HB Litigation Conferences presents

Benzene Litigation Conference

July 24, 2009
Parc 55 Hotel
San Francisco
# Benzene Litigation Conference

**HB Litigation Conferences Presents**  
**Benzene Litigation Conference**  
July 24, 2009 | Parc 55 Hotel, San Francisco  
**Conference Chairs:**  
Raphael Metzger, Esq., Metzger Law Group, Long Beach, CA  
Edward Slaughter, Esq., Hawkins, Parnell & Thackston, LLP, Dallas

### Meeting Room: Cyril Magnin I

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<tr>
<th>Time</th>
<th>Session</th>
<th>Speakers</th>
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<tr>
<td>8:15</td>
<td>Registration and Continental Breakfast</td>
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<tr>
<td>8:45</td>
<td>The Next Generation: New Products and Looming Liability</td>
<td>• What is hydroquinone and why is it important?</td>
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<td>• Cosmetics, film developer, and other products containing hydroquinone</td>
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<td>• Why hydroquinone is banned in Europe but not domestically</td>
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<td>• Other end-user consumer products that may pose risks to users</td>
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<td>• Does benzene in the air we breathe cause leukemia in the general population?</td>
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<td>Gregory Coolidge, Esq., Metzger Law Group, Long Beach, CA</td>
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<td>James Scadden, Esq., Gordon &amp; Rees, LLP, San Francisco</td>
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<td>Allen Lockerman, IV, Esq., Hawkins &amp; Parnell, LLP, Atlanta</td>
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<td>9:45</td>
<td>Recent Update Session-Super-Sized: Breakdown on Four Major Case Areas</td>
<td>A detailed discussion on painter, petroleum, printer, mechanic, gasoline, and tire worker cases addressing:</td>
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<td>• What cases are being filed and where</td>
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<td>• Recent case law impacting the litigations</td>
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<td>• New trial techniques and issues impacting these cases</td>
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<td>Keith Patton, Esq., Shrader &amp; Associates, LLP, Houston</td>
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<td>Thomas Schwartz, Esq., Holloran White &amp; Schwartz LLP, St. Louis, MO</td>
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<td>Neil Bromberg, Esq., Hollingsworth LLP, Washington, D.C.</td>
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<td>11:00</td>
<td>Morning Break</td>
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<td>11:20</td>
<td>How to Work with Your Jury and Select and Present Evidence</td>
<td>• Effective use of jury questionnaires and voir dire questions</td>
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<td>• Developing an accurate jury profile</td>
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<td>• A closer look at jury charges and their decision making</td>
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<td>• Effective use of cause and peremptory challenges</td>
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<td>• Creating optimal communication structure for the plaintiff and defense cases</td>
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<td>• Use of mini openings</td>
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<td>Tammy Metzger, M.A., J.D., President, JuriSense, LLC, Seal Beach, CA</td>
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<td>12:00</td>
<td>Networking Luncheon</td>
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<td>1:15</td>
<td>Causation Evidence and the Different Types of Diseases</td>
<td>• New studies regarding benzene and non-Hodgkin's lymphoma</td>
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<td>• The relationship between benzene and multiple myeloma</td>
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<td>• Manufacturing doubt: industry's suppression of studies showing a relationship between benzene and non-Hodgkin's lymphoma and multiple myeloma</td>
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<td>• Satisfying Daubert, Frye, and other admissibility standards with the studies</td>
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<td>James Dahlgren, M.D., Envirotoxicology, Santa Monica, CA</td>
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<td>Howard Sandler, M.D., President, Sandler Occupational Medicine Associates, Inc., Melville, NY</td>
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<td>2:15</td>
<td>Working With the Jury: Strategy and Procedures</td>
<td>• Strategies for working with jury consultants</td>
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<td>• Methods and models for presenting complicated evidence and when to use them</td>
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<td>• How to demystify the science</td>
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<td>• Tips and strategies for opening and closing statements</td>
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<td>Richard Gabriel, President, Decision Analysis Inc., Los Angeles</td>
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<td>Edward Slaughter, Esq., Hawkins, Parnell &amp; Thackston, LLP, Dallas</td>
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<td>Herschel Hobson, Esq., Ph.D., Law Offices of Herschel L. Hobson, Beaumont, TX</td>
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<td>Tammy Metzger, M.A., J.D., President, JuriSense, LLC, Seal Beach, CA</td>
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<td>3:15</td>
<td>Afternoon Break</td>
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<td>3:30</td>
<td>Mock Session: Preliminary Hearing of Expert Testimony at Trial</td>
<td>This mock session will address various issues, including but not limited to:</td>
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<td>• Expert qualifications</td>
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<td>• Types of data on which experts rely</td>
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<td>• Expert data evaluation and conclusions</td>
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<td>• Daubert, Frye and science</td>
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<td>Hon. Ken Kawauchi (Ret.), JAMS, Walnut Creek, CA</td>
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<td>James Riley, Jr., Esq., Coats Rose Yale Ryman &amp; Lee, Houston</td>
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<td>Amanda Hawes, Esq., Alexander Hawes, LLP, San Jose, CA</td>
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<td>David Galbraith, M.D., ChemRisk, San Francisco</td>
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<td>4:30</td>
<td>Corporate and Insurance Perspectives: Minimizing the Financial Impact of Benzene Litigation</td>
<td>• Benzene-related insurance disputes continue to heat up: coverage disputes involving paint manufacturers &amp; other recent developments</td>
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<td>• Why insurance coverage is a critical corporate asset</td>
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<td>• Settlement tactics and other pretrial efforts that minimize costs for the company client</td>
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<td>• The interplay between insurance issues and defense strategy: the right to control, privilege issues, cooperation and &quot;consent to settlement&quot; questions</td>
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<td>• Insurance company challenges to the reasonableness of defense costs</td>
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<td>• Updates in the pollution exclusion arena: the recent Furmanite decision and its future projections</td>
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<td>Practical steps that benzene defendants can take now to secure coverage and to minimize tension between insurance and defense considerations</td>
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<td><em>Moderator:</em> Barry Buchman, Esq., Dickstein Shapiro LLP, Washington, D.C.</td>
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<td>Bradley Carl, Esq., Vice President &amp; Assistant General Counsel, Safety-Kleen Systems, Inc., Plano, TX</td>
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<td>Laura Foggan, Esq., Wiley Rein LLP, Washington, D.C.</td>
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<td>Frederick Ulkes, Esq., Hinshaw &amp; Culbertson LLP, Los Angeles</td>
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<td>5:35</td>
<td>Networking Reception</td>
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**Location:** Cyril Magnin Foyer
CO-CHAIRS

**Raphael Metzger** is the principal of the Metzger Law Group, a boutique firm in Long Beach, California, whose practice is concentrated on litigating occupational toxic tort cases. Mr. Metzger has obtained more than 10 settlements/verdicts in seven figures for workers who suffer from occupational cancers - mostly leukemias and other cancers from benzene exposure. Mr. Metzger has also secured insurance for organ transplants for clients. He considers his greatest success a case in which he negotiated unlimited lifetime medical care for a client who, for several years, was the longest-surviving female single-lung transplant recipient in the world. For several years he has co-chaired the Benzene Litigation Group of the American Association for Justice and he served as President of the Section on Toxic, Environmental and Pharmaceutical Torts of ATLA, chairing the 2005 program. Mr. Metzger has successfully litigated several appellate cases, including Bockrath v. Aldrich Chemical Co. (1999) 21 Cal. 4th 71, in which the California Supreme Court established pleading requirements for occupational cancer cases. Mr. Metzger has authored articles regarding toxic tort litigation published in the *Los Angeles Daily Journal*, and has chaired many conferences regarding benzene and other toxic tort litigation for HB Litigation Conferences (formerly Mealey's Conferences) and HarrisMartin.

**Ed Slaughter** is the partner-in-charge of the Dallas office of Hawkins, Parnell & Thackston LLP. Mr. Slaughter has been defending corporations, insurance companies, and individuals for more than 14 years. He has served defendants as national trial counsel and national coordinating counsel. Mr. Slaughter has acted as lead counsel in more than 20 jury trials involving business disputes and product liability in jurisdictions across the country including Texas, California, and New York. As national coordinating counsel, he manages expert development and retention, national trial preparation, and national reporting between local counsel, clients, and carriers. He has successfully managed dockets of mass tort cases, obtaining thousands of dismissals without payment in the earliest stages of litigation. Mr. Slaughter has also been actively involved in reshaping the Texas litigation landscape through tort reform. He assisted in drafting legislative proposals and testified before the Texas House Civil Practices Committee to close the loophole that allowed thousands of out of state asbestos claims to be filed in Texas. Mr. Slaughter holds a BA from the University of Memphis (1991) and a JD from the University of Arkansas (1994).
FACULTY

Neil Bromberg is an attorney with Hollingsworth LLP, where he specializes in pharmaceutical product liability and toxic tort defense and has broad state and federal litigation expertise. He has extensive experience representing gasoline manufacturers in personal injury and wrongful death litigation involving alleged exposure to benzene. He has participated in many of the Firm's Daubert matters and has defended and deposed expert witnesses in various fields including neurology, obstetrics, pharmacology, and internal medicine. He has spoken at public and private seminars on a variety of issues including e-discovery and scientific evidence, and he co-chaired the December 2006 Mealey’s Benzene Litigation Conference. Mr. Bromberg previously served on the Steering Committee and was the Internet Coordinator of the Litigation Section of the Bar Association for the District of Columbia. He was also Chair of the Publications Committee and Vice Chair of the Programs Committee. He has served as a member of the Continuing Legal Education Committee of the D.C. Bar's Board of Governors. He was nominated to run for the position of D.C. Representative to the ABA House of Delegates in 2001. In 2006, Mr. Bromberg served as an appellate judge for the American Bar Association's National Appellate Advocacy Competition.

Barry Buchman is with the law firm of Dickstein Shapiro, and is Counsel in the Insurance Coverage Practice. Mr. Buchman specializes in complex civil litigation and dispute resolution, focusing primarily on the representation of corporate policyholders in insurance coverage disputes. He handles a variety of complex civil matters, including disputes over insurance coverage for benzene and other toxic tort claims, and disputes over coverage for “first party” losses, such as property damage and business interruption losses. He has litigated cases both in federal and state trial and appellate courts, and in the context of private arbitration. He also regularly publishes and speaks on insurance coverage issues, and he is the leader of the Firm’s Products/Contaminants Initiative. In addition to his insurance coverage experience, Mr. Buchman also has handled complex tort litigation and civil rights matters. Before joining Dickstein Shapiro, Mr. Buchman was a partner in the Washington, D.C. law firm of Gilbert Heintz & Randolph LLP, and he is a 1997 graduate of the Washington College of Law at American University in Washington, D.C.

Bradley Carl is Vice President - Risk Management and Assistant General Counsel - Litigation for Safety-Kleen Systems, Inc., an environmental services company headquartered in Plano, Texas, with operations throughout the United States. Mr. Carl is responsible for the design and implementation of Safety-Kleen's risk management/insurance program and he also manages all products liability, tort and commercial litigation for Safety-Kleen. Prior to joining Safety-Kleen in 2002, Mr. Carl was general counsel for a start up technology company in Dallas, Texas and before that he was in private practice in Detroit, concentrating on toxic tort and products liability litigation for 12 years, with extensive experience in property and personal injury asbestos litigation. Mr. Carl is a 1984 graduate of Wayne State University Law School and he graduated from Kalamazoo College in 1981.

Gregory Coolidge is a Senior Associate for The Metzger Law Group -- a plaintiff’s firm located in Long Beach, California, concentrating almost exclusively in toxic injury litigation, particularly cases concerning benzene-induced leukemia, multiple myeloma, lymphoma, and other blood diseases and cancers, as well as interstitial lung diseases caused by occupational exposures to silica, aluminum, talc, titanium, and other metallic and inorganic toxicants. For the past nine years, he was handled most of the firm's interstitial lung disease cases and numerous of the firm’s benzene cases. He has also successfully appealed the following published decisions of interest in toxic injury actions: Hernandez v. Superior Court (2003) 112 Cal.App.4th 285 (A trial court, even in an action designated as
complex litigation, is not permitted to order a plaintiff as part of a case management order or otherwise to disclose the identities and opinions of his experts prior to the simultaneous designation and depositions of these experts, because such constitutes a violation of the attorney work product privilege and C.C.P. Section 2034; Téllez-Cordova v. Campbell Hausfeld (2004) 129 Cal.App.4th 577 (The component part defense does not apply to failure to warn or design defect claims asserted against the manufacturers or distributors of machines, such as power saws and grinders, which emit or release toxic substances during the intended and foreseeable uses of the machines).

**James Dahlgren, M.D.,** is a board certified internist with a subspecialty of toxicology. He has practiced in occupational and environmental toxicology for 37 years and has evaluated and treated thousands of patients. He has published numerous peer reviewed articles in the field of toxicology. He is the founder of Pacific Toxicology Laboratories and has served as medical director or consultant for several companies. He has been a consultant to labor unions and is currently the medical director for the International Chemical Workers Union. Dr. Dahlgren has consulted on and testified in dozens of legal cases where benzene toxicity has been an issue. He has treated workers with benzene poisoning. He has organized biological monitoring programs for benzene exposed individuals and groups. He maintains a large library of more than 60,000 peer reviewed articles and monographs on benzene and other toxic chemicals.

**Laura Foggan** is a partner with Wiley Rein in Washington, D.C., where she is a member of the Insurance Practice and co-chairs the firm’s Appellate Practice Group. She has more than 20 years of trial and appellate experience in insurance-related litigation. Consistently named as leading lawyer for insurers in commercial insurance work, Ms. Foggan is recognized for developing key insurance law precedents and effectively presenting insurer views through industry amicus submissions in the courts. She handles a wide range of coverage and regulatory matters, as well as critical appeals, and also is experienced in arbitration and mediation. Ms. Foggan is co-chair of the Insurance Coverage Litigation Committee of the ABA Litigation Section, and the Insurance Law Forum of the DC Women’s Bar Association. Among many other accolades, she has been named one of “The Best Lawyers in America” in the Insurance Law category (2008, 2009), one of “America’s Leading Business Lawyers” by Chambers USA (2002-2009) and was recognized in Euromoney Legal Media Group’s Guide to the World’s Leading Insurance and Reinsurance Lawyers (2006, 2007, 2008). Most recently, Ms. Foggan was especially honored to be named as one of Washington, D.C.’s “Top 50 Women Lawyers” by Super Lawyers magazine (2009).

**Richard Gabriel** is the President of Decision Analysis, Inc. a national trial consulting firm with offices in Los Angeles, Chicago, New York and San Francisco. He has been a practicing trial consultant since 1985, specializing in jury research, jury selection and litigation communication in hundreds of trials in both the civil and criminal arenas across the country. He has conducted extensive pre-trial studies and provided persuasion strategies in the areas of anti-trust, intellectual property, product liability, securities, employment, toxic tort, complex commercial, and white-collar crime. Mr. Gabriel has assisted counsel in the O.J. Simpson, Heidi Fleiss, Enron Broadband case and the Whitewater trials as well as other numerous high profile civil and criminal cases. As a result, he has extensively studied the effects of pre-trial publicity and media culture on both jury and judicial decision-making. Mr. Gabriel is a columnist for Lawyers USA and has authored a series of articles on trial communication, social science, and litigation research for numerous State Bar Journals and other legal publications including the American Bar Association CLE Journal, the Daily Journal, and the Notre Dame and Loyola Law Reviews. He is the co-author of *Jury Selection: Strategy and Science*, printed by Thompson-West Publications and has contributed to the West Coast version
of Bennett's Guide to Jury Selection and Trial Dynamics, also by the West Group. He has appeared regularly on ABC, NBC, CBS, CNN, Fox, COURT TV, MSNBC, CNBC, and NPR as a commentator on high profile trials and issues related to cultural influences on a jury’s decision-making. Mr. Gabriel is the President of the American Society of Trial Consultants Foundation and has been a guest lecturer of at numerous law schools. He has also participated in judicial education programs and numerous programs on trial advocacy and jury issues around the country.

David Galbraith, MD, is a licensed physician in the state of California with a clinical practice here in Silicon Valley. He is also a principal at ChemRisk, a firm providing toxicology, industrial hygiene, epidemiology, and medical risk assessment services. With over 14 years of life sciences consulting experience, Dr. Galbraith specializes in understanding and quantifying human health risk, with a particular emphasis on exposures to chemical toxins in environmental and occupational settings. He has been frequently called upon to offer opinions regarding the probability of exposure to benzene and other chemicals in situations where exposures have been alleged to cause or contribute to a variety of different hematologic disease processes. He is a reviewer for several prominent scientific publications, including Thorax, Occupational and Environmental Medicine, and Toxicology and Industrial Health. He has been a frequent presenter at scientific conferences on human health issues, and a previous speaker at the Mealey's Benzene Litigation Conference (now HB Litigation Conferences). Dr. Galbraith received his undergraduate degree in chemistry from Stanford and his Doctor of Medicine from Yale University.

Amanda Hawes is a partner at Alexander Hawes, LLP, a personal injury law firm located in San Jose, CA. She is a pioneer in toxic chemical litigation, with expertise on the medical effects of toxic chemical exposure, including in utero exposures. She has more than 30 years of experience representing people exposed to toxic chemicals that have caused birth defects, cancer and other chronic diseases. Ms. Hawes has taught environmental justice and toxic tort courses at Golden Gate University School of Law, Santa Clara University School of Law and the University of California, Hastings College of Law. She is a tireless advocate for health-protective exposure standards for workers exposed to toxins.

Herschel Hobson, Ph.D., has made a professional commitment to practicing in the area of toxic tort litigation and representing injured workers and their families. As early as 1970, Dr. Hobson had committed himself to protecting working men and women in Texas from chemical exposure both in the workplace and the home environment. Since Dr. Hobson received his license to practice law in the state of Texas in 1983, he has also fought for the rights of these men and women in the courts. Herschel L. Hobson, Ph.D., J.D. is a licensed Professional Engineer in Civil Engineering (Sanitary) by the state of Texas and he received his Ph.D. in Environmental Health from the University of Oklahoma, Health Sciences Center, School of Public Health. Dr. Hobson's knowledge in these legal and non-legal areas is particularly helpful in litigating chemical exposure cases for: persons diagnosed with mesothelioma, lung cancer, asbestos-related pleural disease, angiosarcoma, acute myelogenous leukemia, aplastic anemia and myelodysplastic syndrome, and cases with these same diseases but referred by other lawyers and law firms. As a leading personal injury and Texas Mesothelioma lawyer, Dr. Hobson is referred or associated in cases from attorneys in other states, including Alabama, California, Connecticut, Illinois, Louisiana, Maryland, Mississippi, Ohio, Oklahoma and Texas, where he has served as co-counsel, local counsel or technical expert witness. Dr. Hobson has litigated cases to a verdict in both the Texas state and federal court systems. Many of his cases, if not tried to a verdict are settled prior to trial. The cases that Dr. Hobson tried to a verdict and/or settled were against the following companies: the manufacturers and suppliers of asbestos, benzene and
vinyl chloride and major oil and chemical companies, including but not limited to: Amoco Oil Corporation, Atlantic Richfield Company, Brown & Root, Cities Service Company, Dow Chemical Company, E.I. DuPont De Nemours & Company, Goodyear Tire & Rubber Company, Gulf Oil Corporation, Hoechst-Celanese Corporation, Marathon Oil Company, Mobil Oil Corporation, Mobil Chemical Company, Monsanto Company, Olin Corporation, PPG Industries, Inc., Phillips Petroleum Company, Texaco, Inc., Shell Oil Company, Sun Oil Company, Union Carbide Corp. and Uniroyal Chemical Company. In litigating national and Texas chemical exposure cases against the major oil and chemical companies, Dr. Hobson has accumulated thousands of pages of corporate documents, technical articles from medical and scientific literature and deposition transcripts from corporate employees.

**Hon. Ken Kawaichi (Ret.)** is a 28-year veteran of Alameda County’s municipal and superior courts. Judge Kawaichi’s experience includes 12 years of experience managing mass tort litigation, including hundreds of multi-party civil disputes as well as 28 years of experience with all types of civil cases, such as asbestos claims, railroad hearing loss claims, complex business and torts, labor and employment issues, construction disputes, discrimination charges, personal injury suits, unlawful detainer and other landlord-tenant disputes, collection and financial disputes, claims under the Americans with Disabilities Act, banking disputes, commercial disputes, consumer claims, contract disputes, criminal matters, family law, disputes involving schools, colleges and universities, estate claims, health care claims, defamation, state and local government claims, products liability, professional negligence cases, real property disputes, and national and international commercial disputes. Judge Kawaichi has trained in, used and taught various dispute resolution techniques, including mandatory and voluntary court settlement conferences, grouped or consolidated case settlement conferences, early disposition programs, trial day disposition programs, mini-trials, supervised negotiations, court trials and arbitrations, mediation, summary trials, mass action settlements, class action settlements, phased settlement conferences and others. His assignments in Municipal and Superior Court bench have included jury and non-jury trials, case management, civil settlement department, criminal trials, criminal master calendar, family law, juvenile law, law and motion, management of asbestos claims, management of railroad hearing loss claims, family support calendar, mental health calendar, Early Disposition Program, and the appellate department. Judge Kawaichi chaired or was a member of the Access, Education, Criminal, Civil, Probation, Jury and Grand Jury, Family Law, Indigent Defendant Committees, as well as other ad hoc committees.

**Allen Lockerman IV** is a partner at Hawkins & Parnell, and has worked in each of its three offices, Atlanta, Dallas, and Charleston, West Virginia, with the firm's clients in asbestos, silica and benzene litigation. In addition to representing a variety of national and multi-national corporations in asbestos litigation, Mr. Lockerman leads the firm's silica practice in state and federal courts. He has developed a system for managing large mass tort dockets and handling cases on a national and local level. He also defends the firm's clients in benzene litigation. Mr. Lockerman currently serves as proxy for the firm on the Defense Steering Committee in the Texas Silica Multi-District Litigation (MDL) and as Chairman of the MDL Defense Medical Committee. Mr. Lockerman earned a Bachelor of Arts degree in 1991 from the University of Georgia and a Juris Doctor from The Walter F. George School of Law at Mercer University in 1994. He served as President of the Thomas County, Georgia, Bar Association between 1994 and 1996. He served as Barrister in the Lamar Inn of Court between 2000 and 2002, and has been selected a 2006 Georgia Rising Star by *Super Lawyers* and *Atlanta Magazine*. 
Tammy Metzger is the principal of JuriSense, a trial consulting firm that conducts pre-trial research, CLE mock trial workshops and offers educational videos on various topics, including jury selection, juror decision-making and how to present expert testimony. She was the in-house trial consultant for a plaintiffs’ toxic tort firm for several years and also guest lectures at law schools. Ms. Metzger’s background as a research scientist, intern manufacturing engineer and teacher makes her uniquely adept at handling environmental, toxic tort and product liability cases. Ms. Metzger is a member of the American Society of Trial Consultants and participates in their educational conferences, workshops and online discussions. She has given talks at many research institutions and academic meetings, including the American Geophysical Union, the International Union of Geodesy and Geophysics and the Statistics Department at the University of California at Santa Barbara. She has authored many environmental compliance documents and she taught science courses at several colleges. Having graduated from Lewis & Clark's Northwestern School of Law, Ms. Metzger understands legal issues and the end game, i.e., the verdict form. She also completed a Certificate in Dispute Resolution from Pepperdine University's Straus Institute and a Certificate in Hazardous Materials Management from the University of California at Riverside. Ms. Metzger worked for the Oregon Department of Justice and the Santa Barbara District Attorney’s Office, writing and researching responses to motions and assisting with trial. She also clerked for the National Oceanic and Atmospheric Administration (NOAA), devising a strategy to introduce exploratory scientific studies into evidence in an attempt to satisfy Daubert restrictions.

Keith Patton is an attorney with Shrader & Associates, LLP, in Houston, Texas, where he concentrates his practice primarily on representing leukemia victims in cases involving occupational and environmental exposure to benzene. He currently represents clients nationwide and frequently associates with attorneys across the country in handling benzene-leukemia and other toxic tort cases. Mr. Patton earned his bachelor’s degree at the University of Dayton in 1998, and law degree at the University of Toledo College of Law in 2001. He became licensed in Texas in November 2001, and practiced as a civil defense lawyer throughout Texas in various areas of personal injury litigation before representing Plaintiffs. Mr. Patton is a member of the State Bar of Texas, the Texas Trial Lawyers Association, and the American Association for Justice.

James Riley is a Director at Coats Rose, and leads a team of litigators in the toxic tort and environmental practice group. Mr. Riley specializes in toxic tort and environmental litigation, representing major manufacturers in various types of toxic tort litigation in Texas and across the country. He currently serves as the National Counsel for a chemical products manufacturer in benzene litigation; regional counsel for a major manufacturer in asbestos litigation; and as Texas counsel for several another clients in silica litigation. He also has significant experience in personal injury suits involving welding rods, mercury, isocyanates, trichlorethylene, coke, oil field fluids, mold, manganese, arsenic gas, and hydrogen sulfide. He also represents clients in Superfund (CERCLA) litigation and environmental property damage claims including litigation involving perchlorethylene (dry-cleaning fluids) and the Brio toxic waste site in Harris County, Texas. During his career, Mr. Riley has tried several toxic tort cases to a verdict including: an asbestos suit with a living mesothelioma plaintiff (2000), a benzene suit involving cancer claims (2004), and a traumatic brain injury suit (1995). Mr. Riley served the U.S. Marines 1971-1972, and upon graduation from South Texas College of Law (1977), he practiced in all fields of law, trying cases in family, criminal, bankruptcy and contract law. He joined Coats Rose in 1985.
Howard Sandler, M.D., is founder and president of Sandler Occupational Medicine Associates. Dr. Sandler has a long and distinguished career in regulation, health care delivery systems, research and problem solving in occupational and environmental health. Dr. Sandler founded Sandler Occupational Medicine Associates, Inc. (SOMA) as a response to business', labor's and government's need for quality, service-oriented approaches to address the many scientific, programmatic and regulatory issues across a broad range of problems in occupational and environmental health. Dr. Sandler has served as a Medical Officer with the National Institute for Occupational Safety and Health (NIOSH). He has also consulted extensively with the EPA, OSHA, NIOSH and the Consumer Products Safety Commission, as well as state and local governmental agencies. Dr. Sandler received his bachelor’s degree from the University of Maryland with honors. He was elected to a number of honorary societies including Phi Beta Kappa. He also graduated from the University of Maryland, School of Medicine. Dr. Sandler performed various research at the National Institutes of Health including neurotoxicology and vinyl chloride carcinogenicity screening markers. He was trained in occupational and environmental medicine while serving as a medical officer with the National Institute for Occupational Safety and Health within the Centers for Disease Control and Prevention.

James Scadden is a partner in the San Francisco and Los Angeles Environmental/Toxic Tort Practice groups at Gordon & Rees. His practice focuses on defending asbestos personal injury, benzene personal injury, and other toxic exposure cases. Mr. Scadden also has extensive experience in alternative dispute resolution, acting as an arbitrator and court-appointed settlement officer, and as a liaison with insurers, self-insureds, and corporate clientele. Mr. Scadden has been defending asbestos personal injury defendants since 1989, beginning with the members for the Center for Claims Resolution. He has a vast amount of experience in environmental and toxic tort litigation representing industry equipment manufacturers, automotive friction-related companies, various product manufacturers, refineries, power plants, and premise owners. He has tried more than 70 cases to verdict, including living mesothelioma cases and other potential multi-million dollar asbestos personal injury actions. His trial expertise has been acknowledged by being elected to the American Board of Trial Advocates in 1986. Mr. Scadden received his JD from the University of California at Los Angeles. He graduated with high honors from the University of California at Santa Barbara with a BA.

Thomas Schwartz is a partner at Holloran White & Schwartz LLP. Mr. Schwartz has tried multiple cases involving personal injury matters, and in 2005 received the Missouri Bar Association’s Lon O. Hocker Award for outstanding trial advocacy. Mr. Schwartz is licensed in Missouri, Illinois, and Kentucky - but regularly represents clients in trial matters throughout the country. While Tom handles a variety of personal injury matters, his areas of emphasis are products liability, toxic torts, and the representation of railroad workers in FELA litigation. He is appointed as designated legal counsel for the International Brotherhood of Boilermakers as well as the Sheet Metal Workers International Association. In addition to serving several local community boards, Mr. Schwartz was elected by his St. Louis lawyer peers to a six year term on the Judicial Commission for the 22nd Judicial Circuit of Missouri. He is a lifelong resident of St. Louis, and a graduate of St. Louis University High School, Marquette University, and St. Louis University School of Law, cum laude. Mr. Schwartz is a member of the Missouri Association Trial Attorneys (Board of Governors 2004 and 2005), Lawyers Association of St. Louis (Executive Board 2004-present), Association of Trial Lawyers of America, and other legal related organization.
Frederick Ufkes is a partner in the Los Angeles office of Hinshaw & Culbertson. Mr. Ufkes is a trial attorney with more than 25 years of experience in complex litigation, environmental, toxic torts, mass torts and products liability defense. He has national and regional counsel experience in both products liability and mass torts, and has defended companies engaged in manufacturing a broad spectrum of products, including chemicals, pharmaceuticals, electronics, computer software and hardware, heavy machinery, construction equipment and consumer products. In addition, Mr. Ufkes has handled a substantial number of matters involving compliance and litigation surrounding California’s Proposition 65, the Safe Drinking Water and Toxic Enforcement Act. He has counseled manufacturers and distributors of both consumer and industrial products at the premarketing phase for compliance on a “go forward” basis. He has also defended consumer class actions and state regulatory cases alleging violation of the Act, seeking injunctive relief and civil penalties in the hundreds of millions of dollars. He has litigated matters under the federal CERCLA, RCRA, Clean Air Act and Clean Water Act statutes for property owners and lessees as well as manufacturing enterprises engaged in plastics manufacturing. Mr. Ufkes joined Hinshaw & Culbertson LLP in January 2009. Previously he was a partner in the Los Angeles office of K&L Gates LLP. He holds a JD from Washington University in St. Louis School of Law (1982) and a BA from the University of California at San Diego (1979).
Hydroquinone-Induced Leukemias Are Scientifically Valid, Provable, and Important Toxic Injury Claims

By Greg Coolidge, Esq.

I. Introduction

Workers and consumers exposed to hydroquinone-containing chemical products who tragically suffer from leukemia constitute a previously unappreciated source of toxic injury actions against the manufacturers and suppliers of these products. Workers at risk include chiropractors, x-ray technicians, photograph developers, and others who have been chronically exposed to x-ray developing and photographic developing chemical products containing hydroquinone. Indeed, this author’s firm is presently litigating the wrongful death action of a chiropractor with no demonstrable exposures to benzene, ionization radiation, or other known causes of leukemia, who developed Acute Myelogenous Leukemia with associated chromosome abnormalities as a result of his nearly twenty-year exposure to hydroquinone-containing x-ray developing products while

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3 Greg Coolidge is a Senior Associate for The Metzger Law Group -- a plaintiff’s firm located in Long Beach, California concentrating almost exclusively in toxic injury litigation, particularly cases concerning benzene-induced leukemia, multiple myeloma, lymphoma, and other blood diseases and cancers, as well as interstitial lung diseases caused by occupational exposures to silica, aluminum, talc, titanium, and other metallic and inorganic toxicants. For the past nine years, he was handled most of the firm’s interstitial lung disease cases and numerous of the firm’s benzene cases. He has also successfully appealed the following published decisions of interest in toxic injury actions: Hernandez v. Superior Court (2003) 112 Cal.App.4th 285 (A trial court, even in an action designated as complex litigation, is not permitted to order a plaintiff as part of a case management order or otherwise to disclose the identities and opinions of his experts prior to the simultaneous designation and depositions of these experts, because such constitutes a violation of the attorney work product privilege and C.C.P. Section 2034); Tellez-Cordova v. Campbell Hausfeld (2004) 129 Cal.App.4th 577 (The component part defense does not apply to failure to warn or design defect claims asserted against the manufacturers or distributors of machines, such as power saws and grinders, which emit or release toxic substances during the intended and foreseeable uses of the machines).
Moreover, in July 2006, a case report entitled “Hydroquinone and/or Glutaraldehyde Induced Acute Myeloid Leukemia” was published in the Journal of Occupational Medical Toxicology, which concerned two x-ray developing technicians who developed Acute Myelogenous Leukemia. The authors concluded that the most likely cause of the technicians’ AML was their chronic exposure to hydroquinone contained in the x-ray developing products they used.

Developing x-rays in his office darkroom. Consumers at risk include persons who have regularly used hydroquinone-containing skin whitening products and cosmetics. As a result of such leukemia concerns, the FDA has moved to effectively prevent the future sale of hydroquinone-containing skin whitening products and cosmetics in the United States, and the European Union has officially banned the use of hydroquinone in skin whitening products and cosmetics.

The scientific proof that hydroquinone causes leukemia in humans is found in abundant published scientific literature, including mechanist studies indicating that hydroquinone is the toxic metabolite of benzene which causes leukemia; published epidemiologic studies concerning benzene exposed workers and leukemia; studies finding that hydroquinone causes leukemia in experimental animals; and human in vitro studies finding that hydroquinone is, itself, genotoxic (damages DNA); is associated with damage to blood cells leading to the development of human leukemia; and causes specific types of chromosome abnormalities in human blood cells exposed to it also regularly found in benzene exposed workers suffering from Acute Myelogenous Leukemia and other leukemias.

The purpose of this article is to therefore inform toxic injury attorneys that hydroquinone-induced leukemias are scientifically valid, provable, and important sources of toxic injury actions for workers and consumers suffering from leukemia. This article also addresses the exposure and causation standards of proof which apply to hydroquinone-leukemia cases in California.

Moreover, in July 2006, a case report entitled “Hydroquinone and/or Glutaraldehyde Induced Acute Myeloid Leukemia” was published in the Journal of Occupational Medical Toxicology, which concerned two x-ray developing technicians who developed Acute Myelogenous Leukemia. The authors concluded that the most likely cause of the technicians’ AML was their chronic exposure to hydroquinone contained in the x-ray developing products they used.
II. An Overview of Hydroquinone, It’s Uses, and Persons At Risk From Exposure to Hydroquinone

Hydroquinone, also known as benzene-1,4-diol or quinol, is an aromatic organic compound which is a type of phenol, having the chemical formula $\text{C}_6\text{H}_4(\text{OH})_2$. Its chemical structure has two hydroxyl groups bonded to a benzene ring in a \textit{para} position. It is a white granular solid at room temperature, and is highly soluble in water.

Hydroquinone is produced industrially in several countries, including the United States. Hydroquinone is used as a reducing agent, as an ingredient in photographic and x-ray developers, as a chemical intermediate for the production of antioxidants, antiozonants, agro-chemicals, and polymers, and as an ingredient in skin whitening products, cosmetics, hair dyes, and various medical preparations.

Consumers who have regularly used hydroquinone-containing skin whitening products and cosmetics, and who have thereby been regularly exposed to hydroquinone through dermal absorption, are at an increased risk of developing leukemia in the future. Hydroquinone has therefore been banned in the European Union since 2001 for use in skin whitening products and other cosmetics as a result of serious concerns over its health hazards, including the development of leukemia and other cancers, resulting from dermal exposure to hydroquinone. Moreover, in August 2006, the U.S. Food and Drug Administration (FDA) proposed a ban on the sale of over-the-counter skin whitening products containing hydroquinone, in part, as a result of the FDA’s concern that hydroquinone is a potential cause of leukemia and other cancers in humans based on existing animal studies. Thereafter, the FDA proposed a rule that, if finalized, would establish that over-the-counter skin bleaching products containing hydroquinone are not generally recognized as safe and are therefore misbranded under FDA regulations. Under this rule, the FDA would also consider all skin bleaching products, whether currently marketed on a prescription or over-the-counter basis, to be new drugs requiring an
approved new drug application (NDA) for continued marketing in the United States. The FDA is therefore proposing to effectively eliminate the sale of hydroquinone-containing skin whitening products in the United States due, in part, to concerns about hydroquinone causing leukemia and other cancers in humans.³

Workers with a leukemia risk from hydroquinone exposure include chiropractors, x-ray technicians, photograph developers, and others who have been chronically exposed to x-ray developing and photographic developing chemical products containing hydroquinone. In these workers, exposure to hydroquinone can occur by the inhalation of airborne hydroquinone vapors airing from developing trays or escaping from x-ray processing machines; by the inhalation of airborne hydroquinone dusts released from dried developer spilled on x-ray processing machines, the floor, or other surfaces of the developing room; and by dermal absorption of hydroquinone resulting from skin contact with spilled developers, from skin contact wet photographs or x-rays, or from skin contact with wet parts of x-ray developing machines during the repair of the machines or other contact with the machines. Indeed, in the case presently being litigated by this author’s firm, the chiropractor who died as a result of Acute Myelogenous Leukemia was chronically exposed to hydroquinone through each of the foregoing routes and sources of exposure for nearly twenty years.

In such cases involving x-ray developers exposed to hydroquinone-containing developing products, it is necessary, if the evidence permits such, to rule out overexposure to ionizing radiation as a cause of the x-ray developer’s leukemia. This is so because overexposure to ionizing radiation is a well-established cause of leukemia, and

³ The California Office of Environmental Health Hazard Assessment (OEHHA) is also currently undergoing an evaluation of hydroquinone to determine whether hydroquinone should by a chemical placed on the Proposition 65 list as a chemical known to the State of California to cause cancer in humans.
because persons who engage in x-ray developing, such as chiropractors, are often the same persons who regularly take the x-rays which will thereafter be developed. This ruling out of ionizing radiation can be accomplished through the introduction of evidence that the x-ray technician always stood behind proper lead shielding when taking x-rays, personal and historical dosimetry readings showing that no overexposures to ionizing radiation occurred, and reports from appropriate regulatory agencies indicating that no overexposures to ionizing were measured during periodic inspections by the agencies.

III. Hydroquinone Is a Cause of Leukemia in Humans

Companies defending hydroquinone-leukemia cases will almost certainly argue that hydroquinone does not cause leukemia in humans, because the three existing published epidemiologic studies of workers in hydroquinone manufacturing facilities and workers involved in motion picture film developing did not find an increased incidence of leukemia among these exposed workers. However, each of these studies lacked sufficient statistical power to detect an increased incidence of leukemia as a result of hydroquinone exposure due to the small populations of exposed workers used in the studies, and the small number of expected leukemias in these groups. The present published epidemiologic studies therefore provide no scientifically valid information for determining whether exposure to hydroquinone causes leukemia in humans.

The scientific proof that hydroquinone is a cause of leukemia is therefore found in other scientific literature, including studies of the biologic mechanism through which benzene causes leukemia in humans; epidemiologic studies of benzene-exposed workers finding an increased incidence of leukemia; studies of animals exposed to hydroquinone which developed leukemia; and human in vitro studies concerning exposure to hydroquinone and the resulting genetic and cellular damage.

Abundant published scientific literature exists discussing the biologic mechanism through which benzene causes leukemia in humans. After being inhaled or absorbed into
the human body, benzene is first metabolized in the liver to benzene oxide, a large proportion of which is then converted to phenol. Phenol is further metabolized to hydroquinone, which is carried throughout the body in the bloodstream. When transported to the bone marrow, hydroquinone ultimately is converted to benzoquinone, which then causes the cellular and genetic damage resulting in leukemia. Thus, benzoquinone, which is the toxic metabolite of hydroquinone, is the critical leukemogenic metabolite of benzene.

For this reason, the voluminous published epidemiologic studies establishing that leukemia in humans is caused by exposure to benzene is, in actuality, voluminous epidemiologic literature which also establishes that exposure to hydroquinone causes leukemia in humans. This is so because the leukemia in each of the workers in these studies exposed to benzene was, as a mechanistic matter, ultimately caused by hydroquinone. When used in conjunction with the published mechanistic literature, the corpus of published epidemiologic studies concerning benzene-exposed workers and leukemia can therefore by used with equal scientific force to establish that exposure to hydroquinone causes leukemia in exposed workers.

There also exists well more than a hundred published, peer-reviewed studies, including animal studies and human in vitro studies, which show that hydroquinone is genotoxic (damages DNA); is clastogenic (breaks chromosomes and causes the loss of chromosomes); causes leukemia in animals experimentally exposed to it; is associated with the damage to blood cells leading to the development of human leukemia; and causes specific types of chromosome abnormalities in human blood cells exposed to it also regularly found in benzene exposed workers suffering from Acute Myelogenous Leukemia (including monosomy 5, 7, 8, and 21; deletions of chromosomes 5, 7, and 8;
translocations of chromosome 21; and others). Additionally, in July 2006, a case report entitled “Hydroquinone and/or Glutaraldehyde Induced Acute Myeloid Leukemia” was published in the Journal of Occupational Medical Toxicology, which concerned two x-ray developing technicians who developed Acute Myelogenous Leukemia. The authors concluded that the most likely cause of the technicians’ AML was their chronic exposure to hydroquinone contained in the x-ray developing products they used.

The existing scientific literature, taken as a whole, therefore clearly establishes that exposure to hydroquinone causes leukemia in humans. Defendants in hydroquinone-leukemia cases are still likely to argue to trial courts that the absence of positive epidemiologic studies concerning workers exposed directly to hydroquinone renders the opinions of plaintiffs’ experts that hydroquinone causes leukemia inadmissible as lacking in foundation. Putting aside the fact that the existing published epidemiologic studies concerning benzene exposed workers and leukemia are highly relevant to establishing that exposure to hydroquinone causes leukemia for the reasons previously discussed herein, there is not a single published California decision which holds that a medical expert rendering an admissible causation opinion is required to rely on epidemiologic studies. To the contrary, California case law explicitly holds that a medical causation opinion in a toxic injury action is admissible in the absence of supporting epidemiologic studies.

The leading case on this point is Roberti v. Andy’s Termite & Pest Control, Inc. (2003) 113 Cal.App.4th 893. In Roberti, a pesticide manufacturer filed an *in limine* motion to preclude the plaintiff’s medical experts from opining that plaintiff’s autism, which is a neurologic disorder, was caused by exposure to the pesticide Dursban. In support of his theory that Dursban caused his autism, plaintiff presented expert testimony

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4 Co-panel participant, James Scadden, has provided in his materials a copy of a bibliography prepared by plaintiffs’ expert in the hydroquinone-leukemia case presently being litigated by this author’s firm, which includes citations to the body of published scientific literature generally referenced above.
of several toxicologists and medical doctors in which each stated the opinion, to a reasonable degree of medical probability, that plaintiff’s autism was caused by his exposure to defendant’s Dursban. The experts did not base these opinions on a single epidemiologic study. Instead, these opinions were based entirely on published peer-reviewed animal studies finding that Dursban causes neurologic disorders.

Defendant contended that the expert opinions offered by plaintiff asserted only the possibility of causation because they were unsupported by peer-reviewed epidemiologic studies. Defendant later filed an amended motion in limine, contending that plaintiff's expert testimony was based on novel methodologies of scientific proof unsupported by peer-reviewed epidemiologic studies (i.e., did not meet the “general consensus” admissibility test set forth in People v. Kelly).

Thereafter the trial court granted defendant’s motion, ruling that "[t]he plaintiff's experts' analysis and causation opinions are not derived from any accepted scientific methodology, are not scientifically valid, and do not possess the evidentiary reliability required by Kelly, . . .” The court further noted that "[t]he consensus in the medical community is that there is no known cause of autism" and further that “[t]here is no consensus among the scientific community that pesticides cause autism.” Plaintiff appealed, contending that Kelly’s general acceptance test did not apply to expert medical opinion testimony, and the trial court had no authority to exclude the testimony of Plaintiffs’ medical experts based upon a threshold test of admissibility akin to the Daubert standard used by federal courts.

The Court of Appeal first agreed that Kelly’s general acceptance test did not apply to the expert medical causation opinions of plaintiff’s experts:

Plaintiff’s experts based their opinion testimony upon research papers and studies (primarily those conducted on animals) in peer-reviewed journals regarding Dursban and its effects, and to some extent upon physical examination of plaintiff using techniques that are generally accepted in the relevant medical community. They did not rely upon any new scientific technique, device, or procedure that has not gained general acceptance in
the relevant scientific or medical community. Rather, it was the theory of causation, that Dursban caused plaintiff’s autism, that has not gained general acceptance in the relevant medical community. The Kelly test is not applicable even though the proffered evidence presents a new theory of medical causation.

Defendant also argued that the trial court was correct in excluding the testimony of plaintiff’s experts based on lack of an adequate foundation. In making this argument, defendant contended that California trial courts could and should apply the foundational analysis employed in the federal courts to all expert testimony. The Roberti court noted that the federal rule established in Daubert v. Merrell Dow Pharmaceuticals, Inc. (1993) 509 U.S. 579 subjects all expert scientific and technical opinion testimony to a threshold reliability test under Rule 702 of the Federal Rules of Evidence, which superseded the Frye test in federal courts as of 1993. However, the Court of Appeal held that Daubert does not alter California law with regard to admissibility of expert medical opinion testimony and that California trial courts may not “conduct preliminary fact-finding, to make a preliminary assessment of whether the reasoning or methodology underlying the testimony properly can be applied to the facts in issue.” Roberti, at 893.

Defendant next argued that the testimony of the plaintiff’s medical experts could be excluded under Evidence Code § 803, which provides that a trial court "may, and upon objection shall, exclude testimony in the form of an opinion that is based in whole or in significant part on matter that is not a proper basis for such an opinion." The Court of Appeal rejected defendant’s misapplication of Evidence Code Sections 801 and 803, which defendant was wrongly equating with a federal court’s authority to determine the admissibility of expert opinions:

Defendant argues that, even if we conclude the Kelly test is not applicable to the expert medical testimony here, the trial court was still correct in excluding it based on its purported lack of an adequate foundation. Defendant contends that we should apply the foundational analysis employed in the federal courts to all expert testimony, an analysis the California Supreme Court has explicitly rejected.
The federal rule established in Daubert v. Merrell Dow Pharmaceuticals, Inc., (Daubert) subjects all expert scientific and technical opinion testimony to a threshold reliability test (under rule 702 of the Federal Rules of Evidence, which superseded the Frye test in federal courts as of 1993). Daubert, however, does not alter California law with regard to admissibility of expert medical opinion testimony.

Under Daubert and the Federal Rules of Evidence it interprets, a district court must first determine whether the reasoning or methodology underlying the testimony is scientifically valid; unlike the Kelly test, however, general acceptance in the scientific community of the underlying methodology is not necessarily required. In addition, the district court must also conduct preliminary fact-finding, to make a preliminary assessment of whether the reasoning or methodology underlying the testimony properly can be applied to the facts in issue. (National Bank of Commerce v. Dow Chemical Co., supra, 965 F.Supp. at pp. 1495-1496, citing Daubert, supra, at pp. 592-595, 113 S.Ct. 2786.)

The district court in National Bank of Commerce applied that test and ruled that plaintiff failed to establish that her exposure to Dursban caused birth defects, where the expert testimony was based on what the court deemed to be studies involving inappropriate protocol and methodology and inadequate exposure and dosage levels, and on animal studies whose applicability to humans was speculative.

"In California evidence is relevant only if it has 'any tendency in reason to prove or disprove any disputed fact' (Evid.Code, § 210). And an expert's testimony must be based on matter 'that is of a type that reasonably may be relied upon by an expert' (id., § 801, subd. (b)). (See People v. Leahy, supra, 8 Cal.4th at pp. 597-598 [34 Cal.Rptr.2d 663, 882 P.2d 321] ....)"

What defendant would have us do, under the guise of determining whether the challenged testimony was supported by the proper foundation, is conduct a Daubert-style analysis, precisely as the court did in National Bank of Commerce. Use of the Daubert threshold reliability test is not, however, in keeping with the law in California.

Defendant's objections are actually to the conclusions plaintiff's experts reached based on the studies available, not with the methodology used in the studies, upon which the experts relied in reaching their conclusions. Defendant's argument in this regard, and the trial court's ruling, instead pertains to the weight of the underlying bases for the expert opinion, not its admissibility.

Roberti, 113 Cal.App.4th at 904-906.
The Roberti court thereafter held that a trial court’s admissibility determination is limited to the general determination under Evidence Code Sections 801 and 803 whether the expert’s opinions are based on matter of the type on which an expert may reasonably rely in rendering such opinions (i.e., whether the studies on which the expert has relied, including animal studies, generally concern the toxins and the diseases at issue in the litigation). The court therefore found that animal studies concerning Dursban and brain and central nervous system disorders were generally of the type on which an expert rendering medical causation opinions concerning Dursban and autism (a type of neurologic disorder) may reasonable rely, because the studies generally concerned the same toxins and same type of injuries at issue in the case. The court thereafter found that the medical causation opinions of plaintiff were admissible, even in the complete absence of supporting epidemiologic studies.

Thus, under California law, even if a trial court were to incorrectly rule that epidemiologic studies concerning benzene exposed workers and leukemia cannot be relied on by a plaintiff’s expert in a hydroquinone-leukemia case, the remaining types of published animal studies, human in vitro studies, and mechanistic studies previously discussed herein provide an adequate foundation to support the admissible opinion that hydroquinone causes leukemia in humans, and caused the particular plaintiff’s leukemia.
IV. Rutherford’s “Substantial Factor Standard” is the Causation Standard in Hydroquinone-Leukemia Cases in California

In 1997, the California Supreme Court issued a landmark toxic tort decision in Rutherford v. Owens-Illinois, Inc. (1997) 16 Cal.4th 953, in which the Supreme Court adopted the extremely liberal “substantial factor standard” for plaintiffs suffering from toxic injuries to prove medical causation in toxic injury actions. Defendants in toxic injury actions regularly argue to trial courts that Rutherford’s substantial factor standard is limited to asbestos lung cancer cases. Defendants are quite wrong.

To fully understand the liberal substantial factor standard created in Rutherford, and why this standard applies to all toxic injury actions it is first necessary to understand the causation issues before the Supreme Court. Rutherford was a lung cancer case brought by a life-long smoker who claimed that his cancer was caused by his exposure to asbestos from the numerous asbestos-containing insulation products of approximately twenty defendants. Prior to trial, Rutherford settled with all of the defendants, except Owens-Illinois. At trial, Rutherford presented evidence of his cumulative exposure to asbestos, including asbestos from Owens-Illinois’ Kaylo product. Owens-Illinois also presented evidence that Mr. Rutherford was exposed to very little asbestos from Owen’s asbestos products, as well as medical evidence that Mr. Rutherford’s 30-year history of cigarette smoking was a substantial factor in causing his lung cancer. Rutherford, 16 Cal.4th at p. 957-962.

In order to lessen Rutherford’s burden of establishing that his exposure to asbestos fibers from Owens-Illinois’ Kaylo product, as opposed to asbestos fibers from settling defendants’ asbestos products, was a substantial factor in causing his lung cancer, the trial court applied a local “burden-shifting instruction.” The jury was instructed that “if the plaintiff has proved that a particular asbestos supplier's product was ‘defective,’ that the plaintiff’s injuries or death were legally caused by asbestos exposure generally, and that
he was exposed to asbestos fibers from the defendant's product, the burden then shifts to
the defendant to prove, if it can, that its product was not a legal cause of the plaintiff's
injuries or death.” Rutherford, 16 Cal.4th at pp. 960-961. The jury thereafter found for
Rutherford, apportioning 1.2% of fault to Owens-Illinois, 2.5% to Rutherford, and 96.3%
to asbestos companies with whom Rutherford had settled before trial. Owens-Illinois
appealed arguing that the trial court’s “burden-shifting instruction” improperly shifted the
burden of proving medical causation, and also plaintiff had failed to prove that he was
exposed to Owens’ asbestos products and had failed to prove that any of Owens’
asbestos had caused Rutherford’s lung cancer.

The issues before the Supreme Court were therefore whether the trial court’s
“burden-shifting instruction” was proper under California law, and whether Rutherford
had introduced sufficient evidence to support the jury’s determination that Owens’
asbestos products contributed to Rutherford’s lung cancer. In determining these issues,
the Supreme Court first held that the “burden-shifting instruction” impermissibly shifted
the burden of proving medical causation to Owen-Illinois. Rutherford, 16 Cal.4th at pp.
976-983. However, the Court also stated that the trial court’s efforts were quite
understandable in attempting to lessen the evidentiary burden of a plaintiff suffering from
lung cancer as a result of his exposure to asbestos from the asbestos-containing products
of multiple defendants, and where the plaintiff must prove that asbestos fibers from a
particular defendant’s products were a substantial factor in causing his lung cancer. For
this reason, the second half of the Rutherford decision concerned the creation of the
Court’s new “substantial factor standard,” which was designed to lessen a plaintiff’s
burden of proving medical causation in such toxic injury actions without impermissibly
shifting the burden of proof to defendants. Rutherford, 16 Cal.4th at pp. 979-983.

In adopting its substantial factor standard, the Supreme Court held that to prevail
in a toxic injury action involving multiple defendants and numerous toxic products, a
plaintiff need not prove that exposure to a particular defendant’s product actually caused his cancer, but need only show that the exposure to a particular defendant’s product was a substantial factor in increasing his risk of developing cancer. Id., 16 Cal.4th at 982. The Court stated that a plaintiff “cannot be expected to prove the scientifically unknown details of carcinogenesis, or trace the unknowable path of a given asbestos fiber”. Id. at 976. Instead, “we can bridge the gap in the humanly knowable” by requiring a plaintiff to show that his exposure to a defendant’s product was a substantial factor in contributing to his aggregate exposure, and thus a substantial factor in increasing his risk of developing cancer. Id. A plaintiff need not demonstrate that exposure to the “fibers of the defendant’s particular product were the ones, or among the ones, that actually produced the malignant growth.” Id. at 977. The Court also explained that “the substantial factor standard is a relatively broad one, requiring only that the contribution of the individual cause be more than negligible or theoretical.” Id., 16 Cal.4th at 978. Thus, to establish the element of medical causation as to any particular defendant, the Rutherford Court held that a plaintiff need only submit evidence that his total exposure to asbestos from all sources substantially increased his risk of developing cancer, and that the contribution of asbestos fibers from a particular defendant’s asbestos-containing products was more than a “merely theoretical or infinitesimal” contribution to his total exposure to asbestos.

The Supreme Court in Rutherford therefore adopted a substantial factor standard which consists of two distinct prongs, both of which must be proven by expert opinion rendered to a reasonable degree of scientific/medical probability: (1) The plaintiff’s cumulative or total exposure to asbestos from all sources, including all of defendants’ products, substantially increased his risk of developing his asbestos-induced cancer; and (2) The contribution of asbestos from a particular defendant’s products was more than a “merely theoretical or infinitesimal” contribution to the plaintiff’s cumulative/total exposure to asbestos. When both prongs are established through expert opinion rendered
to a reasonable degree of scientific/medical probability, a particular defendant is thereby
deemed a “substantial factor” in causing the plaintiff’s lung cancer, because asbestos
fibers from this defendant’s products were more than a “merely theoretical or
infinitesimal” contribution to the plaintiff’s cumulative/total exposure to the asbestos
which had substantially “increased the plaintiff’s risk” of developing lung cancer.

However, in adopting its liberal substantial factor standard in Rutherford, the
Supreme Court did not state whether the standard would apply in toxic injury actions
other than asbestos lung cancer cases. Subsequently, in Bockrath v. Aldrich Chemical
Company (1999) 21 Cal.4th 71, 86, a multi-defendant toxic injury action involving a
plaintiff suffering from benzene-induced multiple myeloma (not asbestos-induced
cancer), the Supreme Court clarified that Rutherford’s liberal substantial factor standard
applies in all toxic injury actions involving a single disease caused by exposure to the
numerous toxic products of multiple defendants. The Court noted that “[i]n Rutherford .
. . we addressed the question of proof of causation in ‘the context of products liability
actions.’” Bockrath at 79 (citing Rutherford at 968). The Court then stated that the
purpose of the Court’s decision in Bockrath was to set forth how a toxic injury action
must be plead to satisfy the elements of proof required under Rutherford’s “substantial
factor standard.” The Court held that Rutherford’s “substantial factor standard” applied
to plaintiff’s toxic injury action because Mr. Bockrath’s case, as with the asbestos-
induced cancer in Rutherford, involved “complicated and possibly esoteric medical
causation issues,” i.e., the determination of medical causation when a single disease (e.g.,
multiple myeloma) is alleged to have been by caused by a plaintiff’s cumulative exposure
to toxins (e.g., benzene) from the numerous chemical products (e.g., benzene-containing
solvents) of numerous defendants (e.g., the 55 manufacturers of said solvents). Id.

According to the Supreme Court in Bockrath, Rutherford’s substantial factor
standard therefore applies in any toxic injury action in which a plaintiff alleges that his
cumulative exposure to toxins from the numerous products of multiple defendants caused him to develop a disease, such as asbestos-induced lung cancer, benzene-induced multiple myeloma, or hydroquinone-induced leukemia. As adopted in Rutherford and extended in Bockrath, this substantial factor standard therefore consists of two distinct prongs, both of which must be proven by expert opinion rendered to a reasonable degree of scientific/medical probability: (1) The plaintiff’s cumulative/total exposure to the toxin(s) at issue (e.g., hydroquinone) from all sources substantially increased his risk of developing his disease (e.g., leukemia); and (2) The contribution of the particular toxin(s) at issue (e.g., hydroquinone) from a particular defendant’s product (e.g., x-ray developer) was more than a “merely theoretical or infinitesimal” contribution to the plaintiff’s cumulative/total exposure to the toxin(s) (e.g. hydroquinone). When both prongs are established through expert opinion rendered to a reasonable degree of scientific/medical probability, a particular defendant is thereby deemed a “substantial factor” in causing the plaintiff’s disease.

Defendants in toxic injury cases nevertheless regularly argue to trial courts that Rutherford’s substantial factor only applies in asbestos lung cancer cases, because the standard was only adopted by the Supreme Court in Rutherford due to the fact that there was no scientific dispute as to the ability of asbestos to cause lung cancer, and Owens-Illinois had conceded that Mr. Rutherford’s lung cancer was only caused by his exposure to asbestos. This argument flies in the face of logic and the facts of Rutherford because the Supreme Court would not have been required to create the first prong of its substantial factor standard (i.e., plaintiff’s cumulative exposure to asbestos “increased his risk” of developing lung cancer), if asbestos was the only known cause of the type of lung cancer from which Mr. Rutherford suffered. In such a case, Mr. Rutherford could have certainly provided medical evidence that his lung cancer was actually caused by his cumulative exposure to asbestos, because only asbestos causes such lung cancer.
"Increasing the risk" is therefore required as a medical causation standard when a disease can be caused by more than one toxic factor which has or may have been encountered by a particular plaintiff, each of which is capable of causing the disease.

Indeed, the Supreme Court in Rutherford specifically noted that Owens-Illinois had also introduced evidence at trial that Mr. Rutherford’s cigarette smoking was a substantial factor in causing his lung cancer. Moreover, the Court noted that the jury was instructed to consider Mr. Rutherford’s smoking for purposes of comparative fault, and the jury thereafter found Mr. Rutherford partially at fault for his lung cancer:

Evidence was also presented that Rutherford had smoked approximately a pack of cigarettes a day over a period of 30 or more years until he quit smoking in 1977. As will be explained, this evidence took on heightened relevance at the second "liability" phase of trial.

[Rutherford, 16 Cal.4th at p. 960]

...Owens-Illinois was also permitted to present evidence that smoking was a "negligent" contributing factor to each plaintiff's condition. Undisputed evidence indicated that smoking sharply increases the risk of lung disease, including lung cancer, and works "synergistically" with asbestos exposure to enhance the severity of resulting damage to the lungs. The trial court's instructions made clear that each plaintiff's entire recovery must be reduced to the extent of his own comparative "negligence" contributing to his condition, because each had continued to smoke tobacco long after he had notice that smoking was hazardous to health, and that the long-term consumption of tobacco products could be a contributing cause of lung disease.

[Rutherford, 16 Cal.4th at p. 962]

...The liability phase jury was instructed to assign percentages of fault for each injury, adding up to a total of 100 percent, among (1) the plaintiff himself (here, plaintiffs' decedent); (2) Owens-Illinois; (3) other manufacturers of asbestos to which the plaintiff or decedent was exposed; and (4) each employer that contributed to the exposure. In Rutherford's case, the jury apportioned fault as follows: 1.2 percent to Owens-Illinois, 2.5 percent to Rutherford himself, and 96.3 percent to the remaining entities to which the jury was allowed to assign fault.

Rutherford, 16 Cal.4th at p. 962.
The Court also stated that cigarette smoking is also a substantial factor in increasing the risk of developing lung cancer, even among asbestos exposed workers, and such indicates that both smoking and asbestos can constitute substantial factors in increasing a particular plaintiff’s risk of developing lung cancer:

[A]t a level of abstraction somewhere between the historical question of exposure and the unknown biology of carcinogenesis, the question arises whether the risk of cancer created by a plaintiff's exposure to a particular asbestos-containing product was significant enough to be considered a legal cause of the disease. Taking into account the length, frequency, proximity and intensity of exposure, the peculiar properties of the individual product, any other potential causes to which the disease could be attributed (e.g., other asbestos products, cigarette smoking), and perhaps other factors affecting the assessment of comparative risk, should inhalation of fibers from the particular product be deemed a "substantial factor" in causing the cancer?

. . .

Instead, we can bridge this gap in the humanly knowable by holding that plaintiffs may prove causation in asbestos-related cancer cases by demonstrating that the plaintiff's exposure to defendant's asbestos-containing product in reasonable medical probability a substantial factor in contributing to the aggregate dose of asbestos the plaintiff or decedent inhaled or ingested, and hence to the risk of developing asbestos-related cancer . . .

Rutherford, 16 Cal.4th at pp. 975-977; See also Cottle v. Superior Court (1992) 3 Cal.App.4th 1367, fn. 5. (“Cigarette smoking presents a striking exception to the general rule that the excess risk created by an activity does not exceed the background risk. For example, the incidence of lung cancer among asbestos-exposed workers who smoke is 10 times greater than that among similarly exposed workers who do not smoke.”) (citing Selikoff & Hammond, Asbestos and Smoking, 242 J.A.M.A. 458, 458 (1979) (editorial).

Thus, the medical fact that both cigarette smoking and asbestos, among other factors, can cause lung cancer is why the Supreme Court found it necessary to lessen a plaintiff’s burden of establishing medical causation by only requiring a plaintiff to prove that his cumulative exposure to asbestos substantially increased his risk of developing lung cancer (Prong Number 1 of the “substantial factor standard”). Because cigarette
smoking and asbestos can both cause lung cancer, the Court concluded that it would be practically impossible for a plaintiff to present medical evidence that asbestos, as opposed to cigarette smoking, actually caused the formation of the cancerous cells in his lungs which resulted in lung cancer. At most, a plaintiff can present evidence that both asbestos and smoking substantially increased his risk of developing lung cancer. Afterward, a jury is thereby permitted to conclude, as apparently the jury did in Rutherford by apportioning comparative fault to Mr. Rutherford, that both cigarette smoking and asbestos increased the plaintiff’s risk of developing his lung cancer.

Similarly in non-asbestos cases, such as the multiple myeloma case before the Supreme Court in Bockrath, epidemiologic studies indicate that there exists a significant increased risk of developing multiple myeloma as a result of exposures to benzene, asbestos, pesticides, paints, solvents, engine and diesel exhausts, formaldehyde, vinyl chloride, styrene, ionizing radiation, and other toxins. See e.g., Herrington, et. al., “Multiple Myeloma,” published in Cancer Epidemiology and Prevention (2nd Ed.) 1996, Schottenfeld & Fraumeni (Editors), Oxford University Press, Chapter 43, pages 956-963. Because a variety of toxins can cause multiple myeloma, including benzene, the Bockrath Court correctly concluded that it would be practically medically impossible for a plaintiff, such as Mr. Bockrath, to present medical evidence that benzene, as opposed to other toxins known to cause multiple myeloma to which the plaintiff was also exposed, actually caused the formation of the cancerous cells resulting in his multiple myeloma. At most, such a plaintiff can present evidence that his cumulative exposure to benzene substantially increased his risk of developing multiple myeloma. For this reason, Rutherford’s substantial factor standard was extended by the the Supreme Court in Bockrath to all toxic injury actions, including benzene and hydroquinone actions.

Indeed, in a remarkably forward-looking and eloquent dissent in Cottle v. Superior Court (1992) 3 Cal.App.4th 1367, Justice Johnson anticipated and urged the Supreme
庭的决定在 Rutherford 和 Bockrath 采用“增加风险”作为因果关系标准在所有毒性伤害事件中：

我与我的同事关于适当的因果关系标准在有毒性案件中的意见不一致。它确实是专家证人的声明, 原告在诉讼中提供的证据可以更精确地描述概率程度。然而，这些专家针对有毒性案件的适当测试进行了评估, 并且足够在合法的裁决运动中生存下来。

几位原告的专家证人—毒物学家、神经学家和其他类似的人—提供了它们的合理医疗证据，指出：（1）个别原告现有和未来将遭受显着疾病的症状；（2）化学物质在该以前的垃圾场中含有一系列个体化学品和其他在相当大的数量；（3）这些化学品已被科学发现能增加暴露者将患有相同类型的疾病和症状的风险，这些疾病和症状是原告实际正在经历的。也就是说，暴露这些化学品的人将比不暴露的人遭受这些疾病和症状的更高发病率。注意，这些专家也把原告与一般人口进行了比较, 找到了一致的对免疫系统的损害模式。这使原告抵抗广泛的一系列严重和不那么严重的疾病能力减弱。

相反, 该法庭所寻求的不可能是像在几乎所有有毒性案件中——证明在特定的个体中一个给定的毒性或组合的毒性是疾病或其他条件的直接原因。这不是一个合理的因果关系标准可以应用于有毒性案件, 如该法庭所面对的案件。

... [S]cores or hundreds of different environmental factors can cause or contribute to most forms of cancer and other injuries and diseases typically confronted in toxic tort cases. Consequently, when a plaintiff is exposed to a toxic and subsequently suffers some disease or injury no expert honestly can testify the toxic caused that particular individual to experience that particular disease or injury.

What science typically can tell us, on the other hand, is that people exposed to a certain toxic have a heightened risk of developing a certain disease or injury. To put it another way, a higher percentage of them will experience that disease or injury than those who are not exposed to the particular toxic. But even when the plaintiff proves he has been exposed to the toxic and later developed the disease or other injury, no expert can responsibly testify to a medical certainty the toxic is the cause in fact of the disease or injury. Only in the rare situation where exposure to a particular toxic raises the risk of the disease by over 50 percent can an expert even testify it is more probable than not the toxic is the cause in fact of the disease or injury.
Toxics thus pose a new problem for the law of torts. The old rules of causation simply don't work because toxics are not automobiles or the other instruments of sudden destruction so familiar to the law. Toxics operate at a microscopic, often submicroscopic, level. They also typically do their damage over the course of months or years. Consequently, there are no witnesses to the "events" linking the toxic to its victim—no one to say "I saw this toxic invade this cell and chemically alter its composition so that a dozen cell generations later it mutated into a cancer that then grew larger and larger until it now threatens the plaintiff's life." Unless the toxic is one of those rare agents, like asbestos, which conveniently causes its own unique disease, there is no way for anyone to testify to the causal path that actually linked the toxic with its injurious effect in the particular case.

As a result, what the trial court sought from plaintiffs' experts in this case—although the traditional causation standard for negligence cases—was not feasible or appropriate in a toxic tort case. The remaining question is whether the law is to deny recovery in the vast majority of toxic tort cases because it is not possible to satisfy a causation test developed in the context of and for the purpose of deciding an entirely different class of cases.


Defendants also regularly argue in toxic injury actions that the limited application of Rutherford's substantial factor standard to asbestos lung cancer cases is established CACI No. 435. CACI No. 435 is labeled “Causation for Asbestos-Related Cancer Claims,” and states in its directions for use that an instruction based on Rutherford's substantial factor standard must be given in asbestos-related cancer cases. However, nowhere is there a statement in the directions that Rutherford's substantial factor can only be used in asbestos lung cancer cases. Moreover, merely because the California Judicial Council, which is not a law-making body, has failed to create a recommended jury instruction for all toxic injury actions based on Rutherford’s substantial factor standard does not mean that the standard does not apply in such cases. Such failure by California Judicial Council merely means that the Council has yet to fully and properly consider Bockrath’s extension of Rutherford’s substantial factor standard to all toxic injury actions, including hydroquinone-leukemia cases.

Defendants in toxic injury actions will also often attempt to introduce expert evidence which contravenes Rutherford’s substantial factor standard in cases in which the
trial court has determined the standard applies. Specifically, a defendant will individually designate an expert who has quantified/estimated the cumulative amount of the toxin at issue (e.g., hydroquinone) to which the injured plaintiff was exposed only from this particular defendant’s products. This expert will then offer an opinion that plaintiff’s cumulative exposure to this toxin from this particular defendant’s products was below or equal to the ambient level of this toxin to which an average person is exposed in the environment during his lifetime. The expert will then offer the opinion that plaintiff’s exposure to this “infinitesimal” amount of this toxin from this particular defendant’s products was, itself, insufficient to have substantially increased plaintiff’s risk of developing the disease from which he suffers, and therefore such exposure was not a substantial factor in causing the disease.\footnote{For example, the expert will opine that the plaintiff’s increased risk of developing leukemia as a result of his cumulative exposure to this toxin from a particular defendant’s products was only 0.000000001% which is itself an infinitesimal increased risk of developing leukemia.}

The Court of Appeal in \textit{Jones v. John Crane, Inc.} (2005) 132 Cal.App.4th 990 clearly explained that these types of opinions cannot be used to defeat medical causation in a toxic injury action. This is so because Rutherford’s substantial factor standard only requires an injured plaintiff to prove that his exposure to a toxin from a particular defendant’s products was more than a merely theoretical or infinitesimal contribution to the total exposure to this toxin which substantially increased his risk of developing his disease. A plaintiff is not required and cannot be required to prove that his exposure to this toxin from this particular defendant’s product was, itself, sufficient to have substantially increased his risk of this disease. The Court of Appeal therefore concluded that even if a plaintiff’s exposure to the toxin at issue from a particular defendant’s
products was below ambient lifetime exposure levels, the plaintiff’s exposure to this particular defendant’s products can still be determined by the jury to be a substantial factor in causing his disease, so long as the jury concludes that this amount of exposure was more than a merely theoretical or infinitesimal contribution to the plaintiff’s total exposure to this toxin. See Jones v. John Crane, Inc. (2005) 132 Cal.App.4th 990, 1000:

Defendant argues that the fibers released from its products were no greater than the ambient level of asbestos in the atmosphere. Its industrial hygienist testified that the general range of fibers released from installation and removal of Crane's products is 0.01 to 0.1 fibers per cubic centimeter of air, and its experts calculated Jones's total asbestos exposure from Crane's products at 10 fiber hours, or .005 fiber years. Defendant's experts considered this amount trivial when compared to the more than 200 fiber years of asbestos exposure Jones suffered during the 7 to 12 years he worked with thermal insulation and his estimated 2.8 fiber years of asbestos exposure from non-occupational ambient asbestos over the course of his lifetime.

Plaintiffs . . . challenged defendant's assertion that Jones's total exposure to asbestos from its products was significantly less than a lifetime of exposure to ambient asbestos. Based on defendant's calculations, the fibers released from defendant's valve packing, 0.01 to 0.1 fibers per cubic centimeter, are tenfold the level of asbestos found in ambient air, i.e., from .001 to .01 fibers per cubic centimeter. Defendant attempts to minimize this disparity by comparing a potential lifetime of ambient exposure to Jones's aggregate occupational exposure to asbestos from its products. But a level of exposure that is the equivalent of that to which one might be exposed in the ambient air over a lifetime is not necessarily insignificant. Rutherford does not require that each exposure be sufficient to independently cause lung cancer. To the contrary, the exposure need only be “a substantial factor in contributing to the aggregate dose of asbestos the plaintiff ... inhaled.” The mere fact that comparable levels could be found in ambient air does not render the exposure “negligible or theoretical.” As Dr. Hammar recognized, if a person were exposed to six different products, each with a release level similar to the asbestos levels recorded in ambient air, the combined concentration in the total dose would contribute substantially to the increased risk of cancer. We heed the admonition in Rutherford to be wary of the misapplication of the substantial factor test.
See also Rutherford v. Owens-Illinois (1997) 16 Cal.4th 953, 979-980 (“[W]e can bridge this gap in the humanly knowable by holding that plaintiffs may prove causation . . . by demonstrating that the plaintiff’s exposure to defendant’s . . . product was a substantial factor in contributing to the aggregate dose . . . the plaintiff inhaled or ingested, and hence the risk of developing asbestos related cancer, without the need to demonstrate that fibers from a defendant’s particular products were the ones, or among the ones, that actually produced the malignant growth. . . . Without such guidance, a juror might well conclude that the plaintiff needed to prove that fibers from the defendant's product were a substantial factor actually contributing to the development of the plaintiff's or decedent's cancer.”)

A defendant therefore cannot defend a hydroquinone case by having its expert render the opinion that plaintiff’s exposure to hydroquinone from this defendant’s products was, itself, insufficient to have substantially increased plaintiff’s risk of developing the leukemia from which he suffers. Indeed, such an opinion would be properly excluded from a hydroquinone-leukemia case in California on the basis that the opinion violates the applicable causation standard set forth in Rutherford, and would therefore only confuse the jury and unduly prejudice plaintiff. Instead, a defense expert is required to render the opinion in a hydroquinone-leukemia case, and to justify this opinion before the jury, that the plaintiff’s cumulative exposure to less than ambient levels of hydroquinone from a particular’s defendant’s products was not a substantial factor in causing plaintiff’s leukemia, because this amount of hydroquinone was merely a theoretical or infinitesimal contribution to plaintiff’s total exposure to hydroquinone from all sources which had substantially increased his risk of developing leukemia.

Another import principle to take from the Jones decision is this: Once a plaintiff’s expert has rendered the admissible opinion that a plaintiff was exposed to an actual and measurable amount of hydroquinone from a particular defendant’s products (i.e, it was
more than theoretical), no matter how small this exposure may be, and has also rendered 
the admissible opinion that this exposure was a substantial factor in causing the 
plaintiff’s disease, it will always be a factual issue for the jury whether this exposure was 
indeed a substantial factor (i.e., whether this exposure was less than or more than a merely 
theoretical or infinitesimal contribution to the plaintiff’s total exposure to hydroquinone). 
In the face of such opinions, it will always be improper for a trial court to conclude, as a 
matter of law, that the actual and measurable amount of hydroquinone to which the 
plaintiff was exposed from a particular defendant’s products was merely a theoretical or 
infinitesimal contribution to the plaintiff’s total exposure to hydroquinone, and therefore 
this defendant was not a substantial factor in causing the plaintiff’s leukemia. This is so 
because only a jury can factually determine the limits of a theoretical or infinitesimal 
contribution of hydroquinone.

V. California Law Does Not Require a Plaintiff to Quantify His Exposure to 
Hydroquinone to Establish Causation

Defendants in toxic injury cases regularly argue to trial courts that an injured 
plaintiff is required to quantify the dose, level, duration, or frequency of his exposure to 
the toxin at issue in order to prove that his exposure to this toxin was a substantial factor 
in causing his disease. However, there are no published California decisions in which a 
court has held that a plaintiff is required to provide expert testimony or other evidence 
quantifying the duration, frequency, dose, or level of his exposure to a particular toxin, 
either in the aggregate or from a particular defendant’s chemical product, in order to 
prove causation in a toxic injury action. To the contrary, California courts addressing the 
issue have held that a plaintiff need only introduce direct and/or circumstantial evidence 
which provides a reasonable inference that a plaintiff was substantially exposed to the 
toxin at issue, and expert medical opinion that this exposure was a substantial factor in 
causing the plaintiff’s disease at issue.
In Lineweaver v. Plant Insulation Co. (1995) 31 Cal.App.4th 1409, 1420, a plaintiff suffering from asbestosis introduced circumstantial evidence of exposure, including the prevalence of defendant’s asbestos-containing insulation product at the worksite and plaintiff’s testimony concerning plaintiff’s proximity to dusts when similar asbestos insulation products were removed. Plaintiff also introduced the testimony of an exposure expert, who based on this circumstantial evidence, opined that plaintiff was substantially exposed to asbestos fibers from defendant’s asbestos product. Plaintiff also introduced testimony from a medical causation expert who had estimated the dose of plaintiff’s exposure in “asbestos fiber years.” Based on all of the foregoing evidence, this medical causation expert also opined that plaintiff’s exposure to defendant’s asbestos product was a substantial factor in causing his asbestosis. The jury thereafter found that plaintiff’s exposure to defendant’s asbestos insulation was a substantial factor in causing his asbestosis and awarded a verdict in plaintiff’s favor. Defendant appealed, arguing that plaintiff’s exposure and medical causation evidence was insufficient to support the medical causation opinions of plaintiff’s experts, particularly the “asbestos fiber years” dose estimate of plaintiff’s causation expert, which defendant contended was speculative and lacking in foundation.

The court thereafter held that plaintiff’s circumstantial exposure evidence was alone sufficient to support the jury’s verdict because a plaintiff, in order to establish exposure to a defendant’s product in a toxic injury action, need only introduce direct and/or circumstantial evidence, such as the prevalence of the product at the work site and the plaintiff’s proximity to noticeable dusts from such products, which provides a reasonable inference that a plaintiff was exposed to a particular defendant’s product:

While there was no direct evidence that Lineaweaver was exposed to Plant-supplied Pabco, the circumstantial evidence was sufficient to support a reasonable inference of exposure. Unlike Dumin v. Owens-Corning Fiberglas Corporation, supra, 28 Cal.App.4th 650, in which we found insufficient evidence of exposure to a particular asbestos product, plaintiff has established that defendant's product was definitely at his work site and
that it was sufficiently prevalent to warrant an inference that plaintiff was exposed to it . . . (Id. at 420)

Concerning the issue of medical causation, the defendant in Lineweaver thereafter argued that the medical causation opinions of plaintiff’s expert should have been excluded, because the expert’s opinion that plaintiff’s exposure to defendant’s asbestos products was a substantial factor in causing his illness was based on the expert’s speculative “asbestos fiber years” dose estimate of plaintiff’s exposure. The Lineweaver court held that even if the dose estimate of plaintiff’s causation expert was completely disregarded, there was sufficient evidence, in the form of plaintiff’s testimony regarding his exposures to dusts and circumstantial evidence concerning the prevalence of defendant’s products at the worksite, for plaintiff’s medical causation expert to render the admissible opinion that plaintiff’s exposure to defendant’s asbestos products was a substantial factor in causing his asbestosis:

As for biological causation, a physician expert in occupational medicine concluded that Lineaweaver's exposure to Pabco products was "a very substantial factor" in causing Lineaweaver's asbestosis. The physician, Dr. Richard Cohen, even opined that it is more likely than not that Lineaweaver would have developed asbestos-related disease from the exposure to Pabco products alone. [Defendant] disputes the validity of these opinions as based on unsupported quantification in "fiber-years" of Lineaweaver's exposure to Pabco. But the opinions of plaintiffs' experts and an inference of Pabco exposure as a substantial factor in contributing to Lineaweaver's asbestosis may be drawn from evidence independent of Dr. Cohen's quantification methodology.

As discussed above, Lineaweaver presented evidence of exposure to Plant-supplied Pabco on a regular basis over more than 30 years of working with and near asbestos insulation products. Lineaweaver was exposed to pipe covering and block insulation which is friable and "very powdery," and created visible dust reminiscent of a "snow storm." While there are other possible sources of Lineaweaver's asbestosis given his exposure to many different asbestos products, it is significant that Pabco products were prominent and prevalent at his work site. Viewing this evidence in Lineaweaver's favor, it was sufficient to support a jury's inference that exposure to Pabco products was a substantial factor in causing Lineaweaver's asbestosis. (Id. at 1420-1421)

Similarly, in Sparks v. Owens-Illinois (1995) 32 Cal.App.4th 461, a plaintiff suffering from mesothelioma caused by his decades-long exposure to asbestos dusts from
asbestos insulation products brought a products liability action against the numerous manufacturers of these products. The jury awarded a verdict in plaintiff’s favor, and in so doing found Owens-Illinois 100% at fault for causing plaintiff’s illness, even though plaintiff was exposed to asbestos dusts from the asbestos products of numerous settling defendants. Owens-Illinois appealed the verdict, and argued, in part, that plaintiff’s exposure and medical causation evidence failed to establish that Owens-Illinois’ “Kaylo” product was the cause of plaintiff’s mesothelioma. Plaintiff’s exposure and medical causation evidence included the opinions of several experts, none of whom calculated plaintiff’s asbestos dose. Rather, these experts opined, based on plaintiff’s testimony, that plaintiff’s exposure to asbestos dusts from Kaylo was “intense,” “substantial,” and sufficient to cause Plaintiff’s illness.

The Court of Appeal held that the opinions of plaintiff’s experts were sufficient to support the jury’s finding that plaintiff’s exposure to Kaylo was the cause of plaintiff’s mesothelioma:

The testimony of plaintiffs' medical experts was clearly sufficient to support a jury finding that Owens-Illinois's product, Kaylo, was more likely than not the source of asbestos fibers that caused Mr. Sparks's mesothelioma. Each of the experts testified that Sparks's exposure to asbestos-containing products during his time aboard the Bremerton was the first, and most intense period of exposure in his lifetime. Each of the medical experts also testified that Sparks's asbestos exposure on the Bremerton was almost certainly sufficient to have caused his mesothelioma. At least one of these experts further stated that Sparks's exposure to Kaylo during the decommissioning was, by itself, sufficient to have caused his disease.


In so ruling, the Sparks court cited Lineweaver’s exposure standard and noted that although the frequency and proximity of exposure are indeed relevant factors when determining exposure, such factors are not necessary to prove exposure in every case:

In a case decided while appellant's petition for rehearing was pending, Division One of this court discussed the burdens of proof on the issues of causation for asbestos-related personal injuries. (Lineweaver v. Plant Insulation Co. (1995) 31 Cal.App.4th 1409, 1416 [37 Cal.Rptr.2d 902].) Writing for the majority, Justice Strankman held that the plaintiff has the
burden of proving that "there [is] a reasonable medical probability based upon competent expert testimony that the defendant's conduct contributed to the plaintiff's injury." The court further observed that many factors are relevant in assessing the medical probability that an asbestos exposure was a "substantial factor" in causing the plaintiff's disease: "Frequency of exposure, regularity of exposure, and proximity of the asbestos product to plaintiff are certainly relevant, although these considerations should not be determinative in every case.


Moreover, in adopting its liberal substantial factor standard in Rutherford v. Owens-Illinois (1997) 16 Cal.4th 953, the Supreme Court explicitly stated that a plaintiff in a toxic injury action need not quantify the dose, level, frequency, or duration of his exposure to a toxin to prove medical causation. Rather, a plaintiff need only submit exposure and causation evidence which permits the jury to reasonably conclude that plaintiff’s exposure to a particular defendant’s product was a substantial factor in causing his disease:

It might also be possible to fashion an instruction that shifted the burden on causation only after the plaintiff had proven, in addition to exposure as such, sufficiently lengthy, intense and frequent exposure as to render the defendant's product a substantial factor contributing to the risk of cancer. As explained earlier, however, there is no need for such a tailored burden shifting instruction; instead, we have determined the jury should simply be told that substantial factor causation can be shown through evidence of exposure to a defendant's product that in reasonable medical probability contributed to the plaintiff or decedent's risk of developing cancer.

Indeed, in stating that a plaintiff is required to show exposure to asbestos from a particular defendant’s product in order to establish medical causation, the Supreme Court cited several California and foreign decisions employing “lenient” and “stringent” exposure standards, none of which require a plaintiff to quantify the frequency, duration, level, or dose of his asbestos exposure, but rather require a plaintiff to introduce a greater or lesser degree of circumstantial evidence which permits a reasonable inference of substantial exposure to a defendant’s asbestos products:
We do not here endorse any one particular standard for establishing the requisite exposure to a defendant's asbestos products, as the issue has not been raised or briefed in this case. We note that a number of different formulations have been applied, both in the reported California cases, and in federal and sister-state jurisdictions. (See, e.g., Dumin v. Owens-Corning Fiberglas Corp., supra, 28 Cal.App.4th at p. 655 [applying "the most generous application of a lenient causation standard"]; In re Hawaii Federal Asbestos Cases (9th Cir. 1992) 960 F.2d 806, 816-817; Blackston v. Shook & Fletcher Insulation Co. (11th Cir. 1985) 764 F.2d 1480, 1485 [stringent approach requiring particularized proof that the plaintiff came into contact with the defendant's product]; Lockwood v. AC & S Inc. (1987) 109 Wn.2d 235 [744 P.2d 605, 613] [lenient approach; sufficient if plaintiff proves defendant's product was at his or her work site, but resolution depends on particular circumstances of each case].)


Thus, in a hydroquinone-leukemia case in California a plaintiff is not required to introduce evidence which quantifies his exposure to hydroquinone, whether by cumulative exposure in parts per million years or some other dose/exposure metric, in order to prove that his exposure hydroquinone was a substantial factor in causing his leukemia. Instead, a plaintiff need only introduce direct and/or circumstantial evidence which provides a reasonable inference that a plaintiff was substantially exposed hydroquinone, and expert medical opinion that this exposure to hydroquinone was a substantial factor in causing his leukemia.

Several courts from other jurisdictions agree with California’s position that a plaintiff need not quantify his exposure to prove exposure and medical causation in a toxic injury action. See, e.g., the following:

Amateis v. City of Bridgeport (2000) 2000 Neb.App. Lexis 194 [“We are not prepared to hold that a plaintiff must prove a mathematically precise level of exposure in order to recover in a toxic tort case. Roth-Nelson’s testimony that Anthony was exposed to a sufficiently high concentration to cause his seizures, along with the testimony of the other experts, was sufficient to support the court’s findings regarding proximate cause.”]

Bainbridge v. Boise Cascade Plywood Mill (1986) 111 Idaho 79, 721 P.2d 179 [“Boise Cascade urges that Ms. Bainbridge has not presented a prima facie case because
NIOSH air quality standards permit formaldehyde levels of up to one part per million and the record provides no evidence indicating that the formaldehyde levels at the situs either reached or exceeded that level. However, to rest its case, as Boise Cascade does at this point, does not negate the prima facie case. The NIOSH standard only sets a parameter for measuring the toxicity of formaldehyde fumes alone. It does not purport to establish a safe level for the combination of formaldehyde and wood particulates. Indeed, Boise Cascade never addressed the issue of whether formaldehyde, at whatever level of concentration in the air, would be absorbed into the wood dust particulates thereby increasing either the concentration of formaldehyde or the toxic effect of the combination. Moreover, evidence was presented indicating that highly susceptible individuals could contract such asthma at a level below the NIOSH standard.”]

Clausen v. M/V New Carissa (9th Cir. 2003) 2003 WL 22208783 [“The fact that the minimum threshold level of oil necessary to cause harm to shellfish has not yet been established with any degree of certainty does not render Dr. Elston's evaluation mere guesswork, as the shipowners argue. While ‘precise information concerning the exposure necessary to cause specific harm [is] beneficial, such evidence is not always available, or necessary, to demonstrate that a substance is toxic ... and need not invariably provide the basis for an expert's opinion on causation.’ Westberry [v. Gislaved Gummi AB (4th Cir. 1999)] 178 F.3d [257] at 264; Heller [v. Shaw Industries, Inc. (3d Cir. 1999) 167 F.3d [146] at 157 (‘even absent hard evidence of the level of exposure to the chemical in question, a medical expert could offer an opinion that the chemical caused plaintiff's illness’).”]

Donaldson v. Central Illinois Public Service Company (2002) 199 Ill.2d 63, 767 N.E.2d 314, 262 Ill.Dec. 854 [“Additionally, we reject CIPS’s assertion that causation includes a showing of exposure, which must be quantified. A Plaintiff must establish that he or she came into contact with chemicals produced by the defendant. See Mitchell v.
In this context, however, Illinois law does not require that plaintiffs quantify the level of exposure. ... Environmental exposure cases, like the instant case, do not afford litigants the opportunity to specify with such certainty the exact level and dose of exposure. In most instances, the details of exposure, including information of exactly when or where exposure occurred, is not available. Here, plaintiffs were not required to show the exact amount of exposure. See La Salle National Bank v. Malik, 302 Ill.App.3d 236, 235 Ill.Dec. 755, 705 N.E.2d 938 (1999) (the inability to show the level of exposure did not bar an expert’s opinion); Harris [v. Cropmate Co. (1999)] 302 Ill.App.3d [364] at 371 (discussing causation testimony that did not calculate the concentration of exposure, but instead reached the conclusion that exposure occurred based upon their “generalized knowledge and firsthand experience with and observations of the effects of exposure”).

Elam v. Alcolac, Inc. (1988) 765 S.W.2d 42, 1988 Mo.App. LEXIS 1546 [“A person subjected to chronic, long-term chemical exposures is not expected to foster a study group in order to prove liability for a disease not even anticipated. ... This lack of detail of exposure quantitation notwithstanding, the evidence agrees that the plaintiffs were exposed on sufficient occasions, for sufficient durations, in sufficient concentrations to toxic Alcolac chemicals to cause them recurrent [and even chronic] irritations and ailments to their eyes, skin and upper respiratory systems. ... In this state of the evidence, testimony of the ‘total adverse effects produced by the toxicant when administered continuously over a long period of time’ bears as circumstantial proof of causation.”]

Fulmore v. CSX Transportation, Inc. (2001) 252 Ga.App.884, 557 S.E.2d 64 [“While both analyses involve a question of the concentration levels of the toxin to which the plaintiffs were exposed, it does not necessarily follow that plaintiffs must show specific air measurement readings, or that they have not otherwise established causation.”]
Lewis v. FAG Bearings Corp. (Mo.App. 1999) 5 S.W.3d 579 [“Even where the evidence does not identify the particular chemical at a particular exposure, the particular concentration of the chemical, the particular dosage of the chemical taken in bodily, or the particular duration of the exposures, the identity of the toxic substances to which the harm is attributed may be shown by circumstantial evidence.” Id., citing Elam v. Alcolac, Inc., supra, 765 S.W.2d at 178-179.

Rockwell International v. Turnbull (Colo.App. 1990) 802 P.2d 1182 [“Nor do we agree that the record fails to support Dr. Aldrich’s assumption that claimant was exposed to harmful quantities of toxic chemical substances, including perchloroethylene and 1,1,1-trichloroethane. This assumption is supported by the employer’s acknowledgment that 1,1,1-trichloroethane was used daily in the area where claimant worked. In addition, claimant and a co-worker, both testified regarding workplace exposure to solvents prior to 1978, and to claimant’s virtually “continuous” exposure to a “fog” of a refrigerative coolant that was sometimes rancid with bacterial contamination during his last year of employment. Contrary to the petitioner’s suggestion, lay testimony is sufficient to support a determination of injurious exposure.”]
BENZENE LITIGATION:
The Next Generation:
New Products & Looming Liability

James G. Scadden
Gordon & Rees LLP
275 Battery Street, 20th Floor
San Francisco, CA 94111
Hydroquinone $\neq$ Benzene
Hydroquinone

C₆H₆O₂
Benzene

$C_6H_6$
Regulatory Risk Assessment ≠ Medical Causation
Hydroquinone NOT classified as a Carcinogen

- **IARC** – “not classifiable”
- **NTP** – “some evidence of carcinogenicity in animals”
- **ACGIH** – “unknown relevance to humans”
- **EC** – “possible carcinogenic effects -- not adequate for making a satisfactory assessment”
Natural Sources of Hydroquinone

Source: Deisinger, P.J., 1999
Bioavailability and metabolism of hydroquinone ---
Drug Metabol. Disp. 27(4):442-448
Hydroquinone, USP

1,4-Benzene diol; 1,4-Dihydroxybenzene

C₆H₆O₂  F.W. 110.11  CAS: 123-31-9

Request a Bulk Quote

MSDS for Hydroquinone

Ratings
Health: 2
Flammability: 1
Reactivity: 0

Available Quantities/Sizes

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<th>SKU</th>
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† Limited Quantity
* Subject to Hazardous Material Fee
Hydroquinone 4%

Tri-Luma

**Tri-Luma**

(fluocinolone acetonide 0.01%, hydroquinone 4%, tretinoin 0.05%) Cream
Hydroquinone

Home > Bleaching-creams

Bleaching Creams | Lighten Up

Brown spots, melasma, freckles. These are all words to describe areas of the skin that are pigmented due to sun exposure, medications, or genetics. Bleaching products are used to suppress pigmentation in order to lighten hyperpigmented areas. The three best ingredients being used in bleaching creams are Hydroquinone, Kojic acid, and Mandelic Acid.

The least invasive way to treat hyperpigmentation is by bleaching. More invasive ways to treat hyperpigmentation are chemical peels or laser surgery. It is best to try different bleaching creams first and if you aren’t seeing the results you desire after three to six months, consider your other options.

Listed below are our recommended bleaching cream products.
**Hydroquinone**

Source: Inhalation, Dermal Absorption

In the Liver: Captured

Disposition: Excreted

---

**Benzene**

Source: Inhalation, Dermal Absorption

In the Liver: Metabolizes to Hydroquinone

Disposition: Circulates to other organs
Literature on Hydroquinone

1. Hundreds of articles with reference to hydroquinone (see bibliography from Nachman Brautbar, M.D. in course materials)

2. Helpful review articles:
   A. Whysner, J., 1995. “Analysis of Studies related to tumorigenicity induced by hydroquinone”
Epidemiology

1. In Vivo v. In Vitro

2. Human Populations

3. Case Reports
   
PLAINTIFF’S THEORY

NTP Bioassays (1989)

F 344/N Rats
- Male
  - Adenomas
- Female
  - MNCL (Mononuclear cell leukemia)

B 63F Mice
- Male
  - Ø
- Female
  - Adenomas

CONCLUSION: “Some evidence of carcinogenic activity”
Worker Population Studies


BENZENE LITIGATION
CONFERENCE

The Next
Generation:
New Products and
Looming Liability

JAMES G. SCADDEN
Jscadden@gordonrees.com
Gordon & Rees, LLP
275 Battery Street
Suite 2000
San Francisco, CA 94111
HR Litigation Conferences
San Francisco, CA July 24, 2009

BENZENE LITIGATION:
The Next Generation:
New Products & Looming Liability

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Gordon & Rees LLP
275 Battery Street, 20th Floor
San Francisco, CA 94111

Hydroquinone ≠ Benzene
Hydroquinone

\[ C_6H_6O_2 \]

\[
\begin{array}{c}
\text{HO} \\
\text{\includegraphics[width=2cm]{benzene.png}} \\
\text{HO}
\end{array}
\]

Benzene

\[ C_6H_6 \]

\[
\begin{array}{c}
\text{\includegraphics[width=2cm]{benzene.png}} \\
\text{C}_3C_3H_6
\end{array}
\]
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Source: Deisinger, P.J., 1999
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Drug Metabol. Disp. 27(4):442-448
Hydroquinone 4%

Tri-Luma
Drug Description
Indications & Dosage
Side Effects & Drug Interactions
Warnings & Precautions
Overdosage & Contraindications
Clinical Pharmacology
Patient Information
Consumer

Tri-Luma
Best Sun-Care Products Slideshow

TRI-LUMA®
(Trihydroquinone acetonide 0.01%, hydroquinone 4%, tretinoin 0.05%) Cream

Hydroquinone

Bleaching Creams | Lighten Up

Bleaching creams are chemical peels or light therapy. They help remove the outer layer of skin and carry nutrients into the lower layers. The most common bleaching creams use ingredients like hydroquinone, retinyl palmitate, and niacinamide.

Listed below are our recommended bleaching cream products.

- Brand 1
- Brand 2
- Brand 3

Hydroquinone is a common ingredient in bleaching creams, but it can cause skin irritation and should be used with caution.
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<th><strong>Hydroquinone</strong></th>
<th><strong>Benzene</strong></th>
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<td><strong>Source:</strong></td>
<td><strong>Source:</strong> Inhalation, Dermal Absorption</td>
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<td>Inhalation,</td>
<td>In the Liver: Metabolizes to Hydroquinone</td>
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<td>Dermal Absorption</td>
<td>Disposition: Circulates to other organs</td>
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<td>In the Liver:</td>
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<tr>
<td>Disposition:</td>
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1. **In Vivo v. In Vitro**

2. **Human Populations**

3. **Case Reports**
   

---

**PLAINTIFF’S THEORY**

NTP Bioassays (1989)

- **F 344/N Rats**
  - Male
  - Female
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- **B 63F Mice**
  - Male
  - Female
  - ∅
  - Adenomas

**CONCLUSION:** “Some evidence of carcinogenic activity”
Worker Population Studies

## HYDROQUINONE

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<th>TITLE</th>
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<tr>
<td>Ahmad</td>
<td>2000</td>
<td>Bioreactivity of Glutathionyl Hydroquinone with Implications to Benzene Toxicity. Toxicology 150(1-3):31-9.</td>
<td>9692</td>
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<td>Andreoli</td>
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<td>DNA damage by hydroquinone in human white blood cells: Analysis by alkaline single-cell gel electrophoresis Mutation Res. 438 (1):37-45</td>
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<td>Anyanwutaku</td>
<td>1994</td>
<td>Oxidative coupling of mithramycin and hydroquinone catalyzed by copper oxidases and benzoquinone. Implications for the mechanism of action of aureolic acid antibiotics Bioorg Med Chem. 2(6):543-51</td>
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<td>Atkinson</td>
<td>2009</td>
<td>A review of the role of benzene metabolites and mechanisms in malignant transformation: Summative evidence for a lack of research in nonmyelogenous cancer types Int J Hyg Environ Health 212(1):1-10</td>
<td>34062</td>
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<td>Badham</td>
<td>2006</td>
<td>The Role of the AHR in Benzene-initiated Toxicity: Benzene, Hydroquinone and Benzoquinone Do Not Induce DRE Activation or CYP1A1 Expression Society of Toxicology 45th Annual Meeting Abstract</td>
<td>26967</td>
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<td>Badham</td>
<td>2007</td>
<td>Investigating the role of the aryl hydrocarbon receptor in benzene-initiated toxicity in vitro Toxicology 229(3):177-85</td>
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<td>Baker</td>
<td>2001</td>
<td>Benzene metabolites antagonize etoposide-stabilized cleavable complexes of DNA topoisomerase IIalpha Blood. 98(3):830-3</td>
<td>13778</td>
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<td>Bandy</td>
<td>1990</td>
<td>Multiple Actions of Superoxide Dismutase: Why Can it Both Inhibit and Stimulate Reduction of Oxygen by Hydroquinones?</td>
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<td>Barale</td>
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<td>Genotoxicity of two metabolites of benzene: Phenol and hydroquinone show strong synergistic effects in vivo Mutation Res. 244(1):15-20</td>
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<td>Bironaite</td>
<td>2004</td>
<td>Stimulation of endothelial IL-8 (cIL-8) production and apoptosis by phenolic metabolites of benzene in HL-60 cells and human bone marrow endothelial cells Chem Biol Interact. 149(2-3):177-88</td>
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<td>Borelli</td>
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<td>Toxicological Studies on the Effects of Hydroquinone and Benzoquinone on Human Basophils</td>
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<td>Bratton</td>
<td>1997</td>
<td>Identification of Quinol Thioethers in Bone Marrow of Hydroquinone-Phenol-Treated Rats and Mice and Their Potential Role in Benzene-Mediated Hematotoxicity</td>
<td>Chemical Research in Toxicology, 10(8): 859-865</td>
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<td>2001</td>
<td>The putative benzene metabolite 2,3, 5-tris(glutathion- S-y1)hydroquinone depletes glutathione, stimulates sphingomyelin turnover, and induces apoptosis in HL-60 cells</td>
<td>Chem Res Toxicol, 13(7): 550-556</td>
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<td>Carbonnelle</td>
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<td>Effect of the Benzene Metabolite, Hydroquinone, on Interleukin-1 Secretion by Human Monocytes In Vitro</td>
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<td>Chen</td>
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<td>Carcinogenesis, 16(10): 2301-2307</td>
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<td>Cho</td>
<td>2008</td>
<td>Suppressive Effect of Hydroquinone, a Benzene Metabolite, on In Vitro Inflammatory Responses Mediated by Macrophages, Monocytes, and Lymphocytes</td>
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<td>Choi</td>
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<td>Hydroquinone, a major component in cigarette smoke, reduces IFN-gamma production in antigen-primed lymphocytes Arch. Pharm. Res. 31(3):337-341</td>
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<td>Chouchane</td>
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<td>Colinas</td>
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<td>1999</td>
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<td>24717</td>
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<td>Role of Oxygen Radicals in the Chromosomal Loss and Breakage Induced by the Quinone-Forming Compounds, Hydroquinone and Tert-Butylhydroquinone</td>
<td><em>Environ. Mol. Mutagen</em> 24(4):293-300</td>
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<td>Eastmond</td>
<td>1987</td>
<td>An Interaction of Benzene Metabolites Reproduces the Myelotoxicity Observed with Benzene Exposure</td>
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<td><em>Mutat Res.</em> 322(1):9-20</td>
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<td>Skin Bleaching Drug Products for Over-the-counter Human Use; Proposed Rule</td>
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<td><em>Environ Health Perspect.</em> 104 Suppl 6:1319-23</td>
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<td><em>J Appl Toxicol.</em> 24(3):183-188.</td>
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<td>Gaskell</td>
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<td>Comparison of the Mutagenic Activity of the Benzene Metabolites, Hydroquinone and Para-benzoquinone in the Supt Forward Mutation Assay: a Role for Minor DNA Adducts Formed from Hydroquinone in Benzene Mutagenicity</td>
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<td>Hiraku</td>
<td>1997</td>
<td>Oxidative Dna Damage and Apoptosis Induced by Benzene Metabolites</td>
<td><em>Cancer Research</em> 56:5172-5178</td>
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<td>Hoffman</td>
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<td>Pharmacokinetics of Benzene Following an Oral or Intradermal Dose in FVB and TG.AC Mice</td>
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<td>Toxicol Appl Pharmacol. 174(2):139-45</td>
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<td>Study on expression regularity of XPV mRNA in L-02 hepatic cells induced by hydroquinone</td>
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<td>Quinone-thioether Mediated Stress Responses in Human Proximal Tubular Epithelial Cells</td>
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Recent Benzene Updates: Major Case Areas

Plaintiff’s Perspective

Keith Patton
Houston, Texas
keith@shraderlaw.com

Tom Schwartz
St. Louis, Missouri
tschwartz@holloranlaw.com
Key Issues for All Cases

- Venue & Law
- Parties & Other Witnesses
- Evidence & Experts

→ Common Challenges for Both Sides
   → No Single Factor Controls Outcome
   → Liability, Causation, and Damages
Six Major Areas

- Tire & Rubber Workers
- Mechanics
- Painters
- Gasoline Workers
- Railroad & Seamen
- Printers
Evidence for All Cases

• Wealth of Evidence Already Discovered
  – Liability Documents
  – Studies: General and Specific

→ Continually Developing
→ Moving Target
Tire & Rubber Workers: Key Issues

- Numerous Cases
- Sophisticated User Issues
- Employer Liability
Tire & Rubber Workers

Recent Law & Filings

• Pending cases in Nebraska
  – Bulk Supplier / Sophisticated User Issue(s)

• Texarkana Case: Pltf. Vs. Suppliers
  – Sophisticated User MSJ Denied
  – Defense Verdict
Tire & Rubber Workers: Key Issues

OHIO

→ Intentional tort standard remains open to interpretation

Special provisions for removal of a safety measure or deliberate misrepresentation of a toxic or hazardous substance
Tire & Rubber Workers: Key Issues

Texas

- Wrongful death/gross negligence case against employer
- Considerations:
  - Conscious Indifference
  - Magnitude of Potential Harm to Others
Tire & Rubber Workers: Evidence

The control of concentration of vapors and the discovery and removal of those individuals who are subject to irregularities of the blood from areas where they may possibly be exposed, represent the two problems involved in maintaining safe working conditions.
Tire & Rubber Workers: Evidence

OSHA and Industry: 1970s

Lymphatic Cancer and Leukemia 2.5 to 5
Tire & Rubber Workers: *Evidence*

**1972:** Tireworkers wear respirators

**MEDICAL EXAMINATIONS**

Personnel assigned to operations that necessitate the wearing of a respirator are to be examined by a physician to determine if they are physically able to perform the work. Personnel using respirators are to have their medical status checked periodically.

**1978 to OSHA:** Respirators are not used

Respirators are not used in operations involving benzene exposure in the tire industry although respirators are available for use at the request of the employee.
Tire & Rubber Workers: Key Issues

Sophisticated User Doctrine

“... If the manufacturer reasonably believes the user will know or should know about a given product’s risk, the manufacturer need not warn that user of the risk”

→ Fact Intensive Inquiry
Mechanics: Key Issues

- Product Identification
- Consistent Exposure
- Recent Exposures
- Younger Plaintiffs
- Various Industries
- Various Defendants
Mechanics: *Literature & Evidence*

- Mechanic studies
- Absence of product testing
- Presumed benzene content
Mechanics: *Plaintiff’s Perspective*

- Large group of exposed workers
- Fair number of potential defendants
- All states and time frames
- Mixed Solvents & NHL
  \[ \rightarrow \text{Law ?} \]
Painters: Literature

IARC: 1989

Overall evaluation

Occupational exposure as a painter is carcinogenic (Group 1).
Painters: Key Issues

- PID
- Respirators
- Ventilation
- Warnings
- Discovery Q’s
Painters: *Plaintiff’s Perspective*

- Large Group of Exposed Workers
- **Small Companies = Great Liability Facts**
  - Not only Leukemia
Q. And compared to other cancers, again breast cancer, kidney cancer, pancreatic cancer, is it your testimony that AML is -- is it the most severe of these cancers and leukemias that we see?

A. Most definitely.
Tom Schwartz
St. Louis, Missouri
tschwartz@holloranlaw.com

- Gasoline Workers
- Railroad & Seamen
- Printers
FELA & Jones Act Claims

• Unique legal issues play important roles in benzene exposure cases
FELA & Jones Act: Recent Cases

• *Shelby v. Sea River Maritime*
• *Seaman v. Seacor Marine*
• *Clark v. KBR*
Gasoline Cases: Key Issues

- Types of Workers
- Case Categories
- Exposure Factors
- Heavily Studied
- Warnings

"This product may contain up to 4.9% benzene. Repeated or prolonged breathing of benzene vapors has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal."

1987 Gasoline MSDS
Gasoline & Benzene: Evidence

Although the significance for man is not presently known, until such a time as we can positively exclude gasoline and/or its components as a weak carcinogen in male rats, a weak carcinogen for man (?), a promoter, a co-carcinogen, etc., it is prudent to issue warnings not only from a health effects aspect, but also from the liability aspect.

Communicating the information, warning against excessive exposures and explaining how excessive exposures may be avoided are steps the industry can take now to lessen what risk may exist.

Executive Summary on Unleaded Gasoline

Industry: 1983
Gasoline Cases: Literature

- Numerous studies specific to gasoline workers and leukemia
- Various sources of benzene/gasoline exposure data
- Overall strength of the gasoline literature is still debated

In essence, to significantly improve the risk assessment by decreasing the scientific uncertainty would be expensive and time-consuming. We would like to show that this effort can be justified in both the scientific and regulatory contexts.

Industry: 1987
Gasoline: *Recent Cases*

- **Nawrocki v. The Coastal Corp.**
- **Henrickson v. ConocoPhillips**

---

**HEALTH WARNING**

**GASOLINE**

Harmful or fatal if swallowed. Long-term exposure to vapors has caused cancer in laboratory animals.

- Avoid prolonged breathing of vapors.
- Keep face away from nozzle and gas tank/container opening.
- Keep away from eyes and skin.
- Never siphon by mouth.

Failure to use caution may cause serious injury or illness.
Printers: *Key Issues*

- Product ID
- Lone-Pine Orders
- National vs. Local Mfgrs.
- Mixed Solvents & NHL
- Employer Fault
Recent Benzene Updates: Major Case Areas

Plaintiff’s Perspective

Keith Patton
Houston, Texas
keith@shraderlaw.com

Tom Schwartz
St. Louis, Missouri
tschwartz@holloranlaw.com
Recent Case Law and Issues Impacting Benzene Litigation in Four Major Case Areas

Neil S. Bromberg
Hollingsworth LLP
1350 I Street, N.W.
Washington, D.C. 20005
Where Are Cases Being Filed?

- Difficult to identify any major jurisdictional trends re filing of benzene cases.

- Top 3 jurisdictions recently seem to be Texas, California, and Louisiana.

- Delaware is still a jurisdiction where cases being filed given a specific docket of coordinated benzene cases, especially trace benzene cases.
ATR Foundation: Judicial Hellholes 2008/2009

♦ Report identifies jurisdictions that may be favored by Plaintiffs’ Bar given the pro plaintiff slant of the courts / laws.

♦ These jurisdictions are not necessarily places where benzene cases are filed in large numbers.

♦ But given the perceived tilt of these courts, it is reasonable to expect cases to be filed there.
Judicial Hellholes

♦ 1. West Virginia
♦ 2. South Florida
♦ 3. Cook County, Illinois
♦ 4. Atlantic County, N.J.
♦ 5. Montgomery and Macon Counties, Ala.
♦ 6. Los Angeles County, California
♦ 7. Clark County, Nevada
Watch List --

- **Gulf Coast & Rio Grande Valley of Texas**
  - Has been counted in the past as a Hellhole, despite rest of state’s call for tort reform.
  - Texas appellate courts, however, have been reining in lower court decisions that fly in the face of evidence or yield excessive awards.

- **Madison County, Illinois**
  - From 2002-2006 ranked high on ATR List, but dropped out in light of continued progress in restoring fairness led by Chief Judge Ann Callis and Judge Daniel Stack.

- **Baltimore, Maryland**
  - State’s longstanding limit on non-economic damages is under attack.

- **St. Louis (the City if) and St. Louis and Jackson Counties, Missouri**
  - These areas host many of MO’s biggest verdicts and settlements.
Key Defenses

- Medical Causation
- Bulk Supplier / Sophisticated User Defenses
- Product Identification
Recent Verdicts and Settlements: Solvents Containing Benzene

♦ Defense Verdicts:
    - Lawsuit alleging exposure to various petroleum hydrocarbon solvent products supplied by defendants Shell Oil Co., Chevron U.S.A. Inc., and Unocal during employment at Firestone Tire & Rubber Company plant caused NHL.
    - Solvents contained <2% concentration of benzene
    - Court dismissed negligence claims at end of trial, case went to jury on strict liability for failure to warn and design defect.
    - Jury found that the designs of products not cause of plaintiff’s injury, but found some products defective for failure to warn. However, found that failure to warn not cause of plaintiff’s NHL.
Defense Verdicts

  - Verdict for defense in case alleging that a release of gasoline from a Gulf station contaminated local properties and led to various illnesses, including leukemia and autism.
  - The jury found that the vapor reached three of four of the plaintiffs’ properties but did not enter the plaintiffs’ individual homes. The defense successfully argued that any exposure to gasoline was insufficient to cause illness.
Recent Verdicts and Settlements: Plaintiff


  - San Francisco jury awarded plaintiff $8 million after finding that defendant SeaRiver Maritime failed to provide a safe work place and that its vessels were not seaworthy. The jury awarded $350,000 for loss of future earning capacity, $1.125 million for past pain and suffering, and $6.525 million for future pain and suffering.
  - Plaintiff diagnosed with cancer of the kidney and low white and red blood cell counts, which he claimed showed damage to his hematological system. Alleged that injuries resulted from over-exposure to airborne hydrocarbons, including benzene.
  - Defendant argued that air monitoring of Shelby’s work place revealed exposures that were inconsequential.
Recent Verdicts and Settlements: Plaintiff

  - The court rejected a challenge to a $3.4 million verdict (awarded on Oct. 31, 2007) for the widow of a former refinery worker with CML, but reduced it by 17% to reflect the jury’s comparative negligence finding. Punitive damages claim had been dismissed during the trial.
Medical Causation: Plan your challenge under *Daubert / Frye* at beginning of case

- General causation defense will depend on the alleged disease at issue
  - AML
    - General causation: Lack of science tying exposure to product at issue to AML
    - Dose / exposure challenges
    - Specific causation challenges
  - Non-AML leukemia, Other adverse effects
    - Defenses as above
      - No scientifically reliable evidence tying benzene exposure to disease in question
Medical Causation: Plan your challenge under *Daubert* / *Frye* at beginning of case

- Defense will depend on product at issue
  - E.g., Pure benzene exposure vs benzene containing product (e.g., gasoline, paint, solvent)

- Defense will depend on exposure
  - Quantifiable
    - High vs. Low vs. Trace exposure

- Work with experts from the beginning.
Specific causation issues

- Is there reliable evidence demonstrating that plaintiff was exposed to benzene attributable to defendant in amounts sufficient to cause the alleged injury?
  - Are there quantitative measurements of benzene exposure at work site for period plaintiff worked there?
  - Are there historical measurements?
  - Can likelihood of exposure be estimated from
    - Type of work performed by plaintiff
    - Specific area plaintiff worked in (e.g., ventilation, size of space)
    - Type, if any, of personal protective equipment used.
  - Can exposure be estimated from studies of comparable environments?
Specific causation issues

Does plaintiff have any risk factors for the disease in question independent of the alleged exposure to benzene that cannot be ruled out as a cause of her injury?
- Background risk generally of type of disease
- Smoking
- Age
- Exposure to other chemicals or toxins
- Exposure to benzene in the environment
- Exposure to benzene in food

Does plaintiff have any evidence of chromosomal changes purportedly indicative of benzene-induced leukemia or disease?
Key Inquiry re Medical Causation

- Can plaintiffs satisfy their burden of showing that their opinions on general causation are based upon scientifically-reliable methodology and scientifically relevant data?

- To be admissible, opinion evidence must be ‘reliable’ and there must be a proper ‘fit’ with issue in question.
“Evidence” plaintiffs may rely on to argue general causation proven

- Epidemiologic studies
- Animal studies
- Case reports / other anecdotal data
- Analogies to other diseases / other chemicals
- Government regulations or findings re benzene
Relevance inquiry: Must be a valid “fit” between evidence relied on and disease at issue.

- Plaintiffs may argue that all cancers and blood diseases are caused by exposure to benzene based on scientific studies of benzene and different diseases.

- Rule 702 “requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility” – i.e. “fit”

Can argue “no fit” if studies relied on don’t involve same . . .

- Product or compound (e.g., pure benzene vs gasoline exposure)
- Dose plaintiff exposed to (e.g., low dose vs high dose)
- Type or route of exposure (e.g., top loading vs bottom loading)
- Disease (e.g., AML vs. NHL)
- Species (e.g., rats vs. humans)
Limits of extrapolation

“But conclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the ipse dixit of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.”

Expert Testimony Excluded: AML (Gasoline)

  - All four of tanker truck driver plaintiff’s experts were excluded.
  - According to the court, the general causation link between gasoline and AML was not scientifically supported:
    - “The court concludes that Plaintiffs’ experts’ general causation testimony must be excluded because the studies they rely upon singly or in combination, do not support the causation conclusions they make in the face of the overwhelming body of contradictory and inconsistent epidemiological evidence.” *Id.* at 1175.
“The scientific record does not reflect that there is ‘universal’ knowledge that benzene causes AML at very low doses, as [plaintiff’s expert] concludes.” *Id.* at 1161.

One expert excluded for not considering dose. Two other experts were excluded for using “unreliable” dose calculations:
Non-AML Blood Injuries: Causation Rejected

♦ Mechanic

♦ Paint

♦ Tanker men
  – *Knight v. Kirby Inland Marine, Inc.*, 482 F.3d 347 (5th Cir. 2007) (on appeal from N.D. Miss.): Lymphoma and bladder cancer.
Other cases of interest in which experts excluded


Non-AML Blood Injuries: Rulings for Plaintiffs on Causation

Non-AML Blood Injuries: Causation Rejected

- **CML**
  - Chambers v. Exxon Corp., 81 F. Supp. 2d 661 (M.D. La. 2000), aff’d, 247 F.3d 240 (5th Cir. 2001)
  - Mitchell v. Gencorp Inc., 165 F.3d 778 (10th Cir. 1999)

- **ALL**

- **Aplastic anemia**
Non-AML Blood Injuries: Causation Rejected

❖ MDS

❖ NHL / Hodgkins
Non-AML Blood Injuries: Causation Rejected

  - Court entered JNOV on a 11/04 $2 million verdict in NHL case from mechanic’s alleged exposure to Liquid Wrench.
  - “[N]either the cohort nor the case control studies relied on by [plaintiff’s expert] support his opinion that a causal connection exists between benzene exposure and [NHL].”
Rejecting causation (other injuries)

- Squamous cell carcinoma

- Bladder cancer

- Lung cancer

- Birth defects
Cases rejecting causation because failed to establish dose

Regulatory Actions / Standards Not Reliable Evidence of Causation

- The “agencies’ threshold of proof is reasonably lower than that in tort law, which ‘traditionally make[s] more particularized inquiries into cause and effect’ and requires a plaintiff to prove that it is more likely than not that another individual has caused him or her harm.”

- “In other words, the fact that an agency, ex ante, sets an exposure standard of 5 ppb [of benzene] for drinking water does not compel, or even necessarily support, the ex post conclusion that Sutera’s leukemia was cause by Perrier [water].”

Case reports and anecdotal data unreliable evidence of causation.

- *Castellow v. Chevron USA*, 97 F. Supp. 2d 780, 787 (S.D. Tex. 2000) (agreeing with defense experts that attempting “to form opinions regarding medical causation based on documents such as [anecdotal case reports or collections of case reports] are unscientific and speculative.”)

Analogies to other chemicals or diseases not reliable evidence of causation.

“Without scientific data supporting their conclusions that chemicals similar to benzene cause the same problems as benzene, the analytical gap in the experts’ testimony is simply too wide for the opinions to establish causation.”

– *Mitchell v. Gencorp Inc.*, 165 F.3d 778 (10th Cir. 1999)
Failure to “rule out” alternative causes of plaintiffs’ alleged benzene injury = excluded expert


Product Identification

"That's the one!"

ALMEIDA
The Benzene Product Id Problem

- Plaintiffs’ complaint fails to identify
  - specific product made by defendant that caused the alleged injuries
  - specific acts / omissions by defendant that caused harm
  - exposures of plaintiff to any product made by defendant

- Plaintiffs seeking: quick settlements; build cases through discovery; hoping for collective liability
How to stop the problem

- Motions to dismiss complaint or for more definitive statement
- Protective orders against discovery absent product id
- Limiting initial discovery to product id.
- Summary judgment on product id
- Sanctions
Motion to Dismiss Complaints

- Bare-bone complaints insufficient to satisfy plaintiffs’ burden
- Plaintiffs have a duty to investigate own case before filing.
  - Should know which products exposed to and caused injury before filing suit.
  - No good faith basis for bringing suit absent such information.
  - Should not be permitted to identify only generic types of products as opposed to specifically naming the products.
- Complaint not a license for a fishing expedition in hopes of discovering some basis for a claim against a defendant

- Complaints failed to provide specific facts about time, place, or manner of alleged exposures to benzene-containing products or processes.

- Complaints failed to identify the specific benzene-containing products or processes to which the plaintiffs were allegedly exposed.

- Complaints simply identified exposure to “categories” of products (e.g., “specialty chemicals” or “fuel”)
Pelous, et al. v. Behr Process Corp., et al.,

- Court granted motions to dismiss complaints on grounds that the lawsuits violated Delaware’s pleading standards for fraud and negligence.

- Allowed plaintiffs 90 days to refile with more specific product identification information.
  - Specific product need not be named, BUT
  - Must id as specifically as possible (e.g., where product was used; how product was used; when product used
Pelous, et al. v. Behr Process Corp., et al.,

- Defendant not required to provide list of its benzene-containing products to assist plaintiffs’ product id

  - “...you’re asking [defendants], in essence, to feed you the information that you need to make your claim […] that could be problematic, too. Wouldn’t they be reasonable in saying tell us what you were exposed to, we’ll tell you if it contained benzene or not?”
Pelous, et al. v. Behr Process Corp., et al.,

In an industrial setting where multiple chemicals are used “there will always be some difficulty” at least initially “in identifying the products that are alleged to have caused injury with particularity … but some effort to do so must be made. The plaintiffs would not have brought their claims against individual defendants unless they had a Rule 11 basis to do so.”

– Tr. at 73-74 (emphasis added).

- Alleged AML from exposure to oil wells and pipelines in vicinity of residence.

- Dismissed 3 benzene actions without prejudice, finding complaints did not assert specific claims against individual defendants or provide a causal connection between defendants’ actions and the alleged injuries.

- Plaintiffs given multiple oppty to fix deficiencies before
Seek sanctions under Rule 11? 
“Reasonable Inquiry” Required

♦ By signing or otherwise presenting a pleading, the attorney “is certifying that to the best of [his or her] knowledge, information, and belief, formed after an inquiry reasonable under the circumstances” the claims are warranted.

– Fed. R. Civ. P. 11
Advisory Committee Notes to Rule 11:

“Tolerance of factual allegations in initial pleadings by plaintiffs . . . when specifically identified as made on information and belief does not relieve [them] . . . from the obligation to conduct an appropriate investigation . . .; it is not a license to join parties [and] make claims . . . without any factual basis or justification.”
**Harden v. Peck, 686 F. Supp. 1254, 1263 (N.D. Ill. 1988).**

- “A ‘Bubba Smith’ approach to litigation, in which the plaintiff grabs as many defendants as possible and then throws them out one-by-one until he finds one with liability, violates Rule 11.”

- “The need for discovery does not excuse the filing of a vacuous complaint.”
Motion for Protective Orders

Motion Commotion by Charles Fincher

LET ME GUESS...
IT'S A MOTION
FOR PROTECTIVE
ORDERS.

MOTION FOR PROTECTIVE ORDERS
Protective orders against discovery

  - Leukemia allegedly caused by 34 yr exposure to unspecified benzene-containing products at tire plant. Plaintiff moved to compel more detailed Fed. R. Civ. P. 26(a)(1) disclosures.
  
  - Exxon objected to disclose all information on all benzene-containing products marketed to the tire industry absent more specific product id.

  - Court agreed it was unreasonable “if not a practical impossibility” to require Exxon to make more detailed disclosures without specific product identification.
No discovery of defendant before product identification

- A Texas judge ruled on two trace cases at the same time:
  - *Sauceda v. Union Carbide Corp.*, No. 38802 (school custodian)

- “Plaintiffs shall not be permitted to obtain discovery of any Defendant until” Plaintiffs identify the name of the products to which they were allegedly exposed and the time and location of the alleged exposure.
Limiting discovery: *Lone Pine* orders

- Requires plaintiffs to produce *prima facie* evidence of exposure to a chemical and that such exposure caused her illness before proceeding with case.

- Discovery initially only on plaintiff’s medical history, exposure to alleged product, plaintiff’s deposition, plaintiff and defense experts.
Motions for summary judgment
Summary judgment on product id

  - Case dropped when plaintiff, a repair shop worker who developed leukemia, failed to respond to defendant’s motion for summary judgment, which claimed that plaintiff had not properly identified its products as either a) the source of his leukemia or b) “in a defective condition unreasonably dangerous to the user.”

- **Smith v. 3M Co., No. 06-2-10994-5 (Wash. Super. Ct.)**
  - June 8th and June 21st, 2007, ten summary judgment motions were granted in case by former Boeing employee with acute lymphocytic leukemia, including one granted in part to two paint companies.
Summary judgment on product id

- *Bly v Tri-Continental Indus.*, 663 A2d 1232 (D.C. Ct. App. 1995) (granted summary judgment in favor of all defendant petroleum companies because decedents' survivors failed to prove which defendants, if any, had supplied the government with gasoline during the relevant years of exposure).

- *Fiorella v Ashland Oil*, 635 N.E.2d 1306 (Ohio 1993) (no evidence of exposure to any named defendants' products; un-named defendants supplied benzene-containing products to decedent's employer).
Sophisticated User / Bulk Supplier Defenses
Sophisticated Intermediary / User Defenses

- Two potential applications
  - Duty to warn -- Manufacturer / supplier discharges any duty to warn the ultimate end-user by adequately warning the immediate purchaser of its product (e.g., employer, distributor).
  
  - No duty to warn exists because a third party to whom a product is sold has (or should have) independent knowledge of the risks and benefits of the product and therefore has a duty to provide warnings to the ultimate product user.
Bulk Supplier Defense

♦ Similar if not identical defense.
♦ Applies if manufacturer / supplier provides raw materials, chemicals or components.
  – Separate defense available to the seller of a raw material or component that is not in itself dangerous, but is combined with other materials to form the allegedly hazardous product.
  – Bulk sellers of such materials generally will be shielded from liability absent substantial participation by the seller in the design of the product.
Factors Key to Defense

♦ Employer or immediate purchaser in a better position than manufacturer to warn the ultimate user of the product
  – Controls use of product
  – Controls safety measures
  – Manufacturer/supplier has no contact with ultimate user

♦ Warnings provided to intermediary are adequate

♦ Reasonable for manufacturer to rely on intermediary to pass on warning
  – Generally not required to monitor purchaser to ensure that warnings passed on.

♦ Intermediary has sufficient knowledge or sophistication to pass on warnings
“Reasonable reliance” on intermediary: Factors

- **Statutory sophistication**: If immediate purchaser has statutory duty to warn, defense more likely to succeed
  - Benzene regulations applicable to employers (e.g., 29 C.F.R. §§ 1910.1028, 1910.1200)

- Provided detailed information on hazards (MSDS, product literature, etc.).

- Can establish intermediary received same.

- Provided such information throughout alleged period of exposure.
“Reasonable reliance” on intermediary: Factors

♦ Offered training to intermediary

♦ Intermediary acknowledged receipt of warnings and agrees to pass on (e.g., contractual provision)
OSHA requires distributors and employers to be “sophisticated purchasers”

Requires employers to provide “information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, [MSDS], and information and training.”

– 29 C.F.R. § 1910.1200(b)(1)
OSHA HazCom standard: Employers

- Must develop a written hazard communication program. 29 CFR § 1910.1200(e)(1).
- Ensure that each container of hazardous chemicals is labeled with certain information. *Id.* at (f)(5).
- Maintain readily accessible copies of MSDS. *Id.* at (g)(8).
- Provide employees with effective training and info on hazardous chemicals in workplace. *Id.* at (h)
OSHA HazCom standard: Distributors

- Defined as “a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.” CFR § 1910.1200(c)

- “Distributors shall ensure that [MSDS], and updated information, are provided to other distributors and employers with their initial shipment and with the first shipment after a [MSDS] is updated.” Id. at (g)(7).
Summary judgment for defendants in printing plant case upheld.

Manufacturers’ tests reported trace or no amount of benzene in products, and therefore they did not warn of any dangers. Plaintiff, who contracted kidney and colon cancer, did not conduct his own tests or seek test results from any of the bulk suppliers.

Plaintiff “conceded the right of product distributors to rely on information and warnings provided by their up-stream suppliers when selling a product without modification. The evidence, when viewed in light of those concessions, does not permit the conclusion that any of the defendants ever had a duty to warn of the presence of trace amounts of benzene in the products that they sold, whether in the products themselves or in their vapors.” Id. at *6.
Case against two rubber solvent manufacturers on behalf of a former Firestone employee who died of AML was dismissed.

First, “[b]ecause Firestone had actual knowledge of the benzene issue [during the relevant time period], Ashland and Shell were not under an obligation to warn Firestone of these dangers.” *Id.* slip op. at 7.

Even for an earlier time period, when the extent of Firestone’s knowledge was unclear, “Ashland was reasonable in believing that Firestone [as a sophisticated user] should have known about any known dangers from the benzene in the rubber solvent.” *Id.* at 8.

In addition, “Ashland and Shell were reasonable in relying on Firestone to convey any warnings and properly protect its employees,” thus they did not have a duty to warn Plaintiff directly and “cannot be held liable for negligent failure to warn.” *Id.* at 10.

- Highlighting that the court must focus on the product supplier, not the actions of the intermediary, the judge in a tire plant exposure case stated that “proof that the intermediary knew that the product was dangerous does not, in and of itself, absolve the supplier of a duty to warn ultimate users.” *Id.* at 958.

- But Arkansas has not adopted § 388 of the Restatement (Second) of Torts, on which the defendants relied.

- “In addition, the Court agrees with those jurisdictions that focus on the knowledge of the ultimate user—the injured plaintiff, in the typical case—and compare his knowledge of the hazards and dangers of the product to the manufacturer or supplier’s knowledge of the same.” *Id.*

- On Aug. 28, 2008, a unanimous jury returned a verdict for the defendants.
California Permits Sophisticated User Defense

  - Not a benzene case but should apply.
  - Resolving a question of first impression, the California Supreme Court concluded that “the sophisticated user defense applies in California.” *Id.* at 908.
  - A “should have known” standard applies: “A manufacturer is not liable to a sophisticated user of its product for failure to warn of a risk, harm, or danger, if the sophisticated user knew or should have known of that risk, harm, or danger.” *Id.* at 914.
Court upheld grant of summary judgment to Dupont on learned intermediary grounds.

- Dupont “reasonably relied” on the intermediary refinery to pass on its warnings
  - Sent letters enclosing MSDS on its benzene-containing product, OSHA benzene std, and other literature on safe handling of product
  - Met with Refinery owners to explain same
  - Received written assurance from refinery that warnings would be passed on to workers.
Recent Update Session-Super-Sized:

Breakdown on Four Major Case Areas – Recent Caselaw and Issues Impacting the Litigation

Neil S. Bromberg
Tamara Fishman
Hollingsworth LLP
1350 I Street NW
Washington, DC
202-898-5805

I. MEDICAL CAUSATION

A. Defending benzene-litigation suits on the grounds that there is no scientifically reliable evidence of general and/or specific causation remains one of the strongest defenses. In benzene litigation, the issues on medical causation include the following:

1. General causation.
   a. Is there scientifically reliable evidence establishing a causal connection between exposure to benzene and the alleged injury?
   b. Is there scientifically reliable evidence establishing a causal connection between exposure to the specific benzene-containing product and the alleged injury?
   c. If the answer to either question is affirmative, what dose or exposure level and over what period of time of exposure is necessary to purportedly induce the alleged injury?

2. Specific causation (assuming general causation can be satisfied)
   a. Was plaintiff exposed to a sufficient dose of the benzene-containing product?
      i. Are there quantitative measurements of the amount of benzene plaintiff may have been exposed to (e.g., air monitoring data from plaintiff’s work site)?
      ii. Can exposure be estimated from other sources?
      iii. Does the environment in which plaintiff was allegedly exposed to benzene suggest limited, if any exposure?
(a) Did plaintiff wear any personal protective gear when?

(b) What ventilation in areas plaintiff worked?

b. Is there reliable evidence demonstrating that plaintiff was exposed to benzene attributable to defendant in amounts sufficient to cause the alleged injury?

c. Does plaintiff have any risk factors for the disease in question independent of the alleged exposure to benzene that cannot be ruled out as a cause of her injury?

d. Does plaintiff have any cytogenetic changes or chromosomal abnormalities that are purported markers of benzene-induced leukemia or other injuries?

B. Cases Rejecting Expert Testimony for Inadequate Dose. Courts have rejected expert testimony for failing to present scientifically reliable testimony (1) establishing the precise dose or amount of benzene plaintiff was exposed to and (2) (if an actual dose was quantified) demonstrating that that specific dose of benzene is capable generally of causing the type of injury suffered by plaintiff.


   a. Granted defendant’s motion for summary judgment after applying Daubert to exclude plaintiffs’ expert causation testimony that plaintiffs’ leukemia was more likely than not caused by exposure to benzene in Perrier water.

   b. “Plaintiffs have produced no scientific peer-reviewed epidemiological studies which would associate [acute promyelocytic leukemia] . . . and benzene exposure at the 5 to 28 ppb level. . . .” Id. at 662.

   c. Rejected evidence based on animal studies because it did not correlate the high doses used in those studies with plaintiffs’ exposure.

   d. Rejected plaintiffs’ effort to rely on a no-threshold theory of causation. The theory “has no known or potential rate of error” and is “merely an hypothesis.” Id. at 667 (citations omitted).

   a. Marsch claimed that he contracted thrombocytopenia (low blood platelet count) from exposure to benzene in petroleum products during his 20 year work history as a seaman.

   b. Summary judgment granted to ExxonMobil and Sea River Maritime because plaintiffs’ causation experts (John R. Eckardt, M.D., Robert E. Short Jr., Ph.D., and Kenneth Storms, CIH) failed to quantify the level of benzene exposure.

   c. Actual quantification of amount plaintiff was exposed to required. Plaintiff’s experts precluded from relying on Material Safety Data Sheets to establish that Marsch was overexposed to benzene. “[T]hese cannot overcome [plaintiff’s] experts’ testimony that they have no evidence of overexposure.” *Id.* at *11.

   d. No attempt made by experts to quantify dose: “In this case, the Court finds that the causation opinions of plaintiff’s expert witnesses are fatally flawed because they do not provide a scientific basis for establishing the level of plaintiff’s exposure to benzene. None of the plaintiff’s experts even attempt to quantify the level of plaintiff’s exposure. As a result, their methodology is not reliable and their opinions as to causation are inadmissible.” *Id.*

   e. “Because plaintiff’s experts did not attempt to reach a conclusion as to the level of benzene to which he was exposed, and offer no facts on which to base such a conclusion, their causation opinions are unreliable and inadmissible. The fact that defendant’s Material Safety Data Sheets and various Mobil Notices indicate plaintiff was working around benzene and should have been provided a respirator cannot serve to establish plaintiff’s level of exposure to the degree required for reasonable scientific certainty under *Daubert.*” *Id.* at *17.

   f. Also ruled that temporal proximity of plaintiff’s elevated platelet counts to his employment insufficient under *Daubert.* “Plaintiff has not submitted his work records, affidavits or other evidence to provide a direct correlation between his platelet count test results and his working on board defendant’s ships. The Court finds the evidence of temporal proximity provided by [the plaintiff’s expert witness] testimony is insufficient to establish reliability under *Daubert.*” *Id.* at *17.

a. Excluded testimony that workplace exposure as a gas station employee to benzene from gasoline caused plaintiff’s acute myelogenous leukemia (AML).

b. Plaintiff’s expert failed to present scientifically reliable evidence of the level of exposure to benzene necessary to trigger an adverse effect, and that plaintiff in fact was exposed to that level in his job. *Id.* at 782 (“at a minimum, exposure to the allegedly harmful substance at a level shown by scientifically reliable studies [to be] capable of causing the complained of ailment” must be shown).

c. Relied exclusively on anecdotal case reports, inaccurate assumptions about plaintiff’s daily exposure to benzene, and made mathematical errors in calculating exposure levels, undermining the value of his assessment.


a. Plaintiff alleged he contracted AML from exposure to benzene in gasoline over his 17-year work history as gas station attendant.

b. Experts excluded under New York’s application of the *Frye* standard. *Id.* at 436 (“Expert testimony is admissible provided that the principles and methodology relied upon by the expert have gained general acceptance as being reliable within the scientific community.”)

c. Defendants on appeal argued that plaintiff’s experts opinions did not comply with generally accepted principals of toxicology. The court agreed, accepting the three step “scientifically-reliable methodology that is recommended by the World Health Organization and the National Academy of Sciences” for establishing a causal connection between an allegedly harmful substance and a medical condition: (1) what is plaintiffs’ level of exposure; (2) what does scientific literature indicate is the level capable of causing the illness; and (3) specific causation determination showing a probability of causation “which involves weighing the possibility of other causes of the illness.”

d. Plaintiff’s Experts Drs. Landrigan and Goldstein failed to quantify any *specific* level of benzene to which plaintiff was exposed and neither provided evidence of the amount of benzene in the gasoline to which plaintiff was exposed.

i. “The plaintiff presented no evidence of the concentration level of benzene in the gasoline to which he was exposed.
Court also recognized the difference between regulatory goals and legal evidence of causation. “The plaintiff’s reference to regulatory standards regarding benzene exposure was not compelling evidence, as such standards are not measures of causation but rather are public health exposure levels determined by agencies pursuant to statutory standards set by the U.S. Congress.” *Id.*


a. Summary judgment on *Daubert* grounds granted in suit brought by mechanic who allegedly contracted AML from benzene-containing solvents and neat benzene over a 26 year work history.

b. Differential diagnosis conducted by the plaintiff’s expert concluding that benzene exposure caused AML not reliable because plaintiff had low-level long term exposure to the chemical, but the supporting scientific data showed that only high-level, long term exposure could cause cancer. Plaintiffs’ industrial hygienist, Dr. Vernon Rose, conceded that plaintiff was only exposed to “low levels” of benzene on a daily basis.

c. Court also opined on evidence necessary to demonstrate exposure to high levels of benzene.

i. Rejects “specific quantitative measurements” of what plaintiff was exposed to as “patently absurd.”

ii. Quantification of exposure levels “after the fact” would have been acceptable.
iii. Circumstantial evidence of long-term high exposure would have been acceptable, e.g., “work site anecdotal evidence of overpowering odors of benzene.”

   a. Denied Daubert motion to exclude Richard Petty, Ph.D., an industrial hygienist who estimated the amount of benzene that a chemical operator, who died of leukemia, was exposed to at Hooker Chemical facility over a 10 year period.  
   b. Court found that Petty’s estimation was based on the "best evidence that anyone can calculate" because the exposure occurred more than 35 years ago at a facility no longer in operation.  Plaintiff’s expert created what the court characterized as a “conservative model” of the environment at the plant based on data from the plant and comparable plants, and from Douglas’ and his co-workers statements about how often they detected benzene odors.  
   c. Defendants argued that the estimate was not reliable given there were too many variables to take into account: different levels at which people might detect benzene odor, olfactory fatigue and the absence of data.  Court found these criticisms went to the weight, not reliability of the opinion.  Order at 19 (“The Court agrees that each of these are variables that cannot possibly be accounted for in this model.  But, the failure to take into account every possible variable goes more to the weight of the testimony than its admissibility.”).

C. Expert testimony excluded (AML):
      a. All four of tanker truck driver plaintiff’s experts were excluded.
      b. According to the court, the general causation link between gasoline and AML was not scientifically supported: “The court concludes that Plaintiffs’ experts’ general causation testimony must be excluded because the studies they rely upon singly or in combination, do not support the causation conclusions they make in the face of the overwhelming body of contradictory and inconsistent epidemiological evidence.” Id. at 1175.
      c. Moreover, one expert’s “inability to point to any source which reliably supports his conclusion, renders his opinion merely
d. The same expert’s specific causation opinion was “inherently unreliable” because he failed “to analyze or evaluate [any] information pertaining to dose or the actual level of Henricksen’s exposure.” *Id.* at 1162.

e. Two other experts were excluded for using “unreliable” dose calculations: “It is impossible not to be skeptical of both Plaintiff’s specific causation experts’ methodologies when their annual dose estimates diverge from one another by a factor of 471%.” *Id.* at 1164.

i. The toxicology expert relied on a single short-term exposure study for his baseline long-term exposure calculation. The court noted that, “[w]hile Rule 702 does not require an expert to find a study linking the exact facts, it does require the expert to demonstrate a scientifically valid basis for projecting the findings of a study to the proferred [causal] theory. Sawyer has not provided an adequate basis for reliably linking the values derived from the circumstances of Kawai to the circumstances of Henricksen’s case.” *Id.* at 1164–65.

ii. None of the experts conducted a differential diagnosis or even noted “the likelihood that Henricksen’s AML had no known cause.” *Id.* at 1162.

f. Two treating physicians also were excluded as experts, because one was not disclosed as an expert witness until “well beyond the discovery cutoff,” and the other was not disclosed at all. *Id.* at 1160.

D. Injuries Other Than AML: Experts excluded


a. Plaintiff Kimberly DeSanto claimed that her workplace exposure to acetaldehyde, benzene, butane, propane and toluene caused birth defects in two of her children. DeSanto’s first child (who was aborted) developed *in utero* anencephaly (a neural tube defect in which the neural tube — the tissue that forms the brain and spinal cord — failed to close at the front end of the embryo by day 28 of pregnancy). Her second child, James Richard Sacco, was born
b. Plaintiff designated Nachman Brautbar, M.D., an internal medicine and occupational medicine physician to testify on general causation. Brautbar opined that the chemicals at issue were capable of causing the two birth defects at issue based upon various human epidemiological studies, case reports and animal studies.

c. Held Brautbar not qualified to offer any opinions as to whether any of the chemicals at issue are capable of causing gastroschisis, neural tube defects or anencephaly.

d. Opinions also found irrelevant and inadmissible under California Evidence Code §§ 350 702 and 801(b) because they are not based on reliable information that logically supports those opinions and the methods he employed to reach those opinions do not comport with the scientific method.

e. Judgment for the defense after motion to exclude plaintiffs’ causation expert granted.


a. Mississippi Supreme Court upheld the reversal of a $2 million verdict for plaintiff who claimed his non-Hodgkin’s lymphoma was caused by benzene exposure during his work as a mechanic.

b. “A review of the case studies [relied upon by plaintiff’s expert] supports the trial court’s finding that Dr. Levy’s testimony as to the content of the studies and their relevance to the facts of this case could easily have misled the jury.” *Id.* at 146.

i. Among other problems, “[n]one of the studies specifically looked at the possible risks associated with use of Liquid Wrench. None specifically studied the risks of development of non-Hodgkin’s lymphoma in mechanics. [And] not one study concluded that there is a causal link between benzene exposure and non-Hodgkin’s lymphoma.” *Id.* at 147.

c. According to the court, “this case is the perfect example of how courts should apply Daubert and its progeny.” *Id.* at 149.

d. “The leap across the chasm from the data in the studies to Dr. Levy’s proffered opinion was more than the trial court could allow,
Chronic Myelogenous Leukemia (CML):


a. Summary judgment entered in favor of various benzene manufacturers and distributors in a case alleging that decedent’s alleged exposure to benzene in mineral spirits while employed as an oil pipeline cleaner and inspector caused his chronic myelogenous leukemia (CML).

b. The court held that the plaintiffs could prove causation using epidemiologic studies linking benzene and leukemia in general if the plaintiffs could prove that it was a scientifically reliable inference that if benzene can cause leukemia generally, it can cause CML. Plaintiff's expert, however, failed to establish his theory that all types of leukemia were related or interchangeable, and thus, his conclusion that exposure to benzene generally caused the decedent's CML was not based on a reliable foundation.

c. No scientifically reliable evidence “that Austin was exposed to benzene at all, or if he was, to what degree or level.”

i. Evidence was “inadequate to show a level of exposure” to benzene. Specific mineral spirits used by Austin had never been tested for benzene. *Id.* at 291

ii. “It is fundamental that a plaintiff in a toxic tort case must prove the levels of exposure that are dangerous to humans generally, and must also prove the actual level of exposure of the injured party to the defendant’s toxic substances.” *(citing Mitchell v. Gencorp., Inc., 165 F.3d at 778, 781 (10th Cir. 1999)).* *Id.* at 291.

d. Also rejected expert testimony because expert did not affirmatively exclude with reasonable certainty other potential causes of the CML, and thus, his testimony was not sufficiently reliable.

*Chambers v. Exxon Corp.*, 81 F. Supp. 2d 661 (M.D. La. 2000), *aff’d*, 247 F.3d 240 (5th Cir. 2001),

a. Excluded as scientifically unreliable expert testimony that benzene exposure caused plaintiff’s chronic myelogenous leukemia (CML) because no epidemiological study demonstrated a statistically significant increased risk.
b. Court explained that because “CML develops in the general population in those that have been exposed to benzene and those that have not . . . there is no way to determine if CML is more common in people who are exposed to benzene than those who are not” absent an epidemiologic study. *Id.* at 663-64.

c. Plaintiff’s experts’ studies suggesting a relationship between benzene exposure and *other* types of leukemia insufficient to support a reliable causation opinion, particularly given that numerous scientifically performed studies identified by defendant demonstrated no association between exposure to benzene and CML.

*Mitchell v. Gencorp Inc.*, 165 F.3d 778 (10th Cir. 1999)

a. Affirmed exclusion of testimony of four physicians that plaintiff’s exposure to toluene, xylene, hexane and other chemicals that allegedly contained some amount of benzene caused plaintiff’s CML. Plaintiff allegedly exposed in “flammable room” at a warehouse where he stocked chemicals.

b. A toxic tort plaintiff must “demonstrate the levels of exposure that are hazardous to human beings generally as well as the plaintiff’s actual level of exposure . . . before he . . . may recover.” *Id.* at 781 (citations omitted).

i. Plaintiff’s expert Heron never visited the “flammable room,” never reviewed or conducted any air tests of the room, and never attempted to model the exposures.

ii. Expert’s reliance for his causation opinion on plaintiff’s alleged frequency of visiting the room, photographs of chemical spills in room, and MSDS sheets insufficient.

iii. “A plaintiff must prove level of exposure using techniques subject to objective, independent validation in the scientific community.” *Id.* at 781.

c. Concluded that, even though benzene was structurally similar to the compounds to which plaintiff was exposed, there was no evidence of exposure to benzene itself.

d. Even assuming plaintiff had been exposed to benzene, the evidence was insufficient to support an inference that benzene caused CML.

   a. Affirmed summary judgment to defendant after exclusion of plaintiff’s expert, Jesse Bidanset, Ph.D.

   b. No epidemiology or other scientifically reliable evidence linking benzene exposure to carcinoma. Bidanset relied on animal studies that were not conclusive on the link and theorized (without scientific support) that cancer could be triggered by exposure to a single toxic molecule of benzene, i.e., there was no safe level of exposure.

   c. Failed to rule out alternative causes of plaintiffs’ cancer such as smoking and alcohol use.


   a. Involved claims of 2 Tanker men, Knight (Hodgkin’s) and Ingerman (bladder cancer), who claimed exposure to benzene and other chemicals in the workplace. Court rejected as unreliable the general causation opinion of plaintiff’s expert, Dr. Barry Levy.

   b. Levy’s opinion was overall unreliable because his causation theory was not generally accepted or subject to testing, there was no published epidemiological study or review of the studies he cited, the cited studies were dissimilar, and most of studies “failed to identify specific chemical exposures, involved potential exposure to chemicals not at issue in this matter, or inferred exposure by job category rather than by direct measurement.” *Id.* at 866.

   c. Knight

      i. Dr. Levy relied upon epidemiologic studies that did not “isolate particular exposures” i.e., there was always a mixture of chemicals, including chemicals to which plaintiff was not exposed.

      ii. Studies relied on by Levy also lacked documentation of the level of exposure to the chemicals. *Id.* at 865 (“A related deficiency is the lack of documentation of the level of exposure for any of the cohorts at issue.”)
d. Ingerman.

i. No evidence from plaintiff’s annual physicals that he had “any abnormality or buildup of benzene or any other hazardous chemicals.” *Id.* at 861.

ii. 12 studies relied upon by Levy excluded because they lacked statistical significance.

iii. 18 other studies are confounded because they include “a broad category of exposures” including chemicals to which Ingerman never exposed.

iv. To the extent the studies “do suggest associated with a particular exposure, e.g., diesel exhaust, data pertaining to the subjects’ exposure levels is unavailable” – therefore, they “afford no reliable information with regard to how much exposure is necessary to produce harm.”

6. *Knight v. Kirby Inland Marine, Inc.*, 482 F.3d 347 (5th Cir. 2007) (on appeal from N.D. Miss.)

a. Fifth Circuit affirmed the exclusion of expert of two tankermen plaintiffs, one with Hodgkin’s lymphoma and one with bladder cancer, which led to summary judgment award to defendant.

b. “[T]he expert’s testimony must be reliable at each and every step or else it is inadmissible.” *Id.* at 355.

c. Although the expert’s methodology was “unassailable,” the data upon which he based his conclusions was deficient. *Id.* at 351.

d. “Of the over fifty studies relied upon by Dr. Levy, none gave an adequate basis for the opinion that the types of chemicals appellants were exposed to can cause their particular injuries in the general population. . . . Because the data relied on by Dr. Levy failed to provide a ‘relevant’ link with the facts at issue, his expert opinion was not based on ‘good grounds.’” *Id.* at 355.

7. Myelodysplastic Syndrome:


i. Summary judgment for defendants in case where plaintiff with myelodysplastic syndrome (MDS) “worked in areas where paint products were regularly used.” *Id.* at *1.
ii. Plaintiff offered only one “purported expert,” his treating physician, whose one-page letters were “plainly inadequate” as expert reports. *Id.* at *3.

(a) They did not set forth the doctor’s qualifications, any publications he had authored in the last 10 years, any cases in which he had testified, or any information about compensation. They also did not “explain the basis for [his] opinion beyond a generalized statement.” *Id.*

iii. A treating physician may be exempt from the report requirement, but his testimony would then be limited to the opinions offered in his reports, “based on information that he has acquired in his role as a treating physician.” *Id.* at *4. The doctor’s admissible statements would be insufficient to support the plaintiff’s claims.


i. Excluded testimony of various experts who claimed that plaintiff’s death from myelodysplastic syndrome (MDS) was caused by workplace exposure to cleaners containing benzene.

ii. Plaintiff’s expert, Dr. Melvin Kopstein, employed standard textbook formulae and models for calculating the amount of plaintiff’s benzene exposure, but he “ignore[d] basic science principles” in applying the models. *Id.* at 1358 (expert failed to address adequately “lateral diffusion, mass versus volume, and measurement of air flow” in calculating exposure).

iii. Dr. Susan Daum’s specific causation opinions excluded because she relied on the suspect exposure calculations.

iv. Also excluded oncologist’s testimony because he could not identify the chemical composition of the cleaning solvents used by decedent, did not know whether plaintiff in fact had been exposed to benzene, conceded that “in order to link the cause of the decedent’s MDS with a specific exposure or specific product, an in-depth epidemiologic study would need to be done[,]” and “is not aware of any studies which define the minimum level of exposure to benzene (either as to amount or duration) necessary to be toxic.” *Id.* at 1359.
v. Finally, the court excluded defendant’s expert’s opinion that decedent’s MDS could not have been caused by benzene exposure because various laboratory tests did not demonstrate any mutation of chromosomes. The literature relied on by defendant’s expert was “merely ‘suggestive’ of that conclusion. *Id.* at 1359.


   a. Case alleging residential exposure over a three year period to benzene from an underground natural gas storage facility. Appeals court affirmed summary judgment based on plaintiff’s failure to produce evidence of benzene exposure sufficient to cause lupus and aplastic anemia.

   b. “Absent evidence that appellant was exposed to more than background levels of benzene, she cannot link her lupus or aplastic anemia to the PDR facility emissions in order to establish causation.” *Id.* at *11. Several studies showed that emissions of benzene from facility were no higher than background levels of benzene in Los Angeles.


   a. Suit brought by hundreds of residents, alleging that a leak from an oil field contaminated the groundwater. Six bellwether plaintiffs proceeded to trial and were awarded almost $7 million in actual and punitive damages after concluding that Exxon was negligent and grossly negligent. The trial court rendered take-nothing judgments against four adult plaintiffs and reduced the judgments for the two minor plaintiffs.

   b. Split decision affirmed take-nothing judgments for exposure to benzene in domestic water that allegedly caused plaintiff’s acute lymphatic leukemia (ALL).

   c. Majority said the epidemiological evidence presented by the parties did not establish causation. Held that the “evidence is legally insufficient to support” the jury award because “[n]o epidemiological study establishes a statistically significant *doubling* of the risk of ALL from exposure to benzene.” *Id.* at 188.

   i. “Someday, medical science may find that benzene causes ALL, but on the record before us, it is just as likely to find that it does not. We cannot rush to impose liability when scientifically reliable evidence is unavailable.” *Id.* at 190.
d. Rejects experts’ reliance upon study to connect plaintiffs’ exposures and ALL.
   i. “For example, one study found a significant association between ALL and other lymphatic leukemias with exposure to benzene and other solvents, but because of the confounding exposures and diseases the study tells us nothing definitive about benzene and ALL.” *Id.* at 187-88.

e. Also rejected recovery for plaintiff Russell for anemia alleged to be a precursor for ALL. “Texas law prohibits recovery for future diseases unless there is a reasonable medical probability the disease will occur.” *Id.* at 190.

E. Mixed Rulings

   a. About two dozen cases are captioned under *Thorpe*, including *Pearl v. Safety-Kleen*, No. BC358327, brought by a mechanic with AML.
   b. Over April 13-14, 2009, the judge granted six of the plaintiffs’ nearly 60 *in limine* motions, which resulted in the exclusion of the testimony of a former Chevron petroleum chemist (improper hearsay for repeating out-of-court testimony from other experts) and an environmental engineer (speculative), among others.
   c. Other defense experts will have to testify at a preliminary hearing regarding the foundation of their opinions.

   a. 513 F. Supp. 2d 641 (E.D. La. 2007)
      i. The district court granted summary judgment to defendant after excluding the reports and testimony of the tanker truck driver plaintiff’s key causation expert.
      ii. After systematically reviewing each of the studies upon which the expert relied, the court concluded that they did not sufficiently “meet the Hill causation criteria and there is insufficient valid and admissible scientific evidence (under *Daubert* and Federal Rule of Evidence 702) to support Dr. Gardner’s opinion that benzene and the type of benzene exposures Malcolm Leblanc experienced . . . are capable of causing [myelofibrosis with myeloid metaplasia] in the general population.” *Id.* at 663.
iii. Other than one study which was not duplicated, “no peer-reviewed scientifically accepted literature that attributes myelofibrosis or MMM to benzene exposure was identified.” Id.

b. 275 Fed. Appx. 319 (5th Cir. 2008)

i. The Fifth Circuit vacated the dismissal of the case and remanded it back to the district court. According to the Circuit, a new report by the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) merited “careful consideration” because it made an “apparent link between Appellant’s disease and aplastic anemia, which the report states is caused by benzene exposure.” Id. at 321.

c. No. 05-5485, 2009 WL 482160 (E.D. La. Feb. 25, 2009)

i. The court notes that it denied the Defendants’ renewed motion to exclude on remand, although it “found that the reference of the Tondel study (in the ATSDR report) did not transform that single case report ‘in the absence of epidemiological studies confirming a causal connection between benzene exposure and MMM’ into reliable scientific evidence.” Id. at *2.

ii. Discovery was allowed, and this order reviewed a ruling by the magistrate judge granting the Plaintiffs’ motion to compel unpublished studies. The district court did not find that the studies had been shown to be “within the parameters of permissible discovery,” but concluded that the magistrate judge’s ruling was “not clearly erroneous or contrary to law.” Id. at *3.


a. In a case brought by the widow of a former printer who developed non-Hodgkin’s lymphoma, a motion to exclude the cumulative exposure opinion was rejected, but select defective warnings opinions were excluded “because they either have been withdrawn or because they are based only on [plaintiff expert’s] personal standard and have not been adopted by any other person or source in the scientific community."

b. On Jan. 9, another plaintiff’s expert, a professor of occupational medicine, was allowed to express his opinion that exposure to benzene causes non-Hodgkin’s lymphoma after submitting a 230-page declaration in support of that opinion.
c. A confidential settlement with more than 35 defendants totaling $1,624,000 was reported on March 11, 2008. The remaining parties reached settlement the following October.

F. Injuries other than AML: Causation Accepted

   a. Affirming jury award after finding that child developed leukemia due to mother’s exposure during pregnancy to methane gas (allegedly containing benzene) from a city landfill near family’s home.
   b. Both plaintiffs’ and defense experts estimated about the same amount of benzene in methane gas, i.e., 40-160 ppb.
   c. Hematologist Patel opined that exposure at this level (to pregnant mother) can cause ALL. Relied upon abnormal chromosomes, including a certain (unspecified) type of trisomy and certain translocations, as evidence of specific causation.
   d. Court of appeals does not consider Havner “doubling of the risk” argument because it was allegedly waived; “the City waived its reliability argument by failing to complain at trial.”
   e. On appeal now before Texas Supreme Court. City arguing that there is a lack of causation evidence, and alternatively that the personal injury damages should be capped at $250,000 under the Tort Claims Act.

2. Variety of injuries including dizziness, diarrhea, and lack of energy: Curtis v. M & S Petroleum, Inc., 174 F.3d 661 (5th Cir. 1999)
   a. Fifth Circuit reversed exclusion of industrial hygienist’s testimony that refinery workers’ exposure to benzene caused a variety of ailments.
   b. Refinery workers began experiencing symptoms immediately after refinery switched to refining Heavy Aromatic Distillate (“HAD”), which contains up to 25% benzene content, into gasoline blend stock and marine diesel oil blend stock.
      i. Blood work done on employees was normal.
      ii. “Draeger tube” tests were conducted to determine ambient air concentration. Devices were designed to register a
c. Expert based his opinion on a comparison of the supplier’s MSDS with the symptoms experienced by the workers, review of the Toxicological Profile for benzene prepared by the U.S. Agency for Toxic Substance and Disease Registry, on the Draeger tests purportedly showing that OSHA’s Permissible Exposure Level for benzene had been exceeded by at least 100 times, and on a temporal relationship between exposures and health complaints.

d. The Fifth Circuit held that District Court abused discretion in excluding Dr. Stevens’ testimony that exposure to benzene at levels of 200-300 ppm would cause plaintiffs’ injuries. “The law does not require Plaintiffs to show the precise level of benzene to which they were exposed.” *Id.* at 671.

e. Although the district court had excluded the causation opinion in part because the expert had not performed a differential diagnosis, the court of appeals rejected that ground of exclusion without discussion.

G. Other cases of interest:

1. Claims of in utero exposure causation fail:


      i. Homeowners alleged benzene leaking from municipal landfill caused daughter’s acute lymphoblastic leukemia (ALL) through *in utero* exposure.

      ii. Texas Supreme Court reversed jury verdict, finding that the expert testimony did not support an award of $7.5 million personal injury damages.

      iii. One expert’s “opinion that [the mother] was chronically exposed to benzene concentrations of 160 ppb has no basis in the record [and] is the kind of naked conclusion that cannot support a judgment.” *Id.* at *6.

      iv. In addition, “[b]ecause neither the epidemiological studies nor the similarities in [the daughter’s] chromosomal anomalies” support the other expert’s opinion that the girl’s “ALL was caused by exposure to benzene *in utero*, his testimony was conclusory and cannot support liability.” *Id.* at *7.

i. A state appellate court upheld the dismissal of a case alleging that *in utero* benzene exposure caused birth defects and mental retardation.

ii. The plaintiffs’ two medical causation experts, an industrial hygienist and a polymer chemist, were excluded because their testimonies were not grounded in sufficient methodology.

iii. A highlighted concern was that the experts could identify “no studies or articles that establish a causal connection between in utero exposure to the chemicals in question and structural chromosomal rearrangement resulting in birth defects.” *Id.* at *5. “In fact, both [of the causation experts] conceded that chromosomal abnormalities have many unknown causes.” *Id.* at *4.

iv. In addition, the experts did not reliably establish either the chemicals present in the plant or their exact emission amounts.

2. Exhaust fumes cases have mixed results:


i. Wife of deceased railroad employee claimed that husband’s multiple myeloma was caused by diesel exhaust fumes inhalation during his employment.

ii. Nebraska Supreme Court held that trial court erred in concluding that plaintiff’s expert testimony was unreliable, therefore summary judgment for defendant was overturned.

iii. The trial court “erred in applying a ‘conclusive study’ standard,” wherein it “only considered whether the studies [the expert] relied upon showed a definite conclusion on a causal relationship.” *Id.* at 49.

iv. “Under the *Daubert* . . . framework, a trial court should not require general acceptance of the causal link between an agent and a disease or condition if the expert otherwise bases his or her opinion on a reliable methodology.” *Id.* at 44.
v. Therefore, “once the expert has established that he or she reliably assessed the data, the weight of the expert’s conclusion is an issue for the jury to resolve.” *Id.*

vi. Accordingly, “regarding the sufficiency of the underlying studies, [the court] should focus on whether no reasonable expert would rely on the studies to find a causal relationship—not whether the parties dispute their force or validity. And regarding the admissibility of [the expert’s] opinion, the focus must be on the validity of his methodology and whether good grounds exist for his opinion—not whether his ultimate conclusion differs from that of other experts.” *Id.* at 49.


i. Plaintiff who claimed his aplastic anemia was caused by benzene exposure through exhaust emissions from the gasoline engines of his landscaping equipment (and while filling gasoline cans at a gas station) was denied permission to appeal case dismissal.

ii. The case was dismissed for failure to produce any medical or scientific literature that supported Plaintiff’s claims that benzene causes aplastic anemia.

iii. Dose concerns also were at issue: “The affidavit of plaintiff’s expert failed to set forth the manner in which he estimated plaintiff’s exposure to a specific level of benzene. Moreover, the affidavit of plaintiff’s expert failed to refer to any study establishing that plaintiff was exposed to sufficient levels of benzene to cause aplastic anemia.” 45 A.D.3d 1341, 1342 (N.Y. Sup. Ct., App. Div. Nov. 9, 2007).

iv. May 6, 2008, Plaintiff’s motion to appeal was also denied by New York Court of Appeals. 10 N.Y.3d 710 (N.Y. 2008).

3. **Other:**


i. Four *Daubert* motions were denied in the case of a maintenance worker with AML, because the “Court is not persuaded that . . . there is ‘too great an analytical gap
ii. “[T]he appropriate vehicle for attacking the credibility or reliability of expert testimony in this case is through ‘[v]igorous cross-examination [and] presentation of contrary evidence’ at trial.” (quoting Daubert v. Merrell Pharmaceuticals, Inc., 509 U.S. 579 (1993)).

H. Recent Jury Verdicts in Benzene Cases

1. Verdicts for Defendants
   a. Molina v. Shell Oil Co., No. BC367800, 2008 WL 5553192 (Calif. Super. Ct. verdict Nov. 5, 2008). (i) A Los Angeles jury returned a defense verdict in a lawsuit brought by plaintiffs who alleged that William Molina was exposed to various petroleum hydrocarbon solvent products supplied by defendants Shell Oil Co., Chevron U.S.A. Inc., and Union Oil Company of America (“Unocal”) during his employment at the former Firestone Tire & Rubber Company plant in Salinas, California between 1963 and 1980. (ii) Plaintiffs alleged that as a result of his inhalation and dermal exposure, he developed follicular B-cell non-Hodgkin’s lymphoma (“NHL”). The various chemical solvents supplied by the defendants purportedly contained small concentrations of benzene (less than 2%). (iii) Although plaintiffs proceeded to trial on theories of negligence and strict liability, at the close of trial the court found that the plaintiffs had not produced sufficient evidence of negligence and the case went to the jury on strict liability for failure to warn and design defect. (iv) Defendants argued that “hydrocarbon solvents” have not been demonstrated by reliable standards of medicine and epidemiology to be carcinogenic and to the extent that there are epidemiological studies identifying a putative association between hydrocarbon solvents and NHL, they were not published until after plaintiff ceased work at Firestone and accordingly, defendants could not have known and warned at the relevant time. Defendants also argued that no causal connection between NHL and benzene had been proven and that plaintiff’s exposure was not toxicologically significant. (v) The jury found that the designs of the defendants’ products were not causes of Molina’s NHL. The jury found however that defendants Chevron’s and Unocal’s products were defective based on a failure to warn theory and that Shell’s products were not so defective. The jury found that the failure to warn was not the cause of plaintiff’s NHL.
b. *Ball v. Bayard Pump & Tank Co.*, No. 99-06438, 2007 WL 4730194 (Pa. Ct. Com. Pl. verdict May 3, 2007). (i) A Pennsylvania jury returned a defense verdict in the case of four bellwether plaintiffs against Gulf Oil Ltd., Thomas Wagner/Thomas Wagner, Inc. (Blue Bell Gulf), Bayard Pump & Tank Co. and several other defendants in connection with a gasoline leak at the Blue Bell Gulf gasoline station. (ii) Plaintiffs Ball, Glass, Weidenhammer, and Wrubel brought this suit on behalf of 49 plaintiffs who lived within a half of a mile from the Blue Bell gas station. The leak was discovered in May 1998; however, no one was able to determine when the leak began or exactly how much gasoline had been released. (iii) An investigation into the leak revealed that a hole in the pump line had allowed at least 10,000 gallons of gasoline to leak over a period of several months, creating a plume a half mile long and 850 feet wide. Upon discovery of the leak, the station owners began a remediation process, which was eventually completed by the Pennsylvania Department of Environmental Protection (“DEP”) and during which much of the leaked oil was pumped out of the ground. (iv) Plaintiffs claimed that constituents of gasoline, especially benzene, toluene, ethyl benzene, xylene, (BTEX compounds) and methyl tertiary butyl ether (MTBE), migrated from the Blue Bell Gulf station through the groundwater under the homes of the plaintiffs. The plaintiffs alleged that the fumes from the gasoline entered their homes through the mechanism of soil vapor intrusion, allegedly causing personal injuries, medical monitoring, and a diminution in value of their homes. (v) Pursuant to the defendants’ suggestion, the court adopted a reverse bifurcation scheduling order involving four bellwether plaintiffs. The issues at trial were limited to the following: whether the contaminants of concern reached the plaintiffs’ property; whether the contaminants of concern entered the plaintiffs’ homes; whether exposure to the contaminants of concern warrants the medical monitoring claims brought by plaintiffs; whether exposure to the contaminants of concern caused property damage and property value diminution; and the amount of plaintiffs’ damages. (vi) Plaintiff claims: (a) Susan Fralich Ball alleged that she suffered headaches and heart palpitations due to her exposure to benzene and MTBE, which she claimed entered her well and her home through soil vapor intrusion. She also sought medical monitoring damages and property diminution damages. (b) Plaintiff Jared Glass a minor born in 2000, alleged that he was exposed to gasoline and gasoline constituents in utero and after his birth and as a result, he was diagnosed with pervasive development disorder, a condition on the autism spectrum. (c) Plaintiff Karen Weidenhammer claimed that she was diagnosed with acute
c. *Camizzi v. Akzo Prod., Inc.*, No. BC289503, 2005 WL 4158070 (Cal. Super. Ct. settlement May 2, 2005). (i) A settlement for $2.282 million was reached in a case in which plaintiff alleged that he contracted leukemia from working with benzene-contaminated paints and solvents. (ii) Plaintiff alleged he used them to clean his paint gun and hands while working as a painter at McDonnell-Douglas from 1991 to 1992. None of the paint or solvent products had warning labels indicating that the products contained benzene or that exposure to benzene can cause leukemia. (iii) Defendants argued that their products, at most, contained trace concentrations of benzene, that exposure to such small amounts of benzene would not cause leukemia, and that they, therefore, had no duty to warn of the leukemia hazard. (iv) Defendants also contended that plaintiff’s leukemia was idiopathic (spontaneously induced) and that McDonnell-Douglas was a sophisticated intermediary that was aware of the benzene hazard and provided plaintiff with appropriate respiratory and dermal protective equipment. Defendants also contended that they should not be liable because they made their products according to specifications provided by McDonnell-Douglas.


i. Verdict for defense in case alleging that a release of gasoline from a Gulf station contaminated local properties and led to various illnesses, including leukemia and autism.

ii. The jury found that the vapor reached three of four of the plaintiffs’ properties but did not enter the plaintiffs’

i. Plaintiff pipe fitter claimed that exposure to Chevron’s thinners and solvents containing 0.1 % and 1.5 % benzene caused his NHL. Plaintiff’s causation experts included: Kenneth S. Cohen, industrial hygiene and toxicology; Richard Cohen, M.D., MPH, occupational medicine and epidemiology; Peter F. Infante, M.D., epidemiology; Elliott Kagan, M.D., pathology; and Daniel Teitelbaum, M.D., toxicology.

ii. Defendant Chevron argued that benzene and solvents do not cause NHL at any dose, and even if they could, plaintiff’s exposure was not toxicologically significant. Regarding the failure to warn claim, Chevron argued that epidemiologic studies did not demonstrate that benzene was capable of causing cancer until after the time of plaintiff’s exposure. Defendant’s causation experts included: John M. Bennett, M.D., oncology/hematology; Morton Corn, Ph.D., industrial hygiene; John Whysner, M.D., Ph.D., DABT, toxicology.

iii. Resulted in a defense verdict following a six-week trial. The jury’s findings included: Chevron’s products failed to perform as safely as an ordinary user would have expected, but such failure was not a cause of plaintiff’s injury and Chevron failed to adequately warn of its products’ risks, but such lack of warnings was not the cause of plaintiff’s non-Hodgkin’s lymphoma.


i. The West Virginia Supreme Court of Appeals denied appeal of judgment on a February 27, 2004 defense verdict for ExxonMobil and Valspar on claims that a plaintiff’s exposure to aromatic hydrocarbons in paint caused him to develop NHL. Defendants successfully argued at trial that no scientific evidence existed tying NHL to paint solvents.

ii. Plaintiffs countered on appeal that undisputed expert testimony at trial showed defendants violated the Hazardous Communication Standard and the trial court
iii. Plaintiffs’ appeal also claimed that a jury instruction erroneously stated that in order for the plaintiff to recover for strict liability, she had to prove regular exposure to the product, instead of simply being exposed to the defendants’ products. Defendants countered that the instruction did not require proof of a specific level of exposure but only that the jury conclude that there was sufficient exposure to be a substantial factor in causing the disease.

2. Verdicts for Plaintiffs

a. *Shelby v. SeaRiver Maritime, Inc.*, No. CGC-06-449350, 2008 WL 2190050 (Calif. Super. Ct. verdict May 15, 2008). (i) A San Francisco jury awarded plaintiff $8 million after finding that defendant SeaRiver Maritime, formerly known as Exxon Shipping Company, failed to provide a safe work place and that its vessels were not seaworthy. The jury awarded $350,000 for loss of future earning capacity, $1.125 million for past pain and suffering, and $6.525 million for future pain and suffering. (ii) Plaintiff was diagnosed with cancer of the kidney resulting in removal of the kidney, and low white and red blood cell counts, which he claimed showed damage to his hematological system. He alleged that these injuries resulted from over-exposure to airborne hydrocarbons, including benzene, while he was aboard the defendant’s ships. (iii) Defendant argued that air monitoring of Shelby’s work place revealed exposures that were inconsequential and that occasionally, and for short periods of time, were slightly above the level desired for an average 40 hour work week. However, defendant argued that there was no evidence that Shelby was exposed at or near those slightly elevated levels for a 40 hour work week.

b. *Gordon v. Coca-Cola Enters. Inc.*, No. 4:06-cv-405 (N.D. Fla. Settlement May 14, 2007). Plaintiff Lizbeth Gordon and three other named plaintiffs filed a class action against Coca-Cola on behalf of a class of all people in Florida who had purchased beverages in the past four years that plaintiffs alleged had a tendency to contain benzene at levels exceeding the maximum safe
c. Hopkins v. Alberto-Culver USA Inc., No. 05-45408 (Cal. Super. Ct. settlement Nov. 7, 2006). (i) A settlement of $1.0 million was reached in a case brought by a cosmetologist who claimed that exposure to numerous cosmetic products used during her 28 years of employment as a cosmetologist caused her to develop acute promyelocyte leukemia. (ii) Plaintiff sued numerous defendants, all of them manufacturers or sellers of cosmetic or hair care products. She claimed that products such as hair dyes, shampoos, conditioners, hair sprays, moisturizers, nail polishes, polish removers, lipstick, makeup, and other beauty products contain benzene, hydroquinone, formaldehyde, toluene, and 1,3-butadiene and that her cumulative exposure to these substances caused her leukemia. (iii) Plaintiffs’ counsel reported that although epidemiological studies have long reported a risk of hematologic malignancies related to cosmetic exposure, this case represents the first lawsuit brought by a cosmetologist or hairdresser alleging leukemia caused by exposure to cosmetic products. (iv) The settlement resolved claims between the plaintiff and her spouse and all but two of the defendants.

d. Estate of Ryan v. BP Corp. N. Am. Inc., 04 CV 223271, 2005 WL 4041236 (Mo. Cir. Ct. verdict Sept. 14, 2005). (i) A jury awarded $13.3 million in compensatory damages and the parties agreed to a confidential settlement before the punitive damages phase of the case. (ii) Plaintiff alleged that BP Corporation’s predecessor, Amoco, released liquid petroleum containing benzene that migrated into plaintiff’s residential community. Plaintiff further alleged that inhalation of benzene caused polycythemia vera that progressed into myelodysplastic syndrome and leukemia. (iii) The defendant argued there was insufficient exposure to cause plaintiff’s alleged illnesses.


i. Jury verdict for plaintiffs who alleged that benzene had migrated from a nearby oil refinery onto their properties affirmed in part, reversed in part.

ii. The Montana Supreme Court upheld an award of $15 million in restoration damages for property worth approximately $2 million, because it was a “reasonable” compensation between the “two extremes” of a strict aggregate market value cap and the costs of Texaco’s active remediation plans, which “could approach $30 million.” *Id.* at 1090.

iii. $25 million in punitive damages was remanded for consideration of the oil company’s cooperation with state regulators.

g.  *Bowens v. 7-Eleven, Inc.*, No. 20D03-0209-CT-48 (Ind. Super. Ct.)

i. Plaintiffs, who lived or had lived within a three block radius surrounding a gas station with alleged leaks in its underground storage tanks, reached a settlement for groundwater benzene contamination on Nov. 1, 2007. Four defendants agreed to pay up to $19.8 million for site investigation and remediation costs.

i. In a bench trial case, the judge awarded $3,218,845.11 to a former shipyard worker who alleged that workplace exposure to benzene caused his AML.

ii. The judge did not fully credit all of the expert opinion supporting the plaintiff’s claims, but felt that it was “entitled to some weight” and sufficed under the Jones Act standards governing maritime cases.


i. A jury awarded $8 million to a plaintiff who claimed that his exposure to benzene while cleaning tanks and unloading cargo ultimately caused his kidney cancer. The jury found SeaRiver negligent for failing to provide the plaintiff with a safe working environment.


i. The court rejected a challenge to a $3.4 million verdict (awarded on Oct. 31, 2007) for the widow of a former refinery worker with chronic myelomonocytic leukemia, but reduced it by 17 percent to reflect the jury’s comparative negligence finding. A claim for punitive damages had been dismissed during the trial.

ii. The court held that the plaintiff had sufficiently established both general and specific causation through expert testimony.

iii. “Dr. Goldstein testified, to a reasonable degree of medical probability, that Mr. Gates’s exposure to benzene while working at the refinery caused Mr. Gates’s CMML. He based this opinion on Dr. Nicas’s exposure estimate as well as multiple studies examining the health of refinery workers and their increased risk of developing leukemia as a result of their exposure to benzene.” *Id.* at *5.*

iv. “Defendant did vigorously challenge Dr. Nicas’s opinion [but] the jury found in favor of Plaintiff.” *Id.* at *6.*
v. The Delaware Supreme Court also upheld the verdict. *Texaco, Inc. v. Gates*, 962 A.2d 257 (Del. 2008). [This is a one-line opinion.]

II. BULK SUPPLIER / SOPHISTICATED USER DEFENSES

Under the sophisticated user and bulk supplier defenses, a manufacturer either owes no duty to warn people who use or are affected by its product, or discharges its duty to warn by providing information to a third person upon whom it can reasonably rely to communicate the information to the ultimate users of the product or those who will be exposed to its hazardous effects.

A. Overview

1. Sophisticated intermediary defense: Also known as the “sophisticated user,” “sophisticated purchaser,” and “learned intermediary” defenses. (The terms are frequently used interchangeably by the courts.) The defense has two potential applications depending on whether an actual duty to warn exists.

   a. Duty to warn: In true “sophisticated intermediary” cases, the manufacturer relies on a middleman (e.g., employer, distributor) to pass on adequate warnings to the ultimate user. The manufacturer discharges any duty owed the ultimate user by adequately warning the middleman.

   b. No duty to warn: In certain circumstances, the defense is available even when a manufacturer has not provided a warning or has provided an inadequate warning. In these “sophisticated user” cases, no duty to warn exists because a third party to whom a product is sold has (or should have) independent knowledge of the risks and benefits of the product and therefore has a duty to provide warnings to the ultimate product user. In that circumstance, the manufacturer need not warn even the third party because that party already possesses the knowledge that would be conveyed by the warning.

2. Bulk Supplier Defense

   a. In “bulk seller” cases, the defense focuses on the practical difficulties that a bulk seller of chemicals or other components used in the manufacture of products would face in attempting to warn downstream purchasers or users.

   b. A separate defense is available here to the seller of a raw material or component that is not in itself dangerous, but is combined with other materials to form the allegedly hazardous product. Bulk sellers of such materials generally will be shielded from liability.

C. Recognized defenses by Restatement (Second) of Torts, § 388 (2004), “Chattel Known to be Dangerous for Intended Use”:

1. “One who supplies directly or through a third person a chattel for another to use is subject to liability to those whom the supplier should expect to use the chattel with the consent of the other or to be endangered by its probable use, for physical harm caused by the use of the chattel in the manner for which and by a person for whose use it is supplied, if the supplier:

   a. knows or has reason to know that the chattel is or is likely to be dangerous for the use for which it is supplied, and

   b. has no reason to believe that those for whose use the chattel is supplied will realize its dangerous condition, and

   c. fails to exercise reasonable care to inform them of its dangerous condition or of the facts which make it likely to be dangerous.

2. Comment n to Section 388 states that a supplier’s duty to warn may be discharged by providing the necessary information to a third person upon whom it can reasonably rely to communicate the necessary information to ultimate users or others who will be exposed to the hazardous effects of the product.

D. Elements to establish to support application of defense (where duty to warn exists): Although the factors looked at by courts will vary from jurisdiction to jurisdiction, among the considerations looked at are the following:

1. Is the intermediary or middleman in a better position than the manufacturer to warn the ultimate user of the product?

   a. Is the middleman better able to control the use of the product, including the appropriate safety measures, and features which affect the product’s use? If so, then defense more likely to apply. For example, it could be argued that the owner of an automotive
2. Are the warnings provided to the intermediary adequate? If warnings are adequate as a matter of law (e.g., warnings of precise injury that plaintiffs allege was caused by product), then summary judgment should be granted on this defense.

3. Can the manufacturer reasonably rely on the intermediary to pass on the warning? Often considered in connection with assessing whether the intermediary was “sophisticated” enough to pass on the warnings. Generally does not require the manufacturer to monitor the intermediary to see if warnings have been passed on the ultimate user. See *Tilton v. Union Oil Co. of Cal.*, 831 N.E.2d 391, 394-95 (Mass. Ct. App.) (doctrine requires manufacturer to make reasonable inquiry into intermediary’s safety procedures, but does not extend to a duty to police the adequacy of warnings given by the intermediary to end users), review denied, 835 N.E.2d 255 (Mass. 2005).

   a. *Curtis v. M & S Petroleum, Inc.*, 174 F.3d 661 (5th Cir. 1999) (“[T]he penultimate question is the reasonableness of the manufacturer in relying on the intermediary to convey the warning to the ultimate users of the product.”)

4. Does the middleman have sufficient knowledge or “sophistication” that it can be relied upon to understand and pass on the warning?

   a. *Taylor v. Monsanto Co.*, 150 F.3d 806, 808 (7th Cir.1998) (applying Indiana law) ("In order for the [sophisticated purchaser] exception to apply ..., the [purchaser] must have knowledge or sophistication equal to that of the manufacturer, and the manufacturer must be able to rely reasonably on the [purchaser] to warn the ultimate consumer.").

E. Benzene cases in which Sophisticated Intermediary or User Defense Successful


   a. Summary judgment for defendants in printing plant case upheld.

   b. Manufacturers’ tests reported trace or no amount of benzene in products, and therefore they did not warn of any dangers. Plaintiff, who contracted kidney and colon cancer, did not conduct his own tests or seek test results from any of the bulk suppliers.
c. Plaintiff “conceded the right of product distributors to rely on information and warnings provided by their up-stream suppliers when selling a product without modification. The evidence, when viewed in light of those concessions, does not permit the conclusion that any of the defendants ever had a duty to warn of the presence of trace amounts of benzene in the products that they sold, whether in the products themselves or in their vapors.” *Id.* at *6.

   
   a. A case against two rubber solvent manufacturers on behalf of a former Firestone employee who died of AML was dismissed.
   
   b. First, “[b]ecause Firestone had actual knowledge of the benzene issue [during the relevant time period], Ashland and Shell were not under an obligation to warn Firestone of these dangers.” *Id.* slip op. at 7.
   
   c. Even for an earlier time period, when the extent of Firestone’s knowledge was unclear, “Ashland was reasonable in believing that Firestone [as a sophisticated user] should have known about any known dangers from the benzene in the rubber solvent.” *Id.* at 8.
   
   d. In addition, “Ashland and Shell were reasonable in relying on Firestone to convey any warnings and properly protect its employees,” thus they did not have a duty to warn Plaintiff directly and “cannot be held liable for negligent failure to warn.” *Id.* at 10.

   
   a. Court upheld grant of summary judgment to Dupont on learned intermediary grounds, finding that Dupont discharged its duty to warn refinery workers hazards of its chemicals by providing information to independent intermediary, the refinery's lessee and one of the lessee's owners.
   
   b. Dupont “reasonably relied” on the intermediary to pass on its warnings given it provided “extensive information” on the potential dangers of benzene exposure, including:
      
      i. “[W]rote [the refinery] that it would be providing product stewardship before it made any shipments of HAD, [its benzene containing product], to [the refinery]” and included a copy of the benzene OSHA standard with its letter.
ii. A DuPont representative met with an owner of the refinery on-site to explain safe handling procedures for HAD, to review the benzene OSHA standard, and to answer any questions concerning its product.

iii. DuPont subsequently wrote on multiple occasions to the refinery, identifying six safety items that they would have to complete before DuPont would deliver HAD to the refinery, and providing safe handling literature for HAD, including the MSDS on HAD.

iv. The refinery’s owner responded to DuPont’s letter by acknowledging in writing that he had received the safe handling literature and that he would instruct his employees and any others who might handle HAD in the safe handling procedures.


   a. Jury instruction that bulk seller had duty to warn and take reasonable steps to see that distributor knew and complied with duty to inform consumer of hazards of use of benzene was erroneous. Bulk seller of benzene only had duty to sell to knowledgeable and responsible distributors, and thus, giving of instruction that seller had legal duty to take reasonable steps to see that distributor knew and complied with its duty to inform was prejudicial error in products liability action.


   a. Plaintiff's decedent allegedly exposed to benzene while working for Monsanto Company from 1951 to 1964 and contracted AML.

   b. Affirmed the grant of summary judgment to the suppliers of benzene to the decedent's employer based on the bulk supplier doctrine.

   i. “In some instances, a bulk supplier, who has no package of its own on which to place a label, may satisfy its duty to warn ultimate users of its product by proving that the intermediary to whom it sells the product is adequately trained and warned, familiar with the propensities of the product and its safe use, and capable of passing its knowledge on to users in a warning.” *Id.* at 874.
c. Benzene suppliers had no duty to warn Monsanto because “the highly toxic character of benzene has been commonly known in the petrochemical industry, including Monsanto, for many years” and “no study has ever demonstrated a level of exposure above zero that is ‘safe’ from potentially harmful effects.” *Id.*

d. Employer in best position to warn employees of the dangers of benzene exposure.

i. “[P]rotecting workers from the ill effects of benzene exposure could be accomplished, if at all, only by measures known by the decedent's employer: minimizing exposure with engineering controls (such as devices to keep benzene contained and work areas well ventilated), personal protective and respiratory equipment, and environmental and medical monitoring.” *Id.*

ii. Defendant-suppliers therefore “had no duty to instruct Monsanto on these matters, and, correspondingly, any failure by Monsanto to protect [the decedent] from exposure to benzene was not caused by the appellees.” *Id.* at 875.

F. Other toxic tort cases in which sophisticated intermediary defense successful:

1. *Taylor v. Monsanto Co.*, 150 F.3d 806 (7th Cir. 1998) (chemical manufacturer was entitled to rely on “knowledgeable or sophisticated” purchaser to relay adequate warnings to its employees, and so had no duty to warn those employees).


3. *Whitehead v. Dycho Co.*, 775 S.W.2d 593 (Tenn. 1989) (manufacturers of naphtha reasonably relied upon employer to pass warnings on to employee where defendants provided MSDSs to employer).

G. Defense not allowed:


   a. Highlighting that the court must focus on the product supplier, not the actions of the intermediary, the judge in a tire plant exposure case stated that “proof that the intermediary knew that the product
b. The judge noted that Arkansas has not adopted § 388 of the Restatement (Second) of Torts, on which the defendants relied.

c. “In addition, the Court agrees with those jurisdictions that focus on the knowledge of the ultimate user—the injured plaintiff, in the typical case—and compare his knowledge of the hazards and dangers of the product to the manufacturer or supplier’s knowledge of the same.” *Id.*

d. On Aug. 28, 2008, a unanimous jury returned a verdict for the defendants.

   a. Summary judgment motions granted for defendants in refinery worker exposure case, because, first, plaintiff failed to prove that he was exposed to crude oil. Second, the court applied “the raw materials supplier rule set forth in *Artiglio v. General Electric*,” 61 Cal. App. 4th 830, 839 (1998), whose four factors include that “crude oil is not an inherently dangerous product” and “Shell is a sophisticated user of crude oil around the world.”

H. Availability of defense disputed:

      a. Feb. 27, 2009, defendants filed a reply brief supporting their claim that the sophisticated user doctrine is an established defense against failure to warn claims in Nebraska.


I. Not a benzene case, but sets the legal standard in California:

      a. Resolving a question of first impression, the California Supreme Court concluded that “the sophisticated user defense applies in California.” *Id.* at 908.
b. A “should have known” standard applies: “A manufacturer is not liable to a sophisticated user of its product for failure to warn of a risk, harm, or danger, if the sophisticated user knew or should have known of that risk, harm, or danger.” *Id.* at 914.

c. The standard applies to both negligence and strict liability causes of action.

J. **Exception:** Sophisticated purchaser defense will not apply if manufacturer / supplier had contact with or control over ultimate user of product.


   a. Held, “a manufacturer does not have a duty to warn when the user of the product is familiar with the product, making the user a ‘sophisticated user;’ a sophisticated user may be presumed to know about the danger of a product due to familiarity with the product.”

   b. Evidence showed that seaman's employer either knew or should have known about the hazards of transporting benzene, such that it was a sophisticated entity to whom the third-party chemical manufacturers did not owe a duty to warn of dangers of their chemical products containing benzene.

   c. Experts testified that (1) there had existed a known causal connection between leukemia and benzene for over 70 years; (2) the petroleum and petrochemical industries had knowledge prior to seaman's employment, that benzene caused damage to the blood and blood-forming organs; (3) Coast Guard regulations identified benzene as toxic prior to seaman's employment, and that the regulations applied to seaman's employer; and (4) and employer's former vice-president admitted the employer received information and publications from the Coast Guard.

   d. Even though plaintiff’s employer was a “sophisticated user” of benzene-containing products, court held that defendant had a duty to directly warn plaintiff of dangers of exposure to its benzene products because there was direct contact between plaintiff and the defendants. Defendants maintained some control over aspects of the shipping operations, and much of seaman's exposure to benzene-containing products occurred at the defendants' facilities during the loading and unloading processes, and one of the defendants even chartered seaman's employer's vessels to accommodate its shipping needs.
K. Readily available MSDS and/or literature in the public domain detailing purported risks of benzene or other chemicals. The purchaser of a product that injures one of its employees may be deemed to have known of a product’s danger where information on the product’s dangers is available in the public domain.

   a. *Newson v. Monsanto Co.*, 869 F. Supp. 1255, 1260 (E.D. Mich. 1994) (citations omitted). Plaintiffs claimed that vapors from heated polyvinyl butyryl (“PVB”) caused their injuries. Although the court found that there was “no information available in the public domain on the dangers of heating the compound PVB,” the court also found that the purchaser “could have discovered” the dangers because Material Safety Data Sheets listed the decomposition products and there was literature in the public domain about the hazards of the decomposition products. *Id.* at 1261.

   b. *Akin v. Ashland Chem. Co.*, 156 F.3d 1030 (10th Cir. 1998), *cert. denied*, 526 U.S. 1112 (1999). Solvent manufacturers had no duty to warn because the purchaser, the United States Air Force, was knowledgeable and able to conduct its own studies and because substantial research in chronic, low-level exposure risks was already publicly available.

2. Purchaser has statutory duty to warn of the hazards at issue:
   “Sophisticated user” defense also may be successful where the third party is charged by law with knowledge that a supplier would otherwise have a duty to communicate. Under that circumstance, an irrebuttable presumption arises in some jurisdictions that the third party in fact has such knowledge.

L. Issues of fact often preclude summary judgment under this defense: The adequacy of the warning provided to the intermediary often presents an issue of fact precluding summary judgment unless the warning is adequate as a matter of law.


   a. Wrongful death case from exposure to benzene while working at Pfizer. Defendant moved for summary judgment under learned intermediary and knowledgeable user doctrines.

   b. Plaintiff argued that testimony of other employees showed that the first information that the company received from Ashland concerning the dangers of benzene was a Material Safety Data Sheet sent on January 12, 1977. Ashland provided a copy of an MSDS dated 1975, but could not produce any evidence indicating that it sent the MSDS to Pfizer or any other warnings before 1977.
c. Court denied summary judgment under learned intermediary and knowledgeable user exceptions to duty to warn, finding that substantial fact issues existed as to whether Ashland’s customer was aware of health dangers of benzene or had sufficient expertise to be charged by law with knowledge of them.

d. Given plaintiff worked at Pfizer from 1970 to 1980, and Ashland supplied benzene to Pfizer from 1972 to 1977, the court concluded that plaintiff’s evidence suggests that throughout most of the period of plaintiff’s alleged exposure, Ashland did not warn Pfizer concerning benzene. For that reason, the court ruled it could not conclude as a matter of law that Ashland adequately warned Pfizer.


a. Case brought by a jet mechanic for the U.S. Marine Corps who worked at various locations from 1973 to 1989 and allegedly developed chronic lymphocytic leukemia from exposure to benzene in JP-4 jet fuel manufactured by Shell.

b. Shell moved for summary judgment under the sophisticated user doctrine, arguing that it fully discharged its duty to warn by submitting MSDS for jet fuel to the government, Lambert’s employer.

c. Court denied motion for summary judgment, holding that genuine issues of material fact exist as to whether defendant provided warnings throughout plaintiffs’ employment and whether such warnings were adequate.

i. According to the Court, the record in the case showed that Shell did not warn the government about the toxicity of benzene in its fuel until almost three years after plaintiff began working.

ii. Also ruled Shell failed to show that government had independent knowledge of the toxicity of benzene because studies allegedly done by the United States on this issue were not included in the record of the case. Thus, any attempt to “divine what the United States knew or did not know about the toxicity of JP-4 manufactured by Shell would amount to speculation.”

M. Successful use of “bulk seller” defense in non-benzene cases: The “bulk seller” defense was successful in the following cases. See, e.g., Artiglio v. Gen. Elec. Co., 71 Cal. Rptr. 2d 817 (Ct. App. 1998) (bulk seller of silicone which provided silicone to breast implant manufacturer owed no duty of care to implant
III. PRODUCT IDENTIFICATION

A fundamental premise of products liability law is that plaintiffs must prove that the defendant supplied a product that caused her injury or that plaintiff was exposed to a product manufactured or sold by defendant. In benzene and other toxic tort cases, it is not uncommon for plaintiffs to fail at least at the initial pleading stage (1) to identify a specific product manufactured or sold by defendant that caused the alleged injuries; (2) to identify any specific acts or omissions by defendant that they allege was a proximate and/or producing cause of the injury; and/or (3) to identify any exposures of plaintiff to any product manufactured or sold by defendant.

DEFENSE STRATEGIES FOR CHALLENGING INADEQUATE PRODUCT IDENTIFICATION

I. The Problem of Inadequate Product Identification in Benzene Cases

A. Emerging Problem of Multi-Defendant Complaints in Benzene Litigation

1. For example, multiple defendant benzene claims – with more than 100 defendants – have been filed over the last few years in Madison County, Illinois.

2. The Complaints often contain no generic allegations against defendants with no specific claims. In addition, the Complaints typically do not identify the specific product made by the specific defendant that plaintiff was exposed to or provide detailed information on how and where plaintiff was exposed to the product.

3. Mass defendant complaints may be brought for several reasons

   a. To prevent removal to federal court on diversity jurisdiction.

   b. To circumvent rejection of “market share” or “alternative” liability theories when no specific product can be identified.
c. To try to exact routine settlements – without having to do any work -- from defendants not factually connected with the plaintiff.

B. Defense strategies to deal with inadequate product identification

1. Motions to dismiss complaints or for a more definitive statement.

2. Limiting discovery of defendants until plaintiffs produce evidence of product identification
   a. Protective orders
   b. Phased or Bifurcated discovery and Lone Pine Orders

3. Motions for Summary Judgment

4. Motions for sanctions in egregious cases

II. Motions to dismiss complaint for failure to sufficiently allege exposure to defendants’ products or for a more definitive statement regarding product identification

A. Relevant Federal Rules of Civil Procedure

1. Rule 8 – General Rules of Pleading
   a. “(a) Claims for Relief. A pleading which sets forth a claim for relief . . . shall contain . . . (2) a short and plain statement of the claim showing that the pleader is entitled to relief . . .”
   b. “(e) Pleading to Be Concise and Direct; Consistency. (1) Each averment of a pleading shall be simple, concise, and direct. . . .”

2. Plaintiffs are not required to plead each and every specific fact. Pleadings under Rule 8 only need to summarize a party’s claims sufficiently enough to advise the other party of the event being sued upon. All that is necessary is that the claim for relief be stated with brevity, conciseness, and clarity.

   a. The Rules, for example, contemplate that relevant facts in support of the claims may be developed during discovery. But see Migdal v. Rowe Price–Fleming Int'l, Inc., 248 F.3d 321, 326 (4th Cir. 2001) (“Although the pleading requirements of Rule 8(a) are very liberal, more detail is often required than the bald statement by plaintiff that he has a valid claim of some type against defendant. This requirement serves to prevent costly discovery on claims with no underlying factual or legal basis.”); DM Research v. College of Am. Pathologists, 170 F.R.D. 53, 55 (1st Cir. 1999) (“Conclusory
The Federal Rules of Civil Procedure do require plaintiffs, however, to plead facts and legal conclusions that provide each defendant “fair notice” of each claim made against it and the grounds for each claim. So-called notice pleading under the Rule 8 standard does not eliminate the necessity of stating circumstances, occurrences, and events that support the plaintiff’s claims.

a. Generic pleading (making the same exact allegations against each defendant) is clearly insufficient as the plaintiff’s burden requires that she prove use of or exposure to a particular product attributable to a particular defendant.

b. A general statement, for example, that plaintiff was exposed to defendant’s benzene-containing products without specific identification of the product and the time period over which plaintiff was exposed to the product is insufficient.

i. Identifying categories of products exposed to like “oil and fuel,” paint, solvents, specialty chemicals insufficient.

(a) For example, alleging that plaintiff was exposed to defendant’s “oil and fuel” would not be specific enough since that would include a multitude of different products (e.g., gasoline, diesel, aviation fuel, etc.), manufactured over different time periods with potentially different benzene and other chemical content depending on the type of “fuel” and grade.

c. Fair notice requirement. See Conley v. Gibson, 355 U.S. 41 (1957) (federal pleading rules require the complaint to give the defendant “fair notice of what the plaintiff’s claim is and the grounds upon which it rests”). The Rule therefore requires the plaintiff to disclose adequate information regarding the basis for his claim for relief, such as the circumstances, occurrences, and events in support of the claim at issue. See, e.g., Hamilton v. Department of Veterans Affairs, 188 F.3d 513 (9th Cir. 1999) (“vague and conclusory allegations” of breach of contract insufficient); Ware v. Department of Interior, No. Civ. 03-3080-CO, 2005 WL 44001, at *2 (D. Ore. Jan. 10, 2005) (Rule 8 requires “presentation of factual allegations with sufficient clarity and certainty to enable defendant to determine the basis of plaintiff’s claim and formulate responsive pleading”); BondPro Corp. v. Siemens Westinghouse Power Corp., 320 F. Supp. 2d 804, 807 (D.Wis. 2004) (finding that plaintiff’s
d. It can be argued that failing to identify the basis for asserting claims against a defendant or failing to identify the specific product made by defendant that cause harm does not constitute “fair notice.” See cases infra.

4. Multiple defendants. In order to state a claim for relief, actions brought against multiple defendants must clearly specify the claims with which each individual defendant is charged.

5. The form and sufficiency of a statement of a claim for relief under Rule 8(a)(2) may be tested by a motion to dismiss for failure to state a claim upon which relief can be granted, Rule 12(b)(6), by a motion for judgment on the pleadings, Rule 12(c), or by a motion for a more definite statement, Rule 12(e). Even if a complaint satisfies the general pleading requirements of Rule 8(a), a court still may order the complaint revised pursuant to a Rule 12 motion.

Rule 12 – Defenses and Objections – When and How Presented – By Pleading or Motion – Motion for Judgment on the Pleadings

a. (b) Every defense, in law or fact, to a claim for relief in any pleading . . . shall be asserted in the responsive pleading thereto . . . except that the following defenses may at the option of the pleader be made by motion: . . . (6) failure to state a claim upon which relief can be granted. . . . A motion making any of these defenses shall be made before pleading if a further pleading is permitted. . . .

b. (c) Motion for Judgment on the Pleadings. After the pleadings are closed but within such time as not to delay the trial, any party may move for judgment on the pleadings . . .
c. (e) Motion for More Definite Statement. If a pleading to which a responsive pleading is permitted is so vague or ambiguous that a party cannot reasonably be required to frame a responsive pleading, the party may move for a more definite statement before interposing a responsive pleading. The motion shall point out the defects complained of and the details desired. . . .

B. Bare-bone benzene complaints are insufficient to satisfy plaintiffs’ burden.

1. As a general rule, a plaintiff in a toxic tort case must show that he was exposed to (and injured by) the defendant’s product. See, e.g., Bly v Tri-Continental Indus., 663 A2d 1232 (D.C. Ct. App. 1995) (affirming summary judgment to certain defendants in multi-defendant benzene leukemogenesis case where plaintiffs failed to show actual exposure to defendants’ gasoline sufficient to proximately cause claimed illnesses); Blackston v. Shook and Fletcher Insulation Co., 764 F.2d 1480, 1483 (11th Cir. 1985) (proof of the identity of the defective product’s manufacturer required because “elimination of a causation requirement would render every manufacturer an insurer not only of its own products, but also of all generically similar products manufactured by its competitors”); Thompson v. Johns-Manville Sales Corp., 714 F.2d 581, 582 (5th Cir. 1983) (causation in asbestos case required proof of the manufacturer’s identity; summary judgment affirmed given plaintiff failed to testify that he worked with or around defendant’s products); Dillon v. Fibreboard Corp., 919 F.2d 1488, 1491 (10th Cir. 1990) (reversing denial of directed verdict for defendant where evidence showed that defendant’s product was used in facility at which plaintiff worked but there was no evidence that plaintiff had sufficient contact with the product to cause injury).

2. Plaintiffs have a duty to investigate their own case before filing. See Model Rule of Professional Conduct 3.1, Fed. R. Civ. P. 11 (above).

a. Plaintiffs should know therefore which products they were exposed to and may have caused their injury before filing suit.

b. Without such information plaintiffs do not have a good faith basis for their claims.

c. Plaintiffs should not be permitted to identify only generic types of products as opposed to specifically naming the products.

d. A complaint is not a license for a fishing expedition in hopes of discovering some basis for a claim against a defendant.

3. It can be argued that plaintiffs must plead facts, not conclusions, sufficient to show entitlement to the requested relief, and sufficient enough that defendants can assess whether the claims have any merit. See Cooter &
4. Plaintiffs’ claim that it would be “impracticable” or difficult to provide more detail in complaint does not excuse a failure to plead with particularity. See Harold’s Auto Parts, Inc. v. Mangialardi, 889 So.2d 493, 494 (Miss. 2004) (“Absent exigent circumstances, plaintiffs’ counsel should not file a complaint until sufficient information is obtained, and plaintiffs’ counsel believes in good faith that each plaintiff has an appropriate cause of action to assert against a defendant in the jurisdiction where the complaint is to be filed.”).

5. Plaintiffs should not be permitted to “flesh this out” in discovery. They should have a reasonable basis for claims at the pleading stage. See, e.g., Brewington v. Kent General Hosp., Inc., 1986 WL 4851, at *1 (Del. Super. 1986) (“[T]hough discovery may be properly used to supplement the pleadings with additional details, its function is not to serve as a substitute for the complaint, which must contain the facts that are believed to constitute the plaintiffs’ cause of action.”); Harold’s Auto Parts, Inc. v. Mangialardi, 889 So.2d 493, 494 (Miss. 2004) (information regarding which asbestos-containing products plaintiff was exposed to and where such exposures took place “should [have been] known to plaintiffs’ counsel prior to filing the complaint, not information to be developed in discovery or disclosure.”); see also 61A Am.Jur2d Pleadings § 71 (1981) (“Plaintiffs’ argument that discovery responses . . . will remedy the deficiencies in the complaint is a misrepresentation of the purpose of discovery”).


i. Multiple myeloma case brought against 55 manufacturers of 222 products. Plaintiffs permitted to replead claims.

ii. “If plaintiffs do not have a sufficient basis to allege that a particular internalized injury-causing toxin was manufactured or supplied by a specific person or entity, their complaints must name Doe defendants, availing them of that statute's protection against the statute of limitations until they can identify the defendants and name them by their true names.” 980 P.2d at 404-05 (citations omitted).

iii. “The law cannot tolerate lawsuits by prospecting plaintiffs who sue multiple defendants on speculation that their products may have caused harm over time through exposure to toxins in them, and who thereafter try to learn
iv. “The actual belief standard requires more than a hunch, a speculative belief, or wishful thinking: it requires a well-founded belief.” Id.

v. Complaint was dismissed by lower court for inadequately pleading causation. Court remanded to give plaintiff an additional opportunity to amend his complaint.

vi. Sanctions not imposed but the court cautioned that under certain circumstances they would be appropriate. “If a lawyer is found to have deliberately filed a products liability suit of the type under discussion on a lesser basis, he or she can be sanctioned (Code Civ. Proc., § 128.7, subd. (c)) and is subject to other disciplinary action . . . . Moreover, the aggrieved defendant can sue for having had a civil proceeding maliciously instituted against it. These are the deterrents that state law provides for dishonest, reckless, or negligent pleading practice. A cancer-afflicted plaintiff suing every manufacturer of an airborne substance found in the Los Angeles basin probably would be exposed to sanctions for the suit, even if certain defendants eventually were found to have made a product that was a substantial factor in the onset of the plaintiff's cancer. We presume that plaintiff here was aware of his duty to pursue his suit in good faith, and, in the absence of contrary evidence, that he did so.” 980 P.2d at 406.

6. Complaints that do not identify which chemicals or products supplied by each defendant that plaintiff was exposed to or how each defendant is involved with respect to plaintiffs claims should be dismissed. See, e.g., Kozak v Armstrong World Indus., Inc., 572 N.E.2d 279 (Ill. Ct. App. 1991) (affirming dismissal of complaint alleging, inter alia, wrongful death, willful and wanton misconduct, and conspiracy against asbestos-containing product manufacturers for failure to sufficiently identify the specific products at issue); City of Chicago v. Am. Cyanamid Co., 823 N.E.2d 126 (2005) (affirming dismissal of complaint against lead based paint manufacturers that failed to identify any specific manufacturers’ product at any specific location as causing the alleged injury).

7. Defendants in benzene litigation are more frequently moving to dismiss lawsuits for failing to plead complaints with sufficient particularity
8. Repeated motion practice may be necessary
   a. If plaintiffs’ complaint is dismissed and they are allowed to refile their complaint or are ordered to amend the complaint with greater particularity, continued motions practice should be pursued if the amended or new complaint does not sufficiently identify the product at issue.

C. Benzene cases in which motions to dismiss or for more definitive statement successful

   a. Complaint contended that decedent Guy Lee Davis developed cancer as a result of exposure to “benzene-containing products.”
   b. The court entered an order the previous October requiring the plaintiffs to describe the products that the defendants allegedly manufactured or sold and the manner in which the plaintiff was exposed to these products or have their complaint dismissed without prejudice. When plaintiffs failed to comply with the order, defendants moved to enforce the Court’s order on February 25, [year]. Plaintiffs cross-moved for relief from the original order, requesting that the Court allow extended discovery before enforcing the order.
   c. Court granted several benzene defendants’ motions to dismiss claims asserted against them, enforcing its earlier order in which the court required the plaintiffs to produce documentation of the benzene-containing products to which the plaintiff was allegedly exposed.
   d. Did not award attorney’s fees to defendants, but ruled that it would impose sanctions should the plaintiffs refile and not comply with the specificity requirements outlined in the Mississippi Supreme Court decision, *Harold’s Auto Parts, Inc. v. Mangialardi*, 889 So.2d 494 (Miss. 2004).

   a. Defendants filed motions to dismiss in two benzene cases pending before the court, saying that the *Pelous* and *Penza* lawsuits were representative examples of all of the benzene lawsuits filed by the Wilmington, Del., law firm Bifferato, Gentilotti, Biden & Balick.
b. Defendants claimed plaintiffs’ complaints violated pleading standards, failed to plead negligence and fraud with particularity, and failed to state a claim upon which relief can be granted under Delaware Superior Civil Court Rules 8(a), 9(b) and 12(B)(6).

i. No specific facts provided about time, place, or manner of the plaintiffs’ alleged exposures to benzene-containing products or processes.

ii. No specific facts provided on the specific benzene-containing products or processes to which the plaintiffs were allegedly exposed. Instead, plaintiffs simply identified “categories” of products (e.g., “specialty chemicals” or “fuel”) to which they were exposed. Categories, according to defendants do not meet the pleading rules of Delaware Rule 8(a).

(a) Transcript of hearing on defendant’s motion at 17: The complaint alleges that “many defendants are alleged to have marketed or manufactured solvents, and without more, that’s the allegation. . . .Well, the problem with that is if one goes on the Internet or into an encyclopedia, the most common and best known solvent is water. So saying solvents without more” does not provide adequate notice since there are hundreds of products potentially that would fall into the category, “solvents.”

c. The defendants claimed that Delaware Rule 8(a) requires plaintiffs to serve a complaint that contains a short and plain statement of the claim, so that the defendants know the grounds on which the claim is asserted.

i. “In this instance, plaintiffs’ complaints are so vaguely worded that it is impossible to tell from any particular count, or even from the complaints as a whole, why any particular defendant, or the defendants as a group, have been named in this lawsuit.”

d. The defendants also stated that the plaintiffs’ claims fail under Rule 9(b), requiring them to plead claims of negligence and fraud with particularity, saying that their complaints “plead their allegations of negligence at a level of generality that renders them meaningless and plainly deficient as a matter of law.”

e. The Court granted the motions to dismiss the complaints on grounds that the lawsuits violate Delaware’s pleading standards.
i. Acknowledged that in an industrial setting where multiple chemicals are used “there will always be some difficulty” at least initially “in identifying the products that are alleged to have caused injury with particularity … but some effort to do so must be made. The plaintiffs would not have brought their claims against individual defendants unless they had a Rule 11 basis to do so. Tr. at 73-74 (emphasis added).

ii. Although the court disagreed that plaintiffs “must identify the product by name or grade,” it emphasized that the product must be identified as specifically as possible so defendants would have notice of the likely product to which plaintiff contends he was exposed. This, the Court observed, could be accomplished by specifying the locations the product was used by the plaintiff, what the product was used for, the time periods the product was used, etc.

(a) “The class of products should be identified with specificity to include its use as observed by the plaintiff. That description included within the complaint should provide the defendants with adequate notice to begin to identify specifically within their inventory the products that would fall within that description.” Id.

(b) “For example, a plaintiff could take a particular product description or class and allege the several locations where upon information and belief that product was utilized and the manner in which it was utilized. Of course, the locations would be locations visited by or otherwise encountered by the plaintiff, or they could take the approach of taking each location and alleging within that location the products that were used there again by description of the product class and use.” Id. at 75

(c) “The plaintiff should also describe in more particularity, as they’ve indicated they plan to do, what the plaintiff was doing, meaning what was the general description of the plaintiff’s work at a particular site and for recreational exposures what
f. Court rejected plaintiffs’ suggestion that defendants should provide plaintiffs with a list of their benzene-containing products to allow them to identify the specific product to which they were exposed. See Tr. of hearing at 54-55.

i. “Might the cynical defendant say, Well, that’s all well and good. We’ve got 10 products that don’t contain benzene and one that does. Your client is alleging exposure to one of our products unspecified. Which product contained benzene? Well, it was our firmflam product. Well, that’s what I was exposed to then. I mean, if we get into that sort of situation where . . . you’re asking them, in essence, to feed you the information that you need to make your claim, that could be problematic, too. Wouldn’t they be reasonable in saying tell us what you were exposed to, we’ll tell you if it contained benzene or not?”

g. Several defendants recently re-filed their motions to dismiss, after plaintiffs again submitted amended complaints, reasserting their argument that the plaintiffs still failed to plead their claims with sufficient specificity. On Oct. 26, 2006, a hearing on the motions was held before Judge Slight, who is overseeing the Delaware coordinated benzene docket In re: Benzene Litigation, No. C.A. No., 05C-09-191 BEN (Del. Super. Ct., New Castle Cty.). The court plans on issuing a written ruling in the near future.


a. Court denied defendants’ motion to dismiss complaint but granted alternatively sought relief, ordering plaintiffs in a benzene lawsuit to file an amended complaint within 60 days more specifically setting out their claims against 89 named defendants.

b. Court held that original complaint did not plead with particularity and thus did not comply with Mississippi case law.

c. Ordered amended complaint to include: “1. The name of the defendant or defendants against whom each plaintiff makes a claim; 2. Which defendant did wrong to which particular plaintiff; and 3. When and where the wrong was committed.” Id. at 2.
   a. Plaintiff contended he contracted non-Hodgkin’s Lymphoma from exposure to benzene while employed at the Gulf & Western Steel Plant.
   b. Defendants moved to dismiss the complaint based on plaintiff’s failure to comply with prior court orders requiring Simmons to serve an amended complaint with specific information relating to the details of the alleged injuries.
   c. Plaintiffs filed an amended complaint, but it failed according to Defendants’ motion “to link the Plaintiffs’ alleged injuries to any specific acts of any individual.” Further, “other than vaguely referencing ‘cancer and other chemically-related illnesses,’ the Complaint did not specify the injuries the plaintiffs alleged. In addition, the Complaint failed to allege when, how and where the Plaintiffs were allegedly exposed to any chemicals or constituents that allegedly caused Plaintiffs’ injuries.
   d. The Mississippi Circuit Court for Choctaw County dismissed the lawsuit with prejudice on July 24, 2006, citing the plaintiffs’ failure to comply with orders addressing pleading deficiencies and medical causation evidence.

   a. Plaintiffs alleged they developed acute myelogenous leukemia (AML) and acute lymphocytic leukemia from exposure over a 30 year period in various locations, including from oil wells and pipelines in vicinity of residence.
   b. The defendants moved to dismiss the complaints, arguing that the lawsuits failed to comply with the pleading standards set by the state’s high court in *Harold’s Auto Parts v. Mangialardi* (899 So.2d 493, Miss. 2004).
   c. Plaintiffs argued that the Mangialardi decision was issued just five days before the initial lawsuit was filed and that notice pleading is “still alive and well in the court system of today.”
   d. The court disagreed with plaintiff and dismissed the 3 benzene actions without prejudice, finding the complaints did not assert specific claims against individual defendants or provide a causal connection between defendants’ actions and the alleged injuries.
e. “The Second Amended Complaint does not specify how the individual Defendants exposed the Plaintiff, whether the Defendant operated, owned or leased an oil well or pipeline, whether the Plaintiff was an invitee or resident in the area surrounding which Defendant’s oil field operation, nor the specifics of how this alleged exposure caused her leukemia.”

f. Further, “[t]he individual Defendants are not even named in the Second Amended Complaint, but merely listed in an attachment.” “She makes no specific claims against the individual defendants, choosing instead to combine her claims into these generic claims against all of the defendants who operated oil wells and/or pipelines in the fields near where she attended church. The complaint provides no connection between the individual Defendants and the alleged exposure of Davis to benzene.”

g. Finally, the court noted that “[t]he elements that are missing in the Complaint, and that are necessary to maintain a cause of action are: (1) what action or inaction did each individual defendant do that was wrong, (2) when and where did that conduct occur and (3) how that wrongful action or inaction harmed the plaintiff?”

III. Limiting Discovery of defendants until plaintiffs provide evidence of product identification

A. Motions for protective orders against discovery from plaintiffs


   a. Plaintiff’s suit against ExxonMobil Corp. and other manufacturers alleged that decedent Mielke died from leukemia caused by exposure to benzene-containing products, including a product called Varsol, at Bridgestone/Firestone from 1951 through 1985.

   b. Plaintiff moved to compel more detailed Fed. R. Civ. P. 26(a)(1) disclosures because Exxon purportedly failed to disclose all information on Varsol and other benzene-containing products marketed to the tire industry.

   c. In its initial disclosures required by Fed. R. Civ. P. 26(a)(1) ExxonMobil said that, except for employment and medical information concerning Mr. Mielke, without the identity of any specific ExxonMobil product to which the decedent was exposed, or information concerning the time period or frequency of use, it was unable to identify witnesses or documents with information likely to bear significantly on any claim or defense.
d. Exxon’s opposition argued that it could not provide initial disclosures because plaintiffs failed to identify a specific product. The trademark “Varsol,” according to Exxon, encompassed an entire line of products. "Varsol is no more of a specific product than using the term 'pain killer' to describe Codeine." Exxon further noted that the term “benzene-containing product” could encompass literally hundreds of different petroleum based products over a 34 year time period.

e. Court ruled that the initial disclosure requirements under Rule 26(a)(1) do not require Exxon’s disclosure of all information it has concerning Varsol. Order at 3.

i. “As amended in 2000, the initial disclosure requirements of Fed. R. Civ. P. 26(a)(1) manifestly do not require ExxonMobil to disclose all information it has pertaining to Varsol or other benzene products it marketed to the tire industry. With respect to the identity of persons likely to have knowledge of discoverable information and documents, the amended rule requires a party to disclose ‘only information that the disclosing party may use to support its position.’ Advisory Committee Notes to 2000 Amendment (‘Purpose of amendments’); Fed. R. Civ. P. 26(a)(1)(A), (B). Moreover, the duty of disclosure is subject to a rule of reason; to disclose information then ‘reasonably available’ to the disclosing party. FRCP 26(a)(1). ‘The initial disclosure rules do not require a party to conduct a thorough investigation of the case before making its initial disclosures.’” Order at 3.

f. Court agreed it was unreasonable to require Exxon to make more detailed disclosures without specific product identification.

i. “As it has evolved, the initial disclosure requirement is intended ‘to accelerate the exchange of basic information’ the disclosing party may use to support its contentions ... but if the opponent’s pleading is threadbare, ‘[i]t may happen that, owing to a lack of specifics in pleadings, a party does not apprehend initially that it will use certain witnesses or documents.’ 8 C. Wright, A. Miller & R. Marcus, Federal Practice & Procedure § 2053 (2005 supp. at 180). That is the position that ExxonMobil finds itself in. What the motion to compel essentially asks the Court to do is to require ExxonMobil to name all persons known to it and identify all documents in its possession it might use to defend any of its benzene-containing products to which decedent might at some time have been exposed during his
g. Court ruled that because discovery is ongoing, it is reasonable to expect that it will "flush out the factual basis for the claims against ExxonMobil sufficient to trigger the duty to supplement in Fed. R. Civ. P. 26 (a)." Therefore, the court required ExxonMobil to "fully and fairly supplement its initial disclosures" by the expert witness deadline of Nov. 21.


   a. Multiple plaintiffs claimed contracting acute lymphocytic leukemia and acute myelogenous leukemia from exposure to benzene over a 30 year period at various locations.

   b. Defendants’ motion for protective order argued that recent Mississippi precedent on mass joinder precludes plaintiffs from proceeding with the limited discovery responses they provided.

      i. Defendants: “Again for purposes of emphasis: the plaintiffs have generally alleged that they were somehow exposed (they never indicate how) to chemicals ‘including, but not limited to, benzene,’ and the only specific information they have supplied to support this claim is a list available by public record of 175 wells in operation stretching back to the Truman administration.” Defendant’s Motion to Compel at 1-2

      ii. Defendants: “The bar has been raised; plaintiffs may no longer lackadaisically file complaints replete with vague allegations, and then coyly pass through the discovery process making largely ceremonial disclosures that disclose nothing. The time has come for these plaintiffs to be able to intelligently describe when, where, how, and with what they were contaminated and what their resulting damages are, and how they intend to connect the two.” Defendant’s Motion to Compel at 9.

      iii. The defendants further argued that the plaintiffs were vague in their responses to questions concerning specific time and length of exposure.
c. Court granted defendant’s motion for a protective order from answering plaintiff’s discovery until more specific product identification provided by plaintiffs:

   i. “Defendants shall not be required to respond to Plaintiff’s Interrogatories or Request for Production unless and until the Plaintiffs have fully answered discovery as ordered herein, after which defendants shall serve responses (including objections) to Plaintiff’s discovery within 30 days.” Order at 2.

IV. Limiting Initial Discovery to Product Identification

   A. Seeking phased discovery in which product identification discovery takes place initially, followed by regular fact discovery.

   1. A Texas judge ruled on two trace cases at the same time: *Sauceda v. Union Carbide Corp.*, No. 38802 (school custodian); *Lockhart v. Shaw Industries, Inc.*, No. 38582 (carpet manufacturing plant); both: (Tex. 239th Jud. Dist. Ct. Feb. 27, 2007)

      a. “Plaintiffs shall not be permitted to obtain discovery of any Defendant until” Plaintiffs identify the name of the products to which they were allegedly exposed and the time and location of the alleged exposure.


      a. A Delaware judge overseeing a coordinated benzene docket clarified the “three elements that will allow a plaintiff adequately to identify an allegedly defective benzene-containing product when the plaintiff is unable to identify the product by name: (1) a description of the product classification . . . (2) qualified by a meaningful description of the location and manner in which the product was used by the plaintiff or observed to be used by others; and (3) a description of the time frame, reasonably narrowed by due diligence, within which the alleged exposure occurred.” *Id.* at *9.


      a. Plaintiff brought suit against Monsanto for the wrongful death of her husband, a laboratory technician from 1950-1987 with the company, who allegedly died from non-Hodgkin’s lymphoma as a result of his exposure to various chemicals.
b. Upon agreement by both parties, Judge Goodwin ordered bifurcated discovery on April 28, 2006, requiring the parties to identify the chemicals to which the plaintiff’s husband was exposed during his employment with Monsanto/Pharmacia and requiring the plaintiff to provide a list of the specific chemicals and products alleged to have caused his injury.


a. Plaintiffs claimed that Robert Keller contracted AML as a result of benzene exposure from his 20 year work history as a printer and press operator.

b. Court rejected defendant’s request to enter a scheduling order limiting initial discovery in a benzene lawsuit to product identification. Noted though it would consider granting motions for protective orders “if plaintiffs appear to be abusing discovery.”


a. Plaintiff Kimberly DeSanto claimed that her workplace exposure to sulfur and solvent chemical products (some containing benzene) caused birth defects in two of her children.

b. The defendants sought, and the court adopted, a case management order that required the plaintiffs to identify with specificity the chemicals they claimed were a cause of the birth defects; the parties to identify early expert witnesses who would testify that such chemicals have, as a matter of toxicology, the capacity to cause the specific birth defects at issue in humans; and the court to hold an evidentiary hearing to determine whether the plaintiffs could adduce admissible expert testimony on the general causation question.

c. Plaintiffs’ named experts were excluded and the case dismissed following this process. See supra, Section on Medical Causation.

B. Lone Pine Orders

1. Timely identification of the products at issue in any given case and effective use of discovery are essential to seeking and obtaining the necessary information from which to establish the requisite exposure and causation evidence critical to the efficient handling of benzene cases.

2. A Lone Pine order (or a detailed scheduling order) is a one of the strong, but infrequently granted, case management strategies in toxic tort
a. In *Lone Pine*, plaintiffs claimed personal injury and property damage resulting from alleged exposure to chemicals.

b. Hundreds of plaintiffs brought personal injury and property damage claims allegedly caused by landfill.

c. Before allowing the parties to proceed with further discovery, the Court imposed an initial deadline requiring plaintiffs to present the facts of each individual exposure, reports of medical experts supporting plaintiff’s allegations of personal injury and causation, and reports of real estate experts supporting property claims for diminution in value.

d. Notwithstanding several extensions, Plaintiffs were unable to comply with the Order and could not produce any objective evidence establishing a *prima facie* case for their claims.

3. Federal and state courts have the inherent authority to enter such case management orders.

4. *Lone Pine* orders typically require each plaintiff to submit an individual report from treating physicians or experts detailing the specific exposure to toxic substances, including:

   a. The nature and form of the exposure.

   b. The specific toxic substance involved in each exposure.

   c. Specific dates of such form of exposure.

   d. Dose or amount of each toxic substance to which each plaintiff was exposed.

   e. The causal connection between each plaintiff’s alleged injuries and each toxic substance and form of exposure.
5. Benefits to defendants.
   
   a. Plaintiffs must establish *early in the case* that they actually were exposed to benzene or other “toxic chemicals” in order to proceed with the case.
   
   b. Plaintiffs are limited in the discovery they can conduct; useful in preventing fishing expeditions to try to tie defendant’s product to their claims.
   
   c. Can assist in getting defendants out of cases sooner where no product identification exists.
   
   d. An effective way for defendants to evaluate in the early stages of the case the strength and weaknesses of plaintiff’s claims.

6. Cases permitting *Lone Pine* or similar orders
   
   a. In some jurisdictions a defendant can raise the issue at the initial scheduling conference, but in others, such as California, a *Lone Pine* order (known as a *Cottle* motion) is typically raised following discovery, closer to the date of trial. *Cottle v. Superior Court*, 3 Cal. App. 4th 1367, 1380 (Cal. Ct. App. 1992).

   i. The *Cottle* case involved approximately 175 owners and renters of various residential properties in an area once used by the oil industry as a site for depositing hazardous wastes and other by-products. *Id.* at 884.

   ii. While the action was pending, the California Department of Health Services determined that the waste in question did not pose any significant risks to public health or to the environment. Further, none of the plaintiffs who had been deposed were examined by a physician to determine whether their alleged injuries had any relation to exposure to chemical substances, and they had given evasive answers to discovery requests. *Id.* at 890-91.

   iii. The trial court entered a case management order requiring each plaintiff to file a statement establishing a *prima facie* claim, identifying the injury-causing chemical or toxic substance, the dates, manner, and place of exposure, the nature of each plaintiff’s injuries, and the identity of each medical expert who would support the plaintiff’s personal injury claim. *Id.* at 889.

   iv. The plaintiffs complied with the order by submitting a statement that the trial court found to be insufficient to
v. Appellate court affirmed the order relying, *inter alia*, on the inherent case management authority given to lower courts by state rules of civil procedure and the court’s equitable power to make rules for its own governance. *See id.* at 1376-79.

b. *In re Able Supply Co.*, 898 S.W.2d 766 (Tex. 1995).

i. Case brought against 294 defendants who supplied or manufactured products allegedly used at Lone Start Steel Plant from 1947-1995. Involved approximately 3000 employees who asserted various occupational diseases from alleged exposure to various toxic chemicals and various occupational diseases.

ii. Defendants contended they were entitled to know which plaintiffs were claiming injuries from which defendants’ products. Plaintiffs countered that all defendants regardless of product involved exposed each of them “to their various toxic and hazardous poisons, particulates, gases, chemicals, vapors, fumes, defective products, defective equipment, defective machinery.” After more than 8 years of litigation, defendants still had incomplete discovery connecting the alleged exposures to their products

iii. Texas Supreme Court ordered lower court to compel thousands of plaintiffs to identify physicians who had attributed plaintiffs’ alleged injuries to exposure to a particular product manufactured by a specific defendant.

(a) “Requiring the plaintiffs to answer an interrogatory linking each plaintiff’s injuries with a particular product will simplify the case, streamline costs to both plaintiffs and defendants, conserve judicial resources, and aid the trial court in preparing a plan for the trial of these cases.” *Id.* at 771.


i. Plaintiffs given 80 days from the effective date of the order to report from each trial expert the nature and form, substance, dates, and amount of each plaintiff's exposure as
ii. Plaintiffs failed to comply with the CMO, and their case was dismissed without prejudice.


i. 1000+ plaintiffs sued more than 100 defendants for a range of injuries related to uranium mining.

ii. Pre-discovery scheduling orders required the plaintiffs to submit affidavits from expert witnesses specifying the injuries alleged, the substance(s) causing the injury, the facility thought to be the source of the injuring substance, and the dates of exposure, as well as scientific and medical bases for the expert’s opinions. Id.

iii. The plaintiffs presented the court with over a thousand affidavits from the same expert, each of which generalized the required information. The plaintiffs then supplemented the information but it was not enough to prevent a dismissal. The Fifth Circuit affirmed the dismissal.


7. New York courts have also found that a Lone Pine order may be permissible in certain circumstances to direct plaintiffs to present prima facie evidence on preliminary issues near the onset of litigation, in order to narrow the scope of each case. See In re Love Canal Actions, 547 N.Y.S.2d 174 (N.Y. Sup. Ct. 1989), aff’d as modified, 161 AD2d 1167, 555 N.Y.S.2d 519 (1990) (mem).

a. A case management order was proposed by defendants that required plaintiffs, who claimed injuries from chemical exposure from a nearby landfill, to provide documentation of exposure and medical reports supporting their claims. Noncompliance was to result in dismissal with prejudice.

b. The trial court based its ruling in favor of the order on several factors. First, the court reasoned that expert opinions were discoverable before trial under the New York equivalent of Fed. R.
c. Second, the court reasoned that it has the authority to make such an order.

d. Third, the court reasoned that the plaintiffs would need to retain experts before trial in order to disclose this information, and that because the plaintiffs’ counsel had been involved in the litigation for an extensive amount of time there was no prejudice in forcing production of evidence on causation.

e. Fourth, the discovery responses to that time had been inadequate. *Id.*

f. On appeal, the order was modified to require plaintiffs to produce reports by treating physicians and identify their expert witnesses, rather than disclose plaintiffs’ expert reports. The modified order permitted defendants to use any failure on the plaintiffs’ behalf as a basis for summary judgment, rather than a dismissal with prejudice.


a. Action concerning contamination of well water. Alleged sources of contamination filed cross-claims against the property owner, Seidl. Following the filing of the suit in November 1991, expert discovery took place between 1992 and May 1993. No expert for either side testified to a reasonable degree of probability that contaminants from Seidl’s property reached the properties of the plaintiffs.

b. Seidl moved for summary judgment. The plaintiffs asked the court at that point for a *Lone Pine* order to give them additional time to identify expert testimony to support a prima facie case. The court denied their request.

c. Appellate court concluded that the trial court did not erroneously exercise its discretion to decline to enter the order given so much time had already elapsed in case, the appellants had not identified any expert testimony to support their case to date, and it was “pure speculation” whether appellants could find favorable expert testimony. *Id.* at 864.
V. Motions for summary judgment after discovery

A. Issue:

1. Summary judgment is required if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue of material fact, and that the mover is entitled to judgment as a matter of law.

2. The plaintiff’s inability to accurately identify exposure to a specific product that defendant manufactured should constitute sufficient grounds for summary judgment.

B. Benzene cases granting summary judgment to defendants on product identification grounds.

   a. Case was dropped when plaintiff, a repair shop worker who developed leukemia, failed to respond to defendant’s motion for summary judgment, which claimed that plaintiff had not properly identified its products as either a) the source of his leukemia or b) “in a defective condition unreasonably dangerous to the user.”

2. Smith v. 3M Co., No. 06-2-10994-5 (Wash. Super. Ct.)
   a. June 8th and June 21st, 2007, ten summary judgment motions were granted in case by former Boeing employee with acute lymphocytic leukemia, including one granted in part to two paint companies.

   a. Plaintiffs had worked as automotive mechanics for the local government for over 20 years each and contracted leukemia from alleged exposure to petroleum products containing benzene.
   b. Trial court granted summary judgment in favor of all defendant petroleum companies because decedents' survivors failed to prove which defendants, if any, had supplied the government with gasoline during the relevant years of exposure.
   c. Court ruled that defendants could not be held liable under a traditional negligence theory because the plaintiffs were unable to show that specific defendants' products had caused the decedents' illnesses.
   
a. Suit brought on behalf of a tire worker who contracted cancer from alleged exposure to benzene and benzene-containing rubber cement and solvents supplied and manufactured by defendants.

   b. The benzene containing products delivered to the factory were taken to a "cement house," mixed together in large containers, and distributed in unmarked containers throughout the factory.

   c. Summary judgment granted because plaintiff could not show that the decedent was directly exposed to any of the named defendants' products, since it was undisputed that several parties who were not named as defendants supplied benzene and benzene-containing products to the decedent's employer during the decedent's term of employment.

5. *Christopher Remboldt v. ChevronTexaco Corp., et al.*, No. 04-739 (Calif. Super., Contra Costa Co. 10/31/06)
   
a. California state court ordered summary judgment to Chevron U.S.A. Inc., based on grants of summary judgment entered earlier in the month finding that plaintiff had not met the minimum burden to sustain his personal injury claims.

   b. “As a threshold matter, plaintiff must establish product identification and exposure to prevail at trial . . . Without the element of exposure, there is no evidence upon which the trier of fact can determine causation. To establish product identification, plaintiff must demonstrate a nexus or causal link between a specific entity’s product and his injury. Plaintiff has not done so.”

   c. The extent of the plaintiff’s product identification was allegations of contact with crude oil in petroleum refineries where he worked. The crude was allegedly provided by the defendants.

VI. Unusual (Trace) Cases

1. Beverage cases:
   

   i. Plaintiffs alleged breach of implied warranty of merchantability, unfair trade practices, and unjust enrichment against PepsiCo, Sunny Delight, Rockstar, and Coca-Cola. On May 24, 2007, Defendants’ motions to dismiss were overruled.
ii. Plaintiffs did not allege personal injury, but they sought economic damages and injunctive relief.

iii. The court found that “plaintiffs have sufficiently alleged a defect in defendants’ beverage products which made those products unfit for their ordinary purpose and reduced their value so as to cause plaintiffs economic loss.” Id. at 1248.

iv. The “causal connection” is that “plaintiffs allege that they would not have purchased defendants’ beverage products but for defendants’ wrongful failure to disclose the tendency of those products to contain benzene.” Id.

v. Shortly before the ruling, on May 14, 2007, Coca-Cola settled this suit, together with two others, by agreeing to stop producing its “Vault Zero” and “Fanta Pineapple” drinks in their current forms and to pay each of the plaintiffs $500. It also offered to provide replacements to people who purchased the two products before September 2006. See also Gordon v. InZone Brands, No. 06-405 (N.D. Fla.); Lamond v. PepsiCo, No. 06-03043 (D. N.J.).


i. The suit had claimed that PepsiCo violated California’s False Advertising Law and the Consumer Legal Remedies Act and that the purchase of Pepsi Twist had endangered the plaintiff’s health because of the risk of benzene exposure.

ii. PepsiCo’s motion to dismiss, which was granted, argued that the plaintiff “never once identifies the allegedly false or misleading advertisements or representations.”

2. Cosmetics:


i. A former cosmetologist who alleged that exposure to the benzene in cosmetics products caused her acute promyelocytic leukemia reached settlement agreements with more then 30 defendants that totaled more than $1 million. (reported Jan. 18, 2007) Two remaining defendants were moving forward with a trial.
ii. The negligence suit had been filed after the U.S. EPA banned the use of hydroquinone in cosmetics.
How Jurors Decide a Toxic Tort Case

HB Benzene Litigation Conference
San Francisco, California
July 24, 2009

Tammy R. Metzger, J.D., M.A.
JuriSense Trial Consultant

www.JuriSense.com
Seal Beach, California
How Jurors Decide a Toxic Tort Case

- Effects of biases, personality, group dynamics and life experiences
- California’s Consumer Expectations Test
- How to arm Plaintiff jurors (see paper)
- More analysis at www.jurisense.com
Fact Pattern

• Plaintiff is Mr. Smith, a painter
  • Worked at Aircraft Co. in 1990s
  • Died of kidney disease in ‘01 at age 30
  • Widow, children ages 4 and 10

• Defendants are 2 paint manufacturers
  • Design defect & failure to warn claims
Disputed Facts

- General & specific causation
  - Medical doctor - paints caused illness
  - UCLA professor - idiopathic
- Plaintiff followed all safety procedures
- Label should specify better respirator
JuriSense
Prepare to Win

Julian

- White, male, 31, living together, some college, web design, 15-30K
- Anti-corporation bias

(seating chart)

Victoria
Patrick
Paulette
Melissa
Julian
Holly
James
Patrick

• White, male, 26, divorced, 2 kids, some college, sales rep, 15-30K
• Personal responsibility bias

Victoria       Melissa
Patrick         Paulette
Julian          Holly
James
(seating chart)

JuriSense
Prepare to Win
Victoria

- White, female, 25, single, BA/BS, outdoor env. edu., 0-15K
- Personal responsibility, bitter

JuriSense
Prepare to Win
Melissa

- Hispanic, female, 29, single, BA/BS, project coordinator, 30-50K
- Follows Victoria and Patrick

Victoria
Patrick
Julian
James
Paulette
Holly

(seating chart)
Paulette

- White, female, 59, divorced, some college, restaurant mgr., 30-50K
- Focuses on corporate responsibility

Victoria
Patrick
Julian
James

Melissa
Paulette
Holly

(seating chart)
Feeling Function

- Extraverted Feeling – Paulette (primary)
- Introverted Feeling – Julian (secondary)
Holly

- White, female, 44, divorced, BA/BS, graphic design, 50-70K
- Tort reformer

JuriSense
Prepare to Win
James

- Black, male, 44, married, high school, security, 50-70K
- “who’s responsible?” (authoritarian)

JuriSense
Prepare to Win
California’s Consumer Expectations Test

“Did the product perform as safely as an ordinary user would have expected?”
www.JuriSense.com

Prepare to Win
Consumer Expectations Test
“Did the product perform as safely as an ordinary user would have expected?”

• Jurors argue the entire case in this Q.
• Defense jurors frame this as “functionality”
  • focus on the impersonal subject – “product”
• Plaintiff jurors focus on “safely”
  • focus on the personal subject – “user”
Consumer Expectations Test
“Did the product perform as safely as an ordinary user would have expected?”

• De facto test of “what level of risk is acceptable to you, juror?”
• This question drains jurors’ commitment to justice – especially plaintiff’s jurors
• Defense jurors fight this easy question because they don’t want Plaintiff to win
For More Information…

- Please read *How Jurors Decide a Toxic Tort Case* for practice tips on teaching jurors to properly apply the law
- Visit [www.JuriSense.com](http://www.JuriSense.com) for more analysis, general practice tips and copies of the videos
How Jurors Decide a Toxic Tort Case
Tammy R. Metzger, J.D., M.A.

This paper analyzes an unusually insightful mock jury’s discussion of typical defense and plaintiff themes in toxic tort cases, as well as their understanding of California’s consumer expectations test. Limited and contradictory information was provided to test the effect of jurors’ biases, life experiences and personality on their decision-making.

Jurors typically have no prior sense of toxic tort law or how justice should be dispensed. Furthermore, most people’s innate sense of fairness in these cases is much more defense-oriented than California law. Attorneys can correct these misunderstandings and eliminate some biased jurors in *voir dire* by understanding how jurors decide these cases and adjusting their presentation accordingly.

Summary of Practice Tips on Teaching Jurors to Properly Apply the Law

The judge should pre-instruct jurors on the law at the start of trial to encourage jurors to use legal standards in deciding cases and attorneys should provide guideposts of how a party should have acted early in trial, such as industry standards or advertising claims, to help jurors decide who should win.

Jurors interpret the consumer expectations test to mean “what level of risk is acceptable to you, juror?” So you must ask about risk in *voir dire* because their answers to those questions are more predictive of their decision than the facts you will present at trial.

Jurors also misunderstand this law to refer to the product’s functionality, instead of safety. So some jurors will never find that any product is defective when it performed the immediate job at hand – if it functioned properly. Plaintiff’s attorneys must explain that the question is asking “How would you expect it to affect the user?” This gets at expected health effects. The key word is *safely*, not functionality.

Attorneys must clearly define “defective” in terms of safer product designs. Jurors typically misunderstand design “defect” claims. They often assume that “defective” means there was a quality control issue in
manufacturing or they are just baffled and simply reject the claim.

Plaintiff’s attorneys must clearly inform jurors that if they believe the product caused Plaintiff’s disease and that the label should have had a warning, then they’ve proven their failure to warn claim, that Defendant doesn’t avoid liability if they followed other laws. They may have technically following some laws, but not all.

Jurors in this video didn’t discuss it in depth, but jurors usually misunderstand “substantial factor” to mean a lot, not CACI’s1 “more than a remote or trivial factor.” The legal definition of “substantial” must be repeatedly explained to jurors before they will discard their common sense understanding of the word.

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**Fact Pattern Summary**

Mr. Smith worked as a painter at an aircraft company in the 1990s. He died of kidney disease in 2001 at the age of 30. He is survived by a wife and two children, ages 4 and 10. Plaintiff brought suit against 2 paint manufacturers, claiming solvents in their paints caused Smith’s kidney disease and death.

Plaintiff sued the paint manufacturers in strict liability for design defect and warning defect, claiming that their paints were defective because they contained solvents that caused kidney disease and the MSDSs were defective because they did not warn of the risk of kidney disease and death. Defendants contend their paints are safe. Under California law, to establish these claims Plaintiff must prove that Defendants’ products were a substantial factor in causing harm; i.e., more than a remote or trivial factor in causing the harm. To establish the warning defect claim, Plaintiff must also show that Defendants had knowledge of the risk of kidney disease or the risk was scientifically knowable. To establish the design defect claim, Plaintiff must also show that the paints did not perform as safely as an ordinary painter would have expected.

<table>
<thead>
<tr>
<th>Plaintiff Claims</th>
<th>Disputed Facts</th>
<th>Defense Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSDS should have warned of possible kidney disease and death since scientists knew of a link between the solvents in the paint and kidney disease in 1990.</td>
<td>The paints do not cause kidney disease. So the MSDS only warned that repeated overexposure to the paints could cause harm to the urinary tract system.</td>
<td></td>
</tr>
<tr>
<td>Medical doctor testified that Defendants’ solvents caused Smith’s kidney disease</td>
<td>UCLA professor testifies that cause is idiopathic (unknown)</td>
<td></td>
</tr>
<tr>
<td>Smith followed all of employer’s safety procedures, which were based on Defendants’ MSDSs</td>
<td>There are no records of safety training and Smith did not read the MSDSs</td>
<td></td>
</tr>
<tr>
<td>MSDS should have recommended an independent air supply respirator, which would have saved Smith’s life.</td>
<td>Cartridge respirator recommendation on MSDS is sufficient</td>
<td></td>
</tr>
<tr>
<td>Smith always wore respirator, as employer required</td>
<td>Smith did not always wear his respirator</td>
<td></td>
</tr>
</tbody>
</table>

---

1 The Judicial Council Of California Civil Jury Instruction 430 Causation: Substantial Factor (Revised December 2005)

A substantial factor in causing harm is a factor that a reasonable person would consider to have contributed to the harm. It must be more than a remote or trivial factor. It does not have to be the only cause of the harm.
## Juror Seating Chart

<table>
<thead>
<tr>
<th>Juror</th>
<th>Comments</th>
<th>Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Victoria</strong></td>
<td>personal responsibility, bitter</td>
<td>undecided - before deliberations; defense - first 13 minutes; undecided - most of deliberations. White, female, 25, single, BA/BS, outdoor environmental education, 0-15K annual salary</td>
</tr>
<tr>
<td><strong>Patrick</strong></td>
<td>personal responsibility</td>
<td>strong defense - before deliberations; strong defense - first 13 minutes; defense - most of deliberations. White, male, 26, divorced, some college, sales rep, 15-30K</td>
</tr>
<tr>
<td><strong>Julian</strong></td>
<td>anti-corporation</td>
<td>strong plaintiff - before deliberations; strong plaintiff - first 13 minutes; plaintiff - most of deliberations. White, male, 31, living together, some college, web design, 15-30K</td>
</tr>
<tr>
<td><strong>James</strong></td>
<td>“who’s responsible?” (authoritarian)</td>
<td>strong plaintiff - before deliberations; strong plaintiff - first 13 minutes; strong plaintiff - most of deliberations. Black, male, 44, married, high school, security, 50-70K</td>
</tr>
<tr>
<td><strong>Melissa</strong></td>
<td>follows Victoria and Patrick</td>
<td>slight plaintiff - before deliberations; defense - first 13 minutes; defense - most of deliberations. Hispanic, female, 29, single, BA/BS, project coordinator, 30-50K</td>
</tr>
<tr>
<td><strong>Paulette</strong></td>
<td>focuses on corporate responsibility</td>
<td>slight plaintiff - before deliberations; plaintiff - first 13 minutes; plaintiff - most of deliberations. White, female, 59, divorced, some college, restaurant mgr., 30-50K</td>
</tr>
<tr>
<td><strong>Holly</strong></td>
<td>tort reformer</td>
<td>strong defense - before deliberations; strong defense - first 13 minutes; defense - most of deliberations. White, female, 44, divorced, BA/BS, graphic design, 50-70K</td>
</tr>
</tbody>
</table>

**Note:** the comments immediately following jurors’ names are the underlying biases and personality traits that primarily skew their interpretations of the case facts. Also, this is not a representative group because jurors were selected from a larger pool and split into 3 groups to encourage thorough deliberations.
<table>
<thead>
<tr>
<th>Juror</th>
<th>Time</th>
<th>Quotes</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julian</td>
<td>0:00</td>
<td>Deliberations are about to begin, jurors asked to state overall opinions</td>
<td></td>
</tr>
<tr>
<td>Julian</td>
<td>0:20</td>
<td>A lot of companies do this kind of thing... no idea the extent of damage [their products] can cause to a person</td>
<td>Julian starts with his anti-corporation bias</td>
</tr>
<tr>
<td>Julian</td>
<td>0:25</td>
<td>They pretty much neglect their responsibility of letting somebody know exactly what procedures they need to take in order to avoid further damage [to a person].</td>
<td>Bias drives his assumption of failure to warn.</td>
</tr>
<tr>
<td>Julian</td>
<td>0:45</td>
<td>There is no evidence to prove either case....</td>
<td>It's fascinating that he admits that there is no way to actually decide the case, but then he proceeds to state such strong conclusions. This clearly demonstrates the powerful influence of his anti-corporate bias.</td>
</tr>
<tr>
<td>Julian</td>
<td>0:55</td>
<td>It's probably just the company neglecting their responsibilities.</td>
<td>States his bias in a conclusory form, which is typical of feeling types.</td>
</tr>
<tr>
<td>Julian</td>
<td>1:00</td>
<td>I doubt that this guy is ... just not wearing his mask knowing that he's breathing in paint, like that's just common sense.</td>
<td>Julian uses his strong bias against companies to decide a contested fact, i.e., whether Mr. Smith wore his respirator at all times.</td>
</tr>
<tr>
<td>Julian</td>
<td>1:10</td>
<td>So I doubt if it's any of [Mr. Smith's] neglect.</td>
<td>Before deliberations he assumes that Plaintiff is not at all at fault in causing his injury.</td>
</tr>
<tr>
<td>James</td>
<td>1:20</td>
<td>What do you conclude... who would be at fault?</td>
<td>Jurors usually start with this, their innate sense of justice, when deciding who should win. And that is, who is at fault here? They do not use a legal framework when forming initial impressions. And then they will selectively attend to facts that support this gut response -- of what is a fair outcome -- when answering specific questions on the verdict form.2</td>
</tr>
<tr>
<td>Julian</td>
<td>1:40</td>
<td>The only possibilities I see is basically if either the manufacturing company completely neglected putting out letting the aircraft company or any other individuals know exactly what kind of damage could be causes they say that “Oh, it never caused any kidney stuff” but evidently other people have found different and so they've hired on a physician of their own who's not really a physician of their own.</td>
<td>Jurors often have multiple stories from which they base their decision. Julian describes the two stories he has formed. First he expands on his preferred story, that the manufacturer is at fault, by dismissing the defense medical doctor as a hired gun.</td>
</tr>
</tbody>
</table>

2 The judge should pre-instruct jurors on the law at the start of trial to encourage jurors to use legal standards in deciding cases and attorneys should provide guideposts of how a party should have acted early in trial, such as industry standards or advertising claims, to help jurors decide who should win. This is especially important in toxic torts, where jurors typically have no prior sense of the law or how justice should be dispensed. Most people’s innate sense of fairness in these cases is much more defense-oriented than California law.
| Julian  | 2:00 | The other possibility is that the aircraft company didn’t really assume the responsibility that they should have... they are supposed to buy [Mr. Smith] the protection that he needs... they might have just been like “oh, I don’t want to spend that much money on this.” It’s always just a matter of how much money you want to spend.  
Almost every juror considers employer fault, simply because they can easily relate to the employer (through their own work experiences) and they expect workplaces to be safe. |
| Julian  | 2:20 | I don’t want to put this and this on the label because it lowers the chances that somebody actually buying it, like this aircraft company it’s going to be a long standing business relationship. A lot of money stands to be made, so they obviously neglect their [manufacturer’s] responsibilities....  
Julian is going back to blaming the manufacturer as he’s describing his alternate story, the possibility that the employer (aircraft company) is at fault. He strongly prefers to blame the defendants. He also speculates about a conspiracy between the employer and the manufacturer. He feels powerless against corporations and assumes they have control over people’s heath. |

It would be easy for the defense to spot Julian, based on his answers to the questionnaire. He thinks chemicals are “dangerous,” which predisposes him to assume causation. He also identifies with fathers and is a “feeling” type of person who is strongly influenced by his values; whereas “thinkers” make impersonal decisions based on rational, conscious analysis.³

Interestingly, halfway through the questions in the research project, Julian’s handwriting dramatically changed, from block print to very round cursive. It happened after he was asked “Please summarize the plaintiff’s position in your own words, as you understand it.” He answered from the perspective of Mr. Smith, as a father. He strongly connected with the father.

One of the most predictive indicators of verdict is whether a juror extraverts or introverts their feeling function and how strongly do that compared to their thinking function (conscious reasoning). About 25% of Americans make decisions similarly to Julian, i.e., they introvert their feeling function.

Extraverted feeling types typically place blame on those who do not follow social norms, are more likely to attribute bad outcomes to personal flaws and are less likely to consider external circumstances, whereas introverted feeling types decide things from an individual’s perspective. They will look for ways to find for the plaintiff and excuse their fault in contributing to their injury. Their personality is strongly biased for the plaintiff, but they are often not especially persuasive with the other jurors because they typically have difficulty verbalizing their values and they don’t like to argue.

³ Actually, the latest neuroscience research indicates that most decision-making occurs in the unconscious mind – even for these “thinkers.” People who rely on their thinking function will come to a different, impersonal decision because they are juggling fewer variables in their working memory to arrive at that conclusion and disregarding more of their emotional impulses. So those particular factors (that their intelligence and experience can handle) and where they direct their attention (or where it is directed) drives their decision-making. For more information, see “How We Decide,” by Jonah Lehrer and “The Psychology of Persuasion” by Kevin Hogan.
Julian’s feeling function -- his emotional instincts -- strongly influence his decisions. He filled out the rest of his forms in that feminine penmanship. To make sure Julian was actually writing those answers, I compared the literary style, punctuation (he used oddly shaped semi-colons throughout his forms) and capital letters. It was definitely still Julian’s writing. It is much easier to assess if the feeling or thinking function most drives a person by asking questions in *voir dire* and listening for confident “should” responses (value statements) and watching their body language when others express strong values and opinions.

It is important to note that emotionally expressive people are not necessarily feeling types. Almost half of all “thinking” types who impersonally decide cases are charismatic and tend to connect better with others than the feeling types who introvert that function, so they are often mistaken as feeling types. These thinking types extravert their relatively undeveloped feeling function, so they can express extremely strong, uncontrolled emotions when under stress.4

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<tr>
<td>Patrick</td>
<td>3:00</td>
<td>He’s not going to get kidney disease after one batch of defective product.</td>
<td>Jurors typically misunderstand design “defect” claims. They often assume that “defective” means there was a quality control issue in manufacturing or they are just baffled and simply reject the claim.5</td>
</tr>
<tr>
<td>Patrick</td>
<td>3:40</td>
<td>I’ve worked in a couple of factories where people have been required to wear safety equipment like goggles, masks, whatever, and they don’t.</td>
<td>Jurors typically bring in their own experiences to decided contested facts and many people have worked with PPE. And they typically do NOT wear masks all the time because they are uncomfortable and hazards that are routinely encountered seem less dangerous. Holly verbalized agreement with this statement.</td>
</tr>
<tr>
<td>Patrick</td>
<td>3:50</td>
<td>If they take it [the mask] off, they assume the risk.</td>
<td>Common defense theme and some jurors will base their decision on this fact alone because it seems fair. Paulette verbalized agreement.</td>
</tr>
<tr>
<td>Patrick</td>
<td>4:15</td>
<td>If the employer did not [make Mr. Smith read the MSDS] and there’s no proof that he read the MSDS, it’s the employer’s fault.</td>
<td>This is an extreme reaction to a very vague fact pattern, so Patrick adds his own facts to justify this gut reaction to the case. (See quote at 4:50) James verbalized agreement.</td>
</tr>
<tr>
<td>Patrick</td>
<td>4:20</td>
<td>If [Mr. Smith] did read [the MSDS] and he signed off on it and he’s still not using the respirator, his fault. That’s where more data would come into play here. At the same time I do not believe that it’s any fault of the manufacturer’s at all.</td>
<td><strong>Patrick is going through a checklist of ways he can blame Mr. Smith.</strong> The data he wants is any shred of evidence, contested or not, that can justify his preference for a defense verdict. Note that the next statement is an extraordinarily certain conclusion that it’s not the manufacturer’s fault – at all. That’s right after he thinks about and mentions the limited data. Bias</td>
</tr>
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4 For more information, see “How We Decide,” by Jonah Lehrer, “Personality Type,” by Lenore Thomson, and “The Art of SpeedReading People,” by Paul Tieger. Or go to [www.jurisense.com](http://www.jurisense.com) and view the video entitled How Jurors Decide a Toxic Tort Case.)

5 Attorneys must clearly define “defective” in terms of safer product designs. Intuitive people are better at understanding this claim, but they only account for about 30% of jurors. These are “big picture people” who tend to speak in metaphors, imagine possibilities and are bored with details.

www.JuriSense.com 6 (800) 891-6592
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<tbody>
<tr>
<td>Patrick</td>
<td>4:45</td>
<td>Everybody knows that the urinary tract is connected with the kidneys.</td>
<td>Justifying the adequacy of warnings with an (unchallenged) over-the-top assertion.</td>
</tr>
<tr>
<td>Patrick</td>
<td>4:50</td>
<td>The urinary tract, if it goes untouched, unaffected, untreated, then it will lead to kidney failure.</td>
<td>Now he’s a medical expert, creating facts to justify his decision.</td>
</tr>
<tr>
<td>Holly</td>
<td>5:50</td>
<td></td>
<td>Backs up Patrick on respirator expertise.</td>
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Patrick has an extreme view of personal responsibility, which is hard for other jurors to argue against because American culture strongly endorses personal responsibility and Patrick conveniently makes up facts to support his positions.

He shares his pseudo-expertise on cartridge respirators. Patrick’s rational analysis is very influential with the others, who often vocalized support, whereas Julian’s conclusory statements were not so persuasive. Patrick fabricates data, which he then uses to rationally argue his points – and he is persuasive.

This is more typical of thinking personality types, which is why they are so powerful in deliberations, where positions must be defended. It is not more reasonable or right than a feeling-types conclusion, but it seems so, since it seems rational. Victoria and Melissa changed their votes after Patrick first stated his opinion, but then they were persuaded back to Plaintiff’s side after Paulette and James spoke. James occasionally nodded when Patrick spoke, but he – a strong plaintiff juror – vocalized support for Patrick’s defense points.

Patrick had an extremely (inaccurate) defense skewed interpretation of the law, such that Plaintiff could not possibly have prevailed with him. It took an analytical, articulate and confident juror like James to argue with Patrick and convince the others to side with Plaintiff.

## Victoria’s General Reaction to the Case

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<tr>
<td>Victoria</td>
<td>6:30</td>
<td>There’s not enough information to actually... decide anything, but... I don’t think it’s the paint company’s problem</td>
<td>She wants documents that will support her bias.</td>
</tr>
<tr>
<td>Victoria</td>
<td>6:50</td>
<td>I think from now on they should write something about kidney disease specifically on their label, but there’s no reason to – it’s just my general opinion.</td>
<td>She clearly thinks the label is inadequate, but doesn’t think the product is “defective.” (or “funky,” as she first put it.) <strong>She is using a misunderstanding of “defective” to decide the entire case,</strong> because she doesn’t understand there are other theories of liability she must decide and she doesn’t know how to figure out who should win on her own.</td>
</tr>
<tr>
<td>Victoria</td>
<td>7:10</td>
<td>I agree with what you said about... the kidney having to do with the urinary tract stuff.</td>
<td>I think she was influenced by Patrick. She referred to him again at 7:50.</td>
</tr>
<tr>
<td>Victoria</td>
<td>7:15</td>
<td>Smith knew that it was a dangerous situation... if he cared about his own health and knew that he was working with hazardous materials.</td>
<td>Victoria is blaming Plaintiff for dying of kidney disease because the MSDS warned to use a respirator to avoid injury to the urinary tract system. This is irrational yet commonly argued by defense jurors</td>
</tr>
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</table>
Victoria is another feeling type juror who cannot articulate her decision-making. She thinks the warning was inadequate, but doesn’t think the law requires more. She is easily confused.

She was undecided before deliberations, but was probably persuaded by Patrick. She swung back and forth, but usually argued for the defense. Patrick’s arguments made sense to her. She was the only juror who seemed like she was open to changing her opinion and she asked the other jurors to explain the law and their opinions to her. She really drove the deliberations, but she also polarized the group with her frustration and combative abrasiveness. “Feeling” jurors who lack compassion are generally a bad juror for the plaintiff.

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### Melissa’s General Reaction to the Case

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<tbody>
<tr>
<td>Melissa 7</td>
<td>8:20</td>
<td>I don’t have a lot to say, just that like she said...</td>
<td>Follower. Had slight plaintiff leaning before deliberation but switched to blame Mr. Smith and follow those who just spoke, the current majority.</td>
</tr>
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Melissa demonstrates how the order in who speaks and which opinions are first stated in deliberations shapes many jurors’ initial positions. She slightly favored Plaintiff before deliberations but switched right away because two jurors before her articulated strong defense views. She did not know how to defend a plaintiff position and she did not care about the process enough to try. Many jurors behave like this at trial. She mostly followed Victoria. You can guess how an apathetic follower will decide by watching jury dynamics during *voir dire* and paying attention to who is most like them or who will reach out to them during the trial.

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### Paulette’s General Reaction to the Case

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<tr>
<td>Paulette 6</td>
<td>8:55</td>
<td>I’m always for the underdog... it’s like a David and Goliath thing</td>
<td>Admits her bias, then argues for the plaintiff. Paulette extraverts her feeling function, but she also supports the plaintiff because her internalized value system is to always support the little guy, the plaintiff.</td>
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| Paulette | 9:20 | These corporations... want to sell their product. They want to get it out there and... if a big aircraft company’s looking at five different paints, “Oh, I want the one | Everyone laughed when Paulette said this, which made it very persuasive. It excused the employer of responsibility. (see discussion below)

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6 Switched back to undecided after Paulette and James voiced plaintiff views. She needs more information than preponderance, to feel convinced.

7 She also switched to undecided after Paulette and James voiced plaintiff views.
Paulette’s sarcastic joke persuasively excuses the employer of responsibility. It points out the defendants’ control of knowledge and motivation to hide the dangers in a way that goes straight to the unconscious where threats to survival are processed. Functional magnetic resonance imaging (fMRI) scans demonstrate that this part of the brain is very powerful in influencing our decisions.8

She’s making the argument, that the employer would clearly not have bought the paint if they knew it caused kidney disease, in such a way that no one can argue with her without losing credibility. And since it’s funny, the rational prefrontal cortex doesn’t bother to critique it. Everyone likes a good laugh, so it also persuades the higher emotional brain, which influences decision-making in the unconscious. Jokes like this, ridicule with a subtext of fear, are powerfully persuasive.

Paulette also articulately argued why the warning was inadequate. Besides that, her efforts to control the deliberations were very subtle. She mostly let James handle the arguing. This is typical of feeling types. Her power and usefulness to Plaintiff is how she manages the group dynamics. As an extraverted feeler, Paulette is very influential in groups. Not only did she keep the discussion civil, she constantly sought common ground with defense jurors and validated their comments. She effectively buffered the toxic polarizing effect of Victoria, which eventually led to a plaintiff verdict. Also, she suggested that James – a strong plaintiff juror – be the foreperson. Everyone would have accepted her suggestion had Patrick not taken it.

About 25% of Americans decide via this extraverted feeling function; they tend to use social norms to decide who should win. Paulette began her statement by stating the social value that she used to decide the case – that she’s “always for the underdog... it’s like a David and Goliath thing.”9 This feeling value motivated her to parse the facts in Plaintiff’s favor.

Paulette argued for very little non-economic damages. Attorneys often think that more emotional, feeling-type jurors will award higher damages, but they only do if it fits with their values. And they will tell you in voir dire what they think of compensating people for loss of love.

### Holly’s General Reaction to the Case

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<tbody>
<tr>
<td>Holly</td>
<td>10:40</td>
<td>The only reason they’re going after the manufacturer is for the money. They go after the manufacturer because they’ve got the cash. 1.5 [million] for each kid is ridiculous.</td>
<td>Stereotypical tort reformer.10 She’s angry when she says this. Her anger would be apparent in voir dire, too. She actually thought the warnings were improper, but still supported the defense.</td>
</tr>
<tr>
<td>Holly</td>
<td>11:00</td>
<td>Paint is toxic... any paint.... It’s a risky job</td>
<td>She thinks Plaintiff assumed the risk by working</td>
</tr>
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8 see “How We Decide,” by Jonah Lehrer.
9 This is a value that she probably internalized at an early age, perhaps from an artisan parent (artisans are rebellious and tend to challenge authority). Whatever values extraverted feeling types absorb will usually not change. And they will usually openly and articulately answer voir dire questions about those values.
10 After the jury finally returned a plaintiff verdict of 2 million, she thought the effect on the community would be more lawsuits, while a defense verdict would have not adversely affected the community.
Holly is a typical tort reformer – very dangerous for the plaintiff. Her voice seethes with anger when she first states her opinions and she’ll also seethe in voir dire when you ask her about them. Her body language will also convey these strong emotions, even if she if she is a “stealth juror” who is trying to conceal her opinions.

To identify these angry tort reformers in jury selection an introverted feeling type\(^{11}\) who has studied body language should scan everyone’s emotional reactions in jury selection when jurors first hear about the preponderance standard and that Plaintiff is asking for millions of dollars.

**James’s General Reaction to the Case**

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<tr>
<td>James</td>
<td>11:45</td>
<td>The employer and the manufacturer that’s liable...</td>
<td>His spoken words are much more persuasive than his written assertions. Everyone stops when he talks.</td>
</tr>
<tr>
<td>James</td>
<td>12:05</td>
<td>[The MSDS] doesn’t get you off the hook when a person becomes ill which leads to death...</td>
<td>He’s stating his innate support for strict liability law (when death).</td>
</tr>
<tr>
<td>James</td>
<td>12:20</td>
<td>Who’s responsible?</td>
<td>This question is especially important to authoritarians, but is on all the jurors’ minds.</td>
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James makes excellent points for the plaintiff in language that other jurors understand. He clearly states the morality behind strict liability law, which plaintiff’s attorneys must do to satisfy jurors’ innate sense of fairness. For example, “[The MSDS] doesn’t get you off the hook when a person becomes ill which leads to death.” This statement was well-received by the other jurors.

Whenever James spoke, people listened. Authoritarians, like James, typically have more influence over other jurors in deliberations. Although they usually support those in power (i.e., corporations), authoritarians are punitive in nature and will argue for a high verdict when they think the defendant behaved badly.

If OSHA regulations had been introduced with testimony about low dose exposures and that regulatory agencies permit low exposures, he might have switched to the defense, as do most authoritarians in these cases where the defendant did not violate a clear standard. This is partly because authoritarians think in black and white and gravitate towards “rules” with certain boundaries.

James probably sided with the plaintiff because authoritarians believe in protecting families, especially when there are two young children and widow. Younger authoritarians\(^{12}\) without families won’t be motivated to do this; instead, they’ll identify with the large corporation that they hope to soon run.

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\(^{11}\) People whose most developed personality function is introverted feeling are innately skilled at reading others’ emotions. Training in reading body language gives them more confidence that their intuitions are correct.

\(^{12}\) Young authoritarian men tend to be very strong defense jurors.
Authoritarians are easily identified by their appearance, demeanor and answers to voir dire questions. They are respectful of the judge and dress well for court. (Note that James wore a jacket for this research project.) Authoritarians often speak in an assertive, calm voice that demands respect and they tend to have good posture. Their voir dire answers focus on responsibility, fault and they have rigid definitions of proper behavior. They severely punish rule-breakers.

Authoritarians are extraverted, analytical, detail-oriented and very structured (ESTJ per MBTI). It is possible to identify a person’s personality type (to about 60% accuracy\(^\text{13}\)) by watching them for a couple of minutes in voir dire. I’m pretty sure James is an authoritarian because he’s such a strong example of one; he’s not on the cusp, between personality types. As an ESTJ, introverted feeling is the least developed function, which means it’s entirely in his unconscious. He will not verbalize his values in deliberations and he repeatedly stated that it’s not appropriate to use your feelings when arriving at a verdict.\(^\text{14}\) Nonetheless, his deeply held values drive his decision-making, which he then consciously rationalizes during deliberations.

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<tr>
<td>Victoria</td>
<td>41:25</td>
<td>What is [the consumer expectations test] asking us? Is it asking us to be the painter?</td>
<td>Jurors are often extremely confused by the consumer expectations test, as explained below.</td>
</tr>
<tr>
<td>James</td>
<td>43:10</td>
<td>When you talk about “did the paints perform as safely as an ordinary painter would expect?” is that – when you paint a wall, will it expose you to danger?</td>
<td>Well said. I’d add that “safely” applies to future health effects, not just an immediate, physical danger.</td>
</tr>
<tr>
<td>Victoria</td>
<td>44:20</td>
<td>I don’t think that this question is asking that. I’m thinking did the paint perform as safely or I think they could’ve said as dangerously as an ordinary painter would’ve expected.</td>
<td>Victoria will rarely find for the plaintiff. She resists accepting the law because she does not think Plaintiff should win these types of cases.</td>
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20 minutes later...

JAMES: How are you guys interpreting “paint perform safely?”

PATRICK: That you put it on a brush and you paint it on. There it is.

HOLLY: That you wouldn’t die.

PAULETTE: No that’s performance. That’s not safely that’s performance.

JAMES: That’s not what that’s saying.

PATRICK: It says perform safely.

PAULETTE: But you’re saying it performed. I painted that wall that color is no longer beige…

\(^{13}\) Longer personality tests are only about 75% accurate.

\(^{14}\) He did not say this in the clips presented here, but several times during the 2.5 hour deliberation.

\(^{15}\) Jurors debated the legal meaning of the consumer expectations test for half an hour.
JAMES: What this is saying is when you paint your walls in your house -- do you expect from that point to be exposed to something that would do harm to you? This is what safely is talking about. It's not him on a brush or with a roller painting that's going on safely -- that's not what the question is.

VICTORIA: I agree with you, but the way it affected Smith -- it's not per se... we don't know anything about the rest of his coworkers. And he might have died but I don't think that people would go into work expecting to die. Of course not, but like... did the paints perform safely? Like are we asking because he died theoretically from it or because his neighbor didn't?

Patrick is still interpreting the question from an impersonal focus on performance. When Victoria mentions “coworkers” and “neighbor” she is mentally calculating a probability of risk here, and deciding that it is expected. The risk is acceptable because it is not too high, in her opinion, because not many others died. Many jurors insert their own measure of acceptable risk into the consumer expectations test, which makes it a very subjective question and leads to much angry debate. She also resists answering for the plaintiff on this question\textsuperscript{16} because, overall, she favors the defense and doesn’t yet understand that she can reduce the damages award by the percent fault of the employer and Mr. Smith.

\textit{“Did the product perform as safely as an ordinary user would have expected?”}

Jurors have a difficult time understanding this question so they bring every issue that concerns them into the discussion and they consider numerous other (irrelevant) factors when trying to answer this question. As explained in the preceding comment, many jurors misunderstand the test to mean “what level of risk is acceptable to you?”

Some defense jurors misunderstand this part of the consumer expectations test to mean “Did the product perform as expected, or as it should?” They think of it in terms of functionality instead of safety. Patrick said “it stuck to the aircraft. It did what it was supposed to do.” He viewed the question from the frame of the product, instead of the user.

This is because the first subject in the sentence is “paint,” followed immediately by the verb “perform.” This focuses the brain on the product’s performance, which is not the actual question.

The key word is SAFELY, modified by the second subject and verb, “painter” and “expected.” Impersonal, “thinking” personality types (versus “feeling,” value-based decision-makers) still think of safety as immediate physical safety concerns, which modify “paints perform.” People are limited by the capacity of their working memory, so they can only juggle a few ideas at once. Less intelligent “thinkers’ have a hard time understanding this question.\textsuperscript{17} This short sentence is quite complex and difficult to comprehend, with the second subject and verb broken up with confusing fragments.

Jurors in our mock trial research projects often spend half of their time trying to answer this first question, even when the facts support a clear “no” answer. They do not understand the question so they pull every issue into it, which frustrates them. Lawyers think it’s the easy question, but it actually drains jurors’ energy and commitment to get through the rest of the verdict form. You hear statements like “we’ll be here all

\textsuperscript{16} She actually said this during the deliberations.

\textsuperscript{17} Our society is biased, assuming that rational thought can accurately analyze complex questions like this. It actually doesn’t work that well for these types of complex problems because rational thought is limited by a person’s working memory. Detail-oriented “sensing” personality types have a harder time understanding this question than “intuitive” types, who are able to see the pattern in the question and understand the intent.
year.” After a while of struggling with this question, jurors often notice that if they just answer for the defense they could go home.

Plaintiff’s attorneys must explain that the question is asking “How would you expect it to affect the user?” This gets at expected health effects. The key word is SAFELY, not functionality. Plaintiff’s jurors often say they don’t expect the product to kill people who use it. They perceive this question through a different frame than defense jurors. It’s personal, as the law intended.

Attorneys must clearly explain this to the jurors, that the question looks deceptively simple. It was meant to be simple and the words are simple but the sentence structure is complex. The question is not asking about the product’s functionality, but safety. And not just the immediate, physical safety concerns when people use the product. The law protects us from long term toxic effects. It’s about protecting people’s health and safety. Also, this frame encourages a plaintiff verdict by activating personal, value-based decision-making by using emotional words like safety, protect, responsibility, caring, freedom, cooperation, community, clean, security, prosperity, opportunity and other values.18

Feeling types look for the personal aspect to the question, so they find the confusing second part to the question. This is one reason why feeling personality types are oftentimes plaintiff jurors. You can identify these jurors in voir dire by listening for words like should, that express values. These people sometimes appear more emotional, but this is not the most accurate way to identify these jurors.19

There is much more to learn from this insightful group, who deliberated for 2.5 hours. I was only able to include 10 minutes of clips for my 30-minute talk. To download the entire videotaped deliberations, visit www.jurisense.com/CLE.htm. You can download a sample video clip for free and you can order a more thorough explanation of the deliberations and how jurors decide cases. JuriSense also offers a 1.5 credit MCLE video on jury selection and will soon add instructional videos on how to read body language and identify feeling personality types.

In November 2009, JuriSense will offer a one-day mock trial workshop on a Yamaha Rhino ATV rollover design defect case in Anaheim, California. This 8 credit MCLE will feature a live jury, whose moment-to-moment reactions to the trial will be projected for the attendees to view in real time. The jurors will deliberate via closed circuit TV. Attorneys can speak with jurors at the networking cocktail reception. Presenters will receive individual help from Tammy and an early copy of the course book, which explains case themes, communication strategies and tips for each segment of the mock trial. Register early at www.jurisense.com/CLE.htm if you want to participate. It will be a fun, educational event.

I would appreciate hearing your thoughts on this paper and any suggestions you may have. My email address is tammy@jurisense.com.

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18 See Moral Politics: How Liberals and Conservatives Think, by George Lakoff and How We Decide, by Jonah Lehrer. How We Decide (2009) is an engaging summary of the current research in neuroscience and behavioral economics. I highly recommend this book for anyone who wants to understand human decision-making.

19 Many “thinking” types extravert their feeling function, so they appear to be “feeling” types since they are charismatic and connect well with others; however, they make impersonal decisions and tend to favor the defense.
Dissection of a Defense Verdict in a Benzene Lymphoma Trial
Tammy R. Metzger, J.D., M.A.

The benzene lymphoma conference jurors wanted Plaintiff, Edgar Williams, to win, they believed the solvents caused his cancer, that the defendants knew it could, and that the label should have included more information. Although they did not think the products were “defective,” 8 of the jurors voted that there was a defect for failure to warn. They also answered “yes” to the design defect questions for all three products – including the substantial factor tests for causation – “because we have common sense.” But they suddenly changed their interpretation of “substantial factor” the fourth time they were asked about it on the verdict form, without directly discussing it with each other in deliberations.

The foreperson, Damen, successfully argued to the other jurors that the solvents were not a substantial factor in causing Plaintiff’s cancer because the employer was mostly at fault. In the debriefing, 8 of the 12 jurors said they would award nothing to the plaintiff.

This is a plaintiff’s nightmare! What happened? You can answer this question by counting how many times the jurors said “guilty,” “OSHA,” “employer,” “millions,” “Edgar,” “gloves” and “ventilation” during their deliberations.

The jurors focused on the employer and the plaintiff, perceiving them as having the most control over the outcome. We are conditioned to believe that the main character of a story determines the outcome. When attorneys focused the jurors’ attention on the defendants’ actions the plaintiff’s ratings improved. After the conference, jurors were asked what they thought the case was about. Defense jurors spoke of the employer and the plaintiff while plaintiff’s jurors discussed the defendants.

1 Harris Martin 2008 Trial of a Benzene Case Conference, NYC, post-conference analysis.
2 Based on Perception Analyzer data and deliberation comments.
3 Based on post-conference interviews and how jurors answered questions 9 and 10 on the verdict form.
4 Damen, the foreperson, said this on page 25 line 16 of the deliberation transcript.
5 The deliberations powerfully demonstrate the critical concepts which I explain in my 10 Tips for Trial Attorneys and Plaintiff’s Jury Selection in a Benzene Leukemia Case conference papers, which can be downloaded at www.JuriSense.com.
Fact Pattern Summary

Plaintiff, Edgar Williams, worked as a printing press cleaner for the Los Angeles News for 35 years until he was diagnosed with large B-cell lymphoma (NHL) in 2006. To clean the press, Edgar used a bucket, rags and about 125 gallons of solvent per week. There was never a cancer hazard warning on the 55-gallon drum labels nor the MSDSs. Occasionally Plaintiff experienced chapped hands, nausea and dizziness but he did not inform his employer. The L.A. News never provided Plaintiff gloves or respirators to use while working.

Plaintiff sued the solvent manufacturers, Chestron and Solv-Central in strict liability, for design defect and warning defect, claiming that their solvents were defective because they were contaminated with benzene that caused his NHL and that the drum labels and MSDSs were defective because they did not warn of the cancer hazard. Defendants contend their solvents are safe because they at all times complied with OSHA regulations, the benzene content was minimal and that benzene exposure does not cause NHL.

Plaintiff does not allege negligence and his strict liability claims are not based on negligence or failure to follow OSHA regulations. Under California law, to establish these claims Plaintiff must prove that Defendants' products were a substantial factor in causing harm; i.e., more than a remote or trivial factor in causing the harm. To establish the warning defect claim, Plaintiff must also show that Defendants had knowledge of the risk of lymphoma or that the risk was scientifically knowable. To establish the design defect claim, Plaintiff must only establish causation and the burden is on the defendants to show that the benefits of their product outweighed the risks.

After the conference, we asked jurors “If asked to describe in a few sentences what this case was about, what would you say?” Damen said I thought the case was personally about a guy trying to get money from a company for a mishap that happened at his job involving their chemicals. Other defense jurors also first spoke of the plaintiff or the employer. Karl, a more plaintiff-oriented juror said this was a case involving negligence of all three parties being the chemical manufacturer, the employer LA News, and Mr. Williams.

There would have been a different outcome if Damen and Ivy were stricken from the jury. Damen controlled the deliberations and focused the discussions on employer fault, while Ivy stressed personal responsibility and shouted at jurors who supported the plaintiff. In a real trial we would strike these 2 jurors, resulting in a very different outcome. Based on her answers to the jury questionnaire, I rated Ivy a “D-” on a scale from “A” to “F.” I considered her to be the most dangerous juror for the plaintiff because of her strong defense views towards lawsuits and her harsh tone regarding mental anguish. I predicted that she would aggressively argue with others and add tension to the deliberations, which hurts plaintiffs, who need consensus.

Figure 1. Clockwise, from left: Traci (#15); Oscar (#13); Trina (#12); Gladys (#11); Diana (#2); Ivy (#8) is at the head of the table; Karl (#3); Robert (#10); Ajin a.k.a. Alex (#4); Donnell (#1); Michael (#16); and Damen (#14, the foreperson), is gesturing to Ivy while talking.
I rated Damen a “D” because he is a defense-oriented authoritarian and probably a charismatic leader. In fact, he strongly sided with the defense before opening statements began. When Damen was selected foreperson and Ivy sat at the head of the table, it became almost certain that there would be a defense verdict, even though every other juror (except Traci, who had no influence) said they favored the plaintiff at the end of closings. This is because people instinctively give more authority to whoever is sitting there. In fact, jurors who sit at the head of the table are more likely to be selected foreperson. Although Damen was the foreperson, he often directed his comments specifically to Ivy, who also controlled much of the deliberations.

The defense won because no one knew how to argue against Damen on employer fault. When asked how they felt about the case, jurors easily talked about gloves and ventilation, which support the defense themes, but only Ajin argued the more complicated point that the defendants had knowledge and control of their product (e.g., they knew that benzene causes cancer and was in the solvents). His comments did not persuade the others because it is difficult to understand and the attorneys did not stress this point during trial.

Going into deliberations, jurors assigned 59% of fault to Defendants and only 37% to the employer. After deliberations, average juror-attributed-fault flipped, with 54% fault attributed to the employer and 32% to the defendants collectively. Plaintiffs must arm favorable jurors to respond to this defense theme of employer fault, which will be an issue in every trial where the exposure occurred at work, because Americans expect employers to provide a safe workplace for their employees. For more on this, email tammy@jurisense.com to request a copy of Teaching Points for Plaintiffs.

![Graph](image)

Figure 2. “X” marks the spot where Plaintiff lost the case. Average juror attributed fault, which does not quite add up to 100% (98%, 96%, 109% and 101%, respectively) but the data still reflect jurors’ attitudes.

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6 And as I said in my lunch talk during the conference, it was obvious in voir dire that Damen was already successfully maneuvering to lead the jury.

7 Jurors were repeatedly asked: At this point, are you leaning toward favoring one side or the other? 0 = Defense 100 = Plaintiff. At the end of voir dire Damen dialed in “38.” Halfway through the trial, Damen began dialing in “0.”

8 Also, people who choose to sit in this chair are often leaders.

9 See the conference paper 10 Tips for Trial Attorneys, which can also be downloaded at www.JuriSense.com.
Authoritarians, who comprise 10% of our population, are often leaders and typically decide quickly for the defense in low dose cases. Authoritarians tend to see things in black and white and are uncomfortable with complicated shades of gray, so they will not find a defendant liable unless a law or moral standard was clearly violated. These jurors have difficulty finding for the plaintiff when the law does not provide a clear boundary, but uses words like “defect,” “generally known or knowable” and “reasonable user.”

Authoritarians also have difficulty understanding degrees of risk. Damen did not distinguish the difference between warning how to protect against chapped hands versus protecting against cancer. In his mind, the employer should have provided gloves and adequate ventilation, as directed by the label. Once the employer PMK testified to these facts, Damen made up his mind.

Figure 3 (next page) shows jurors’ responses to the question: At this point, are you leaning toward favoring one side or the other? 0 = Defense 100 = Plaintiff. Damen’s responses plunged to “0,” completely favoring the defense, and he maintained this extreme position, blaming the employer, throughout the rest of the trial. He was not impressed with the causation testimony because to him, this case was all about fault.

![Figure 3. Average juror responses to the question: At this point, are you leaning toward favoring one side or the other? 0 = Defense 100 = Plaintiff. Damen, an authoritarian, quickly sided with the defense after hearing the employer PMK testimony. I subjectively calculated ratings after closings based on jurors’ votes in deliberations and final verdicts.](image)

Jurors were absolutely confused about what issues they were to decide, the law and the verdict form. In closing, jurors were shown the verdict form and instructed on how to answer the questions. Yet when jurors began deliberations, their first question was [what] are we deciding? They did not understand the big picture;

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10 The employer did not provide Plaintiff with gloves and the windows were closed. The label said “Use only in well ventilated area. Avoid prolonged or repeated breathing of vapor or contact with skin or eyes.” The MSDS said “contact with the skin causes irritation.” Email tammy@jursense.com to request a copy of the fact pattern.

11 Gladys probably inverted her answers to this question the first 4 times because she answered exactly the opposite to similar questions asked at the same time. Donnell probably made this same mistake after opening statements, so I removed their answers from the average. All other data in this graph are consistent.

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i.e., the issues they were supposed to debate. Instead of reading through the verdict form again to answer this basic question, jurors simply asked each other and when Damen answered (incorrectly), no one challenged him. Furthermore, they later interpreted the verdict form questions through his incorrect lens of employer fault, completely misunderstanding the legal meaning of questions. They also never debated causation, which was the focus of most of the trial.

When Traci asked someone to read the first question, Michael, a bright, attentive juror, read the strict liability essential factual elements from the jury instructions. He apparently thought it was a multiple choice test, where either “a” or “b” was the correct answer.

Michael: Edgar Williams claims that he was harmed by a product manufactured by Chextron that: (a) was defectively designed; or (b) did not include sufficient warning of potential [sic] hazards. I’d say b. The other jurors quickly corrected him, pointing out they should go through the verdict form. However, they misread and misunderstood those questions too, usually benefiting the defense.

This confusion hurts plaintiffs in toxic tort cases because the law supports their cases more than jurors expect. In deliberations, Damen said the substantial factor to Edgar Williams’ injuries is not the product; it’s the fact that his company did not regulate how he used the product. The jurors were not debating elements in the jury instruction regarding failure to warn, which they had already answered for the plaintiff. The jurors thought substantial factor referred to fault, rather than causation. Authoritarians like Damen often make this mistake because they are naturally focused on finding fault and punishing accordingly. But no one corrected him. When asked to define substantial factor in the debriefing, jurors said it was a major factor, over 50%, just tipping the scale, so they also confused it with the preponderance of the evidence standard.

Damen, who was formerly the foreperson in a criminal case, said guilty instead of liable 8 times before someone (unsuccessfully) tried to clarify their task. He even said not guilty during the debriefing because he never understood the distinction. Although the other jurors did not use this term, many see a verdict in the millions as punishment, which requires more evidence and/or criminal conduct. As discussed in my conference paper, jurors consider beyond a reasonable doubt and preponderance of the evidence to be nearly identical standards. Although jurors wanted to compensate the plaintiff, they did not want to punish the defendants.

Jurors assume the defendants technically followed all laws if the employer was within OSHA standards. This makes no sense to people with legal training, but it is how jurors often view these cases. Jurors are confused about the role of OSHA regulations and make a myriad of assumptions which are difficult for attorneys to anticipate and counter. Jurors think OSHA regulates solvents, specifying, reviewing and approving

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12 Ivy: Are we deciding whether Chextron and the other company knew that that was — that the benzene was in there, that it could actually cause it or are we just saying that this is the reason he got cancer? Damen: ... ultimately we’re deciding did their product give this guy non-lymphoma [sic] cancer? Ivy: Okay. Not that they were knowledgeable about it? Damen: No.
13 Page 3 line 27. This also happens in our focus group research, so it’s likely deliberating jurors make this same mistake.
14 Page 25 lines 18-19 of the transcript.
15 Deliberation video at 1:06:30, several jurors said “over 50” (percent).
16 A[in, a.k.a. Alex, finally responded: We’re saying the product is defective (page 34 line 28).
17 Jurors answered “7” when asked: At this point, how strong is your desire or feeling that the Plaintiff should be compensated in this case? 0 = Very Weak 10 = Very Strong. They answered “4” when asked: At this point, how strongly or weakly do you feel that the defendants should be punished? 0 = Very Weak 10 = Very Strong.

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particular labels and MSDSs; however, OSHA does not do any of this.\textsuperscript{19} Even if you explain the limited scope of OSHA vis-à-vis other laws, jurors have difficulty grasping that level of complexity. Although jurors are very good fact finders, they consistently misunderstand and oversimplify the law.\textsuperscript{20}

Damen repeatedly asserted that since the defendants followed OSHA regulations, they had not technically broken any laws and cannot be "guilty." He also argued that OSHA "approved" the labels. Again, no one questioned this mistaken assertion; in fact, many jurors repeated this statement. This also happens frequently in our research deliberations; jurors say that manufacturers only have to follow OSHA regulations.

Many jurors trust OSHA to protect them because they are familiar with this agency through their workplaces and have been aware of these laws throughout their working lives. Since it is most accessible in their minds, they refer to it first when trying to understand the law. This makes OSHA regulations seem more credible than other laws, especially since the wording is specific to workplaces, with clear numeric standards. Thus, it is more persuasive than the subjective products liability laws. Many jurors, authoritarians in particular, are most comfortable with clear boundaries of legal and illegal actions, and are frustrated by the complexity of products liability laws. OSHA regulations provide an easy standard on which to base their decision.\textsuperscript{21}

OSHA regulations basically negate or supersede other laws in jurors' minds and it is difficult for attorneys to overcome this bias. An example of the jurors' blind faith in OSHA:\textsuperscript{22}

\begin{tabular}{|l|}
\hline
IVY: & There's a difference between what's morally correct right now and what's legally. He's saying what's on this stuff [label] right now, and that's legally.  \\
DAMEN: & And that's what I was --  \\
UNKNOWN: & Legally, no.  \\
DAMEN: & And they were under legal guidelines, so --  \\
DIANA: & So it would have been nice if they did, but they didn't have to [warn of cancer].  \\
DAMEN: & We would love to know if your product is going to kill us. But if you don't have to tell us, I don't expect you to tell us. And so --  \\
GLADYS: & Next question.  \\
\hline
\end{tabular}

\textsuperscript{18} Damen said "NIOSH, the people who would shut you down if you don't warn for something harmful, always approved this company [chemical manufacturer]." (page 9 lines 8-9). Damen also said "And you -- the biggest point to me is -- the fact is, you're going to have to use solvents sometime in life. OSHA and these people guideline what you need to put on there [the label] and how to use it." (page 11 lines 13-15.) Michael said "The plaintiff's [sic] argument, the lawyer made a good point that we should consider it [solvent] was safe. It was within [OSHA's] guidelines." (page 15 lines 15-16.) Diana said "They're covered legally, and OSHA approved on what they were putting out." (page 31 lines 1-2). \textbf{No one disagreed with these or any of Damen's numerous assertions that OSHA ensures the safety of Defendants' solvents.} After the conference, jurors were asked: \textit{What did you think generally about the defense case? Strongest and weakest facts/arguments?} Robert answered I think that the fact that it made its product to meet or better OSHA's guidelines and stated the need for protective clothing on the barrel cleared them of liability. Michael answered similarly: the strongest argument from the defendants was that they followed all safety guidelines put in place by OSHA. They really did not need to defend the affects of benzene. Their weakest argument was their stance on not having to put a sign on their chemicals.  

\textsuperscript{19} OSHA mostly governs the workplace exposure limits to protect most employees, and does not guarantee that every worker will be safe if the employer follows the regulations.  

\textsuperscript{20} Jurors do not learn to think like a lawyer simply by watching a trial or reading through the verdict form.  

\textsuperscript{21} The facts in these toxic tort cases are confusing enough; the law shouldn't be. Attorneys shouldn't be burdened with convincing jurors that products liability laws should be applied. It is already the law.  

\textsuperscript{22} Page 24, lines 13 to 22.
And these New York City jurors actually moved on with this interpretation of the law. In fact, many jurors nodded in agreement, even though they all had copies of the verdict form and jury instructions, which had been explained in closing arguments. The OSHA bias induces an extraordinary miscarriage of justice.

The defense attorneys empowered the jurors to return a defense verdict. Ted Ray\textsuperscript{23} gave a phenomenal closing. With a conversational demeanor, he connected with the jurors so personably that one juror actually answered him back.\textsuperscript{24} Once he gained the jurors’ trust, Ted said we have a legitimate disagreement and we turn to you to make a decision. This unspoken respect is more effective than telling jurors what to do, which people naturally resist. When he said it seems simple, but jury service isn’t simple, that sometimes making the right decision can feel like the wrong one, he empowered the jury to decide for the defense -- while feeling good about it.

Ted did not rehash the evidence, which some jurors resent. Instead, he repeatedly asked what is the product?, thereby reframing jurors’ focus to a single product -- away from benzene, the labels, a lengthy exposure period and the legal issues. Ted emphasized the distinction between benzene and mineral spirits, saying NIOSH and other agencies agree mineral spirits “don’t cause cancer.”\textsuperscript{25} He also persuasively explained that there is just a small amount of benzene in mineral spirits and that “this room contains benzene.” This makes jurors want to believe that the small amount of benzene in mineral spirits is safe because they feel they are exposed to a similar amount. It would have been interesting to watch these jurors debate causation, but they assumed it without discussion (I will discuss this in the next section).

Another memorable defense presentation was Ricky Raven’s\textsuperscript{26} voir dire. He helped establish Damen as the foreperson in the other jurors’ minds by following up on Damen’s quote see one, do one, teach one, his philosophy on how employees best learn safety in the workplace. (This also focused attention on employer fault at the onset of trial.) On its own, Damen’s statement was not especially powerful, but it became more authoritative when Ricky, who has a commanding courtroom presence, referred to it. In effect, Ricky transferred some of his power and credibility to Damen.

This was a non-Hodgkin’s lymphoma case and causation should have been an issue. Why did the jurors assume causation? (This is a defendant’s nightmare! What happened?) Dr. Melvyn Kopstein,\textsuperscript{28} a chemical engineer, convinced jurors that Plaintiff was exposed to benzene in the solvents and Bernard Goldstein, M.D.,\textsuperscript{29} a medical toxicologist, convinced them that it caused Plaintiff’s cancer.

\textsuperscript{23} Theodore P. Ray, ExxonMobil Corp., Irving, Texas.
\textsuperscript{24} Ted told me that this also happened to him during an actual trial.
\textsuperscript{25} Technically, this is just argument and couldn’t be a fact in evidence because scientists will not actually say that mineral spirits are safe or don’t cause cancer because these mixtures have not been sufficiently studied to reasonably draw that conclusion. In fact, the closest the International Agency for Research on Cancer (IARC) gets to labeling a chemical safe is probably not carcinogenic to humans; mineral spirits is not in that category (only 1 chemical, caprolactam, is in Group 4). IARC Monographs on the Evaluation of Carcinogenic Risks to Humans volume 47 (1989) concludes that “petroleum solvents [including mineral spirits] are not classifiable as to their carcinogenicity in humans (Group 3).”
\textsuperscript{28} Ricky A. Raven, Thompson & Knight, LLP, Houston.
\textsuperscript{29} Jurors did not specifically say this, but implied this assumption when they blamed Plaintiff for causing his own cancer by not wearing gloves. Also, they answered “yes” to question 2, Was Chemtron Solvent 250’s design a substantial factor in causing harm to Edgar Williams?, as well as “yes” to questions 4 and 7, similar substantial factor questions for the other solvents. Only Michael questioned causation, after deliberations, during the debriefing. He said “there was no decisive studies and no solid proof that, you know, that benzene caused this man’s lymphoma.” (page 39 lines 16-17).
As I discussed in my conference paper, jurors start making up their minds who to believe after the defense completes its first cross-examination of a key witness, who testifies to a major issue. After the first expert witness testified, jurors found the plaintiff’s case more convincing. Figure 4 shows that the plaintiff’s ratings briefly dipped after the employer PMK testified. This is because the employer did not provide the gloves and the witness was neither apologetic nor sympathetic.

The actor portrayed a truly unlikeable witness and jurors’ moment-to-moment ratings fell to 35, against the plaintiff. The jurors went back to favoring the plaintiff once the trial focused more on Defendants’ actions and less on the employer’s.

**Figure 4 also illustrates the importance of sequencing.** Just as opening statements should begin with a story of what the opposing side did to cause the bad outcome, so should the first witness. Plaintiff wins when jurors think the case is about the defendants and their choices; i.e., that they had control over the outcome. Since the plaintiff testified first, jurors focused on what he did wrong. If evidence had been presented that foreshadowed Plaintiff’s cancer — if jurors visualized an impending, unavoidable disaster — before the plaintiff testified, they would have blamed the defendants more.

It is a common mistake to use an emotional appeal too soon. Jurors reacted negatively when Paul Sizemore did this early in opening. Today’s jurors are cynical after decades of tort reform rhetoric. It is also not a strong beginning because the story is being framed around the plaintiff, not the defendants. So even though jurors’ moment-to-moment ratings of Paul’s opening were very high, the story had been framed around the plaintiff. Refer to Teaching Points for Plaintiffs for more information on sequencing.

Jurors believed Dr. Goldstein because he is a likeable, credible, prepared witness. When he confidently said “most definitely benzene can cause non-Hodgkin’s lymphoma,” Plaintiff’s moment-to-moment ratings went from 70 to 78, the highest during the entire conference for any presentation.

**Nearly all the jurors accepted Dr. Goldstein’s explanation of causation.** Tom Schwartz did his direct examination, an exemplary demonstration of how to prove to jurors that benzene causes non-Hodgkin’s lymphoma. Jurors were so impressed with Dr. Goldstein’s testimony that I made a note to myself that when

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28 Melvin Kopstein, Ph.D., Rockville, MD.
29 Bernard D. Goldstein, M.D., professor of environmental and occupational health at the University of Pittsburgh Graduate School of Public Health.
30 Paul Sizemore, Girardi & Keese, Los Angeles.
31 Tom Schwartz, Hollaran, White & Schwartz, St. Louis.

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ratings dropped, it was not necessarily because something helped the defense, but simply that jurors had to lower their rating in order to dial up when another point impressed them.

**Dr. Goldstein and Tom had a nice rapport and they interacted seamlessly, back and forth.** The exchange was fast-paced, yet it was easy to follow because Tom asked questions in plain English and Dr. Goldstein answered clearly. Tom’s questions flowed naturally and were sequenced in a way jurors would probably ask, if they could. Sometimes Tom challenged Dr. Goldstein and used a skeptical tone of voice, asking a tougher question that jurors might also be wondering about. He never let Dr. Goldstein talk for more than a couple of minutes, which helped maintain everyone’s interest. Tom stood by the jurors so Dr. Goldstein could easily look at them when he answered. Their interaction engaged the jurors during the entire direct examination. It was dramatic, believable, understandable and memorable.

Plaintiff’s ratings went up when Dr. Goldstein said that he would testify about causation, specifically, that benzene caused Plaintiff’s non-Hodgkin’s lymphoma. Jurors appreciate a quick overview of what to expect and how it fits into decisions they must make. It is much easier to retain knowledge when it is related to other information and its importance is clear. Jurors are often overwhelmed and frustrated by the evidence presented at trial, so they give up trying to understand it all. Attorneys can keep jurors interested in their case by explaining how the testimony will help jurors answer questions on the verdict form.

**Ratings markedly improved when Dr. Goldstein explained the healthy worker effect** and how leukemias and lymphomas are all related to each other. He masterfully introduced complicated testimony in simple terms, went persuasively and confidently into his technical explanation (which most jurors did not understand), then told them in plain English what he just said. After he explained the Steinmaus meta-analysis, he said to be brief (cues jurors to listen carefully), then he succinctly restated his points. Ratings increased dramatically from 63 to 74. Jurors may believe an expert is credible, but they will not know what to believe if it is not stated simply.

**Dr. Goldstein maintained his credibility on cross because he never appeared angry, defensive, flustered or arrogant.** He calmly yet firmly stood his ground without dodging questions. It was difficult for the defense to effectively attack him because Tom and Dr. Goldstein had established such a good rapport, that jurors liked the doctor and believed him.

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32 Studies done on workers, instead of the general population, underreport disease prevalence because many sick people are not working. This results in workplaces having a lower incidence of disease, so an “average” prevalence rate in a particular workplace actually indicates a higher rate of disease. Furthermore, Dr. Goldstein testified that higher exposed workers have statistically significant increased non-Hodgkin’s lymphoma rates than non-exposed workers; this conclusion is based on data in Dr. Wong’s published research, which was funded by the American Petroleum Institute and concluded that petroleum workers do not suffer an increased risk of NHL. A complete criticism of the meta-analysis by Wong and Raabe is available in a letter to the editor of the Journal of Occupational and Environmental Medicine. Goldstein, B.D. and Shalat, S., Letter to the Editor: “Non-Hodgkin’s Lymphoma and Exposure to Benzene in Petroleum Workers,” *Journal of Occupational and Environmental Medicine* 42 (12): 1133-1134 (2000). Wong’s response is also in this issue, at pp 1134-1136.
33 “Meta-analysis of benzene exposure and non-Hodgkin lymphoma: biases could mask an important association,” Steinmaus, C; Smith, A H; Jones, R M; Smith, M T, Occupational and Environmental Medicine, Volume 65(6) June 2008, pp 371-378. This article concludes “The finding of elevated relative risks in studies of both benzene exposure and refinery work provides further evidence that benzene exposure causes NHL. In addition, the finding of increased relative risks after removing studies that included unexposed or lesser exposed workers in exposed cohorts, and increased relative risk estimates after adjusting for the healthy worker effect, suggest that effects of benzene on NHL might be missed in occupational studies if these biases are not accounted for.”
The cross-examination started strong when Kyle Carpenter\textsuperscript{34} said "the single term I didn’t hear was mineral spirits, which has 1,000 times less benzene than gasoline;" ratings dropped from 50 to 43 (favoring the defense). After showing a graphic with many government logos, including IARC, NTP, OSHA, NIOSH and EPA, Kyle said "none say mineral spirits causes cancer." Defense-oriented juror ratings went from 47 to 40, but plaintiff’s jurors were not impressed, probably because they accepted Dr. Goldstein’s opinion that benzene causes NHL and they were not interested in reconsidering causation. Those who kept an open mind may simply have discounted this fact because Dr. Goldstein already discredited the research the agencies relied upon.

Ratings dropped slightly (favoring the defense) when Kyle said there were no excess lymphomas for printers, but jumped up to 55 (favoring the plaintiff) when Dr. Goldstein countered that there is a subset of printers who get lymphoma, specifically the ones who clean the presses, and that he believes Plaintiff got non-Hodgkin’s lymphoma from Defendants’ products. Dr. Goldstein’s ratings soared into the 60s several times when he argued with Kyle, saying "you’re misstating the paper" and "wait a minute" (while laughing), then he proceeded to explain how that part of the paper was also misrepresented. The cross was ineffective because the jurors had already decided that they could trust Dr. Goldstein, that benzene causes non-Hodgkin’s lymphoma, and they gave bonus points to the doctor for entertaining them.

The warning label itself probably persuaded jurors that the products caused Plaintiff’s non-Hodgkin’s lymphoma. Even though the label did not have a “cancer” or “benzene” warning, the fire symbol and “DANGER!” wording scare people on an unconscious level. As I said during my lunch talk, some jurors are self-aware enough to notice this,\textsuperscript{35} but most are not. Either way, it is persuasive. Also, the jurors did not distinguish varying levels of risk, i.e., that a warning that the product could cause skin irritation was sufficient to also warn of cancer. Jurors simply categorized the products as dangerous — and they concluded this was common sense.

This type of black and white thinking is a hallmark of the unconscious. Most people in today’s health-conscious society\textsuperscript{36} make this same subconscious judgment, that any chemical with a warning label is dangerous to their health. And knowing that a plaintiff, who worked with such a chemical for decades, got cancer makes it seem likely that the chemical caused the cancer. It is not rationally analyzed, but seems intuitively obvious.

The jurors believed that the defendants’ products caused the plaintiff’s non-Hodgkin’s lymphoma because the label proved it to their unconscious minds and Dr. Goldstein proved it to their conscious minds.

I want to thank our presenters for demonstrating their substantial talent for us all. I learned a lot and I look forward to incorporating this knowledge into our next benzene trial. I hope you enjoyed reading my reflections on the mock trial. I would appreciate hearing your thoughts on the conference, this paper and any suggestions you may have. Also, email me at tammy@jurisense.com if you would like a color copy of this paper, the follow-up paper entitled Teaching Points for Plaintiffs or other conference documents.\textsuperscript{37}

\textsuperscript{34} Kyle Carpenter, Woolf, McClane, Bright, Allen & Carpenter, Knoxville, TN.
\textsuperscript{35} Technically, it influences them on a subconscious level since it is available to their conscious minds. But it probably remains in the unconscious for most people.
\textsuperscript{36} If plaintiffs make this time distinction clear, jurors are less likely to assume the employer should have known of the danger and will place less blame on the employer for not protecting its employee. Older jurors and people who can think abstractly will have an easier time understanding this.
\textsuperscript{37} The deliberation transcript reference in this paper is slightly different from the one mailed with the DVD. We modified it to identify jurors by name and corrected some of the language.

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Does Benzene Cause or Contribute Significantly to the Risk of non-Hodgkin’s Lymphoma or Multiple Myeloma?

J Dahlgren MD
July 2009
Generic Causation Evidence

- Case Reports
- Epidemiology
- Animal Studies
- Mechanistic/Cellular Studies
BZ & Multiple Myeloma?

- Case reports
  - Torres 1970 - 2 cases & Aksoy 1984 - 4 cases

- Epidemiology
  - Biologically plausible
  - Infante – meta analysis 2006
    - Rare
    - Longer latency
    - Susceptibility differences
      - Ethnic, age, gender
Multiple Myeloma
(Cancer [Leukemia] of Plasma Cells)
Meta Analysis

- Used studies that
  - Had documented exposure
  - Combined the data from all appropriate studies
    - Statistical power
  - Explained why some studies
    - Inaccurate exposure
    - Small numbers
    - Healthy worker effect
TABLE 5. Summary of estimates of relative risk of myeloma identified in benzene cohort studies selected for inclusion in analysis by author and year of publication

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Obs</th>
<th>Exp</th>
<th>SMR</th>
<th>95% CI</th>
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<tr>
<td>DeCoufle et al.</td>
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<td>1</td>
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<td>4.35</td>
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<td>Rinsky et al.</td>
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<td>Wong</td>
<td>1987</td>
<td>2</td>
<td>0.56</td>
<td>3.57</td>
<td>(0.4–12.9)</td>
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<tr>
<td>Fu et al. (Florence)</td>
<td>1996</td>
<td>3</td>
<td>1.04</td>
<td>2.88</td>
<td>(0.6–8.4)</td>
</tr>
<tr>
<td>Yin et al. †</td>
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<td>2.50</td>
<td>0.40</td>
<td>(0.1–10.7)</td>
</tr>
<tr>
<td>Collins et al.</td>
<td>2003</td>
<td>8</td>
<td>4.20</td>
<td>1.90</td>
<td>(0.8–3.8)</td>
</tr>
<tr>
<td>Bloemen et al.</td>
<td>2004</td>
<td>3</td>
<td>4.16</td>
<td>0.72</td>
<td>(0.2–2.1)</td>
</tr>
<tr>
<td>All studies combined</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall pooled added numbers</td>
<td>22</td>
<td></td>
<td>13.67</td>
<td>1.61</td>
<td>(1.01–2.44)</td>
</tr>
<tr>
<td>Weighted (Poisson) RR*</td>
<td></td>
<td></td>
<td></td>
<td>2.13</td>
<td>(1.31–3.46)</td>
</tr>
</tbody>
</table>
Hill Considerations

- Strength of association
- Consistency
- Biological plausibility
- Dose Response
- Experiment
- Temporality
- Coherence
- Analogy
- Specificity
Benzene non-Hodgkin’s Lymphoma (NHL)

- **Case reports**
  - Bousser 1940 - 1, Aksoy 1988 11 cases

- **Epidemiology**
  - Martyn Smith – Literature Review
    - Biologically plausible

- **Animal studies**
  - Cronkite 1984, Synder 1980
non-Hodgkin’s Lymphoma (NHL)
(Cancer [Leukemia] of Lymphocytes)
## NHL Case Control Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>RR or OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bernard</td>
<td>1984</td>
<td>4.21</td>
<td>0.54 - 32.79</td>
</tr>
<tr>
<td>Dryver</td>
<td>2004</td>
<td>1.45</td>
<td>1.13 - 1.86</td>
</tr>
<tr>
<td>Fabbro-Peray</td>
<td>2001</td>
<td>2.0</td>
<td>1.1 - 3.9</td>
</tr>
<tr>
<td>Hardell</td>
<td>1981</td>
<td>4.5</td>
<td>1.9 - 11.4</td>
</tr>
<tr>
<td>Hardell</td>
<td>1994</td>
<td>28</td>
<td>1.8 - 730</td>
</tr>
<tr>
<td>Kato</td>
<td>2005</td>
<td>1.40</td>
<td>1.05 - 2.03</td>
</tr>
<tr>
<td>Miligi</td>
<td>2000</td>
<td>1.6</td>
<td>1.0 - 2.4</td>
</tr>
<tr>
<td>Ott</td>
<td>1989</td>
<td>5.2</td>
<td>NA</td>
</tr>
<tr>
<td>Persson</td>
<td>1999</td>
<td>2.6</td>
<td>1.3 - 4.7</td>
</tr>
<tr>
<td>Wilcosky</td>
<td>1984</td>
<td>5.3</td>
<td>NA</td>
</tr>
<tr>
<td>Xu</td>
<td>2003</td>
<td>2.78</td>
<td>NA</td>
</tr>
</tbody>
</table>
### NHL Petroleum Refinery

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>SMR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collinwood</td>
<td>1996</td>
<td>208</td>
<td>104 – 371</td>
</tr>
<tr>
<td>Consonni</td>
<td>1999</td>
<td>402</td>
<td>108 – 1028</td>
</tr>
<tr>
<td>Heubner</td>
<td>2004</td>
<td>242</td>
<td>116 - 445</td>
</tr>
<tr>
<td>Rabbe</td>
<td>1998</td>
<td>158</td>
<td>101 – 235</td>
</tr>
</tbody>
</table>

22 out of 26 total studies are negative using

- Healthy workers
- No exposure data/exposure misclassification
- Death records
- Small numbers
## Relative Risk of NHL
### NCI Study of Chinese BZ Workers

<table>
<thead>
<tr>
<th>Category</th>
<th>Risk Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>All BZ workers</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>&gt;25 PPM</td>
<td>4.7</td>
<td>1.2 – 18.1</td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>4.2</td>
<td>1.1 – 15.9</td>
</tr>
<tr>
<td>&lt;5 years</td>
<td>0.7</td>
<td>0.1 – 7.2</td>
</tr>
<tr>
<td>BZ in Chemical Industry</td>
<td>7.3</td>
<td>1.9 – 32.5</td>
</tr>
<tr>
<td>Rubber Industry</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Shoe Manufacturing</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>

Hayes 1997
Relative Risks of NHL & BZ

Ceiling Effect

Hayes 1997

Average Benzene Exposure
<table>
<thead>
<tr>
<th>Experiment group and treatment</th>
<th>Sex</th>
<th>No. at start</th>
<th>Corrected No.</th>
<th>Total malignant tumors</th>
<th>Animals bearing tumor</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT902 I, 500 mg</td>
<td>M</td>
<td>40</td>
<td>39</td>
<td>68</td>
<td>174.4</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>40</td>
<td>40</td>
<td>59</td>
<td>147.5</td>
</tr>
<tr>
<td></td>
<td>M and F</td>
<td>80</td>
<td>79</td>
<td>127</td>
<td>160.8</td>
</tr>
<tr>
<td>II, 50 mg</td>
<td>F</td>
<td>30</td>
<td>28</td>
<td>10</td>
<td>21.6</td>
</tr>
<tr>
<td></td>
<td>M and F</td>
<td>60</td>
<td>51</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>BT906 V, control</td>
<td>M</td>
<td>50</td>
<td>45</td>
<td>12</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>50</td>
<td>49</td>
<td>11</td>
<td>22.4</td>
</tr>
<tr>
<td></td>
<td>M and F</td>
<td>100</td>
<td>94</td>
<td>23</td>
<td>24.5</td>
</tr>
<tr>
<td>BT901 III, control</td>
<td>M</td>
<td>30</td>
<td>22</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>30</td>
<td>30</td>
<td>7</td>
<td>23.3</td>
</tr>
<tr>
<td></td>
<td>M and F</td>
<td>60</td>
<td>52</td>
<td>8</td>
<td>15.4</td>
</tr>
</tbody>
</table>

aAnimals alive at 33 and 35 wk, when the first malignant tumor was observed in experiments BT902, 906 and BT901, respectively.
bAnimals with two or more tumors are counted only once.
Maltoni on Benzene

- Potent
  - Multiple tumors per animal
- Multi-organ
  - Including lymphohematopoietic
- Low Dose
Basic Hematology

- Bone Marrow makes
  - Red Cells
  - White Cells
    - Granulocytes
    - Lymphocytes
    - Others
  - Platelets
Stem Cells

BENZENE DAMAGES HERE
Stem Cells 2

Pluripotent stem cell in bone marrow

Processed in organs of the immune system and released into blood as

- T-cell
- B-cell
- Plasma cell

Lymphoid stem cell

Myeloid stem cell

Processed and released as

- Neutrophil
- Monocyte
- Macrophage
- Eosinophil
- Basophil
- Megakaryocyte
- Platelets
Hematotoxic to Circulating stem Cells at less than 1 PPM
Identified susceptible subgroups - MPO and NQ01

Lan et al 2004
Benzene slowly released from body fat

Fig. 2. Elimination of benzene in exhaled breath of one subject after experimental and occupational exposure of about 4 hr duration.

Sherwood 1972
Genetic Susceptibility

Table S3. Effect on white blood cell (WBC) counts of the \textit{MPO} -463GG and \textit{NQO1} 465CT genotypes in combination in controls and workers exposed to benzene. *

<table>
<thead>
<tr>
<th>\textit{MPO—NQO1} genotype</th>
<th>N</th>
<th>WBC $\pm$</th>
<th>\textit{P-value}</th>
<th>\textit{P}_{\text{trend}}</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AA/AG—CC</td>
<td>37</td>
<td>6380 ± 1610</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>(AA/AG—CT) or (GG—CC)</td>
<td>96</td>
<td>6530 ± 1800</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>GG—CT</td>
<td>6</td>
<td>6200 ± 903</td>
<td>0.63</td>
<td>0.94</td>
</tr>
<tr>
<td><strong>Exposed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AA/AG—CC</td>
<td>46</td>
<td>5990 ± 1350</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>(AA/AG—CT) or (GG—CC)</td>
<td>215</td>
<td>5450 ± 1340</td>
<td>0.028</td>
<td></td>
</tr>
<tr>
<td>GG—CT</td>
<td>12</td>
<td>4690 ± 947</td>
<td>0.006</td>
<td>0.004</td>
</tr>
</tbody>
</table>

* Lan, Q. et al.
Gene/Environmental Interaction

Table S3 from Lan 2004

Lowest Observed Adverse Exposure Level (LOAEL)
<table>
<thead>
<tr>
<th>Subject category</th>
<th>Controls (140)</th>
<th>&lt;1 ppm (109)</th>
<th>1 to &lt;10 ppm (110)</th>
<th>≥10 ppm (31)</th>
<th>P for &lt;1 ppm vs. controls†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benzene exposure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene air level (ppm)</td>
<td>&lt;0.04</td>
<td>0.57 (0.24)</td>
<td>2.85 (2.11)</td>
<td>28.73 (20.74)</td>
<td></td>
</tr>
<tr>
<td>Benzene urine (µg/liter)</td>
<td>0.382 (1.24)</td>
<td>13.4 (18.3)</td>
<td>86.0 (130)</td>
<td>847 (1250)</td>
<td></td>
</tr>
<tr>
<td><strong>Peripheral blood cell counts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White blood cells (WBC)**</td>
<td>6480 (1710)</td>
<td>5540 (1220)</td>
<td>5660 (1500)</td>
<td>4770 (892)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Granulocytes</td>
<td>4110 (1410)</td>
<td>3360 (948)</td>
<td>3480 (1170)</td>
<td>2790 (750)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Lymphocytes††</td>
<td>2130 (577)</td>
<td>1960 (541)</td>
<td>1960 (533)</td>
<td>1800 (392)</td>
<td>0.018</td>
</tr>
<tr>
<td>CD4⁺—T cells</td>
<td>742 (262)</td>
<td>635 (187)</td>
<td>623 (177)</td>
<td>576 (188)</td>
<td>0.003</td>
</tr>
<tr>
<td>CD8⁺—T cells</td>
<td>553 (208)</td>
<td>543 (212)</td>
<td>564 (229)</td>
<td>549 (160)</td>
<td>0.75</td>
</tr>
<tr>
<td>CD4⁺/CD8⁺ ratio</td>
<td>1.46 (0.58)</td>
<td>1.26 (0.41)</td>
<td>1.22 (0.45)</td>
<td>1.09 (0.35)</td>
<td>0.015</td>
</tr>
<tr>
<td>B cells</td>
<td>218 (94)</td>
<td>186 (95)</td>
<td>170 (75)</td>
<td>140 (101)</td>
<td>0.003</td>
</tr>
<tr>
<td>NK cells</td>
<td>586 (318)</td>
<td>558 (299)</td>
<td>566 (271)</td>
<td>415 (188)</td>
<td>0.56</td>
</tr>
<tr>
<td>Monocytes</td>
<td>241 (92)</td>
<td>217 (97)</td>
<td>224 (93)</td>
<td>179 (74)</td>
<td>0.018</td>
</tr>
<tr>
<td>Platelets</td>
<td>230 (59.7) × 10³</td>
<td>214 (48.8) × 10³</td>
<td>200 (53.4) × 10³</td>
<td>172 (44.8) × 10³</td>
<td>0.023</td>
</tr>
<tr>
<td>Hemoglobin (g/dl)</td>
<td>14.5 (1.6)</td>
<td>14.7 (1.5)</td>
<td>14.5 (1.7)</td>
<td>13.6 (1.6)</td>
<td>0.12</td>
</tr>
</tbody>
</table>
Hematopoietic Toxicity

- WBC
- Granulocytes
- Lymphocytes

Exposure:
- Controls
- <1PPM
- 1 to 10PPM
- >10PPM
B lymphocytes

Exposure

Controls  <1 PPM  1 to 10 PPM  >10 PPM

Count

0  50  100  150  200  250
More Toxic Metabolites at doses under 1 PPM

Figure 20. Excretion of urinary metabolites S-PMA and \textit{t,t}-MA per 1 ppm benzene in all exposed subjects ($n = 130$) grouped according to current-day benzene exposure levels.
## Low Dose Chromosomal Aberrations

*Qu 2003*  
*NON smokers*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unexposed</th>
<th>Exposed &lt; 0.5 PPM* (prior 4 weeks)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromatid Aberrations</td>
<td>1.28</td>
<td>2.19</td>
<td>0.01</td>
</tr>
<tr>
<td>Chromosomal Aberrations</td>
<td>0.5</td>
<td>1.44</td>
<td>0.008</td>
</tr>
<tr>
<td>Total Aberrations</td>
<td>1.78</td>
<td>3.63</td>
<td>0.001</td>
</tr>
<tr>
<td>Acentric Fragments</td>
<td>0.39</td>
<td>1.06</td>
<td>0.01</td>
</tr>
<tr>
<td>RBC</td>
<td>463</td>
<td>393</td>
<td>0.0006</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>4006</td>
<td>3254</td>
<td>0.02</td>
</tr>
<tr>
<td>Mean 4 week BZ level</td>
<td>0.004 PPM</td>
<td>0.14 PPM</td>
<td></td>
</tr>
</tbody>
</table>
Many Negative Studies

- Flawed
  - Exposure
  - Numbers
  - Valid comparison groups
  - Sufficient latency
Weight of Evidence

- Case reports
- Animal Studies
- Epidemiology
- Mechanism of action

- Sir Bradford Hill
- Federal Manual on Scientific Evidence
- EPA
Finally, in passing from association to causation I believe in 'real life' we shall have to consider what flows from that decision. …

The evidence is there to be judged on its merits and the judgment (in that sense) should be utterly independent of what hangs upon it - or who hangs because of it.

But in another and more practical sense we may surely ask what is involved in our decision. In occupational medicine our object is usually to take action.

If this be operative cause and that be deleterious effect, then we shall wish to intervene to abolish or reduce death or disease.
Cluster of Hodgkin’s lymphoma in residents near a non-operational petroleum refinery
J Dahlgren, J Klein and H Takhar
Toxicol Ind Health 2008; 24: 683
DOI: 10.1177/0748233708100553

The online version of this article can be found at:
http://tih.sagepub.com/cgi/content/abstract/24/10/683

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Cluster of Hodgkin’s lymphoma in residents near a non-operational petroleum refinery

J Dahlgren1, J Klein2 and H Takhar2

1UCLA School of Medicine, Occupational Medicine, 2811 Wilshire Blvd. Suite 510, Santa Monica, CA 91343 USA
2James Dahlgren Medical, 2811 Wilshire Blvd. Suite 510, Santa Monica, CA 91343 USA

This report examines the prevalence rate of Hodgkin’s disease in an American mid-west town located directly south of a non-operational oil refinery. The refinery has a history of benzene-containing gasoline leaks dating back to the early 1900s. Exposure data were assessed through the Toxic Release Inventory (TRI) data as published by the Environmental Protection Agency (EPA) and supplemented by exposure simulations using variations of residential exposure times and odour levels and the benzene content of the gasoline. Prevalence rates depended on the size of the population in question. The population size varied greatly between sources, with the more conservative and consistent estimates being reported by the local government and United States Census Bureau and the highest population figure being reported by the Agency for Toxic Substances Disease Registry. The prevalence of Hodgkin’s disease for the residents within 1 mile from the refinery was found to be elevated for every population figure, ranging from 72.11 cases per 100,000 using the ATSDR’s population to 182.34 per 100,000, whereas the prevalence for Hodgkin’s disease in all the United States is only 22 cases of Hodgkin’s disease per 100,000 people. The prevalence value reported in this report should be given greater weight than what would have been calculated using data from the ATSDR. Because of its significantly increased value compared with the rest of the United States, it provides evidence of benzene’s role as a causative agent in the etiology of Hodgkin’s disease. Toxicology and Industrial Health 2008; 24: 683–692.

Key words: benzene; cluster; Hodgkin’s disease; lymphoma; petroleum refinery; prevalence

Introduction
The former American Oil Company (AMOCO) refinery located immediately to the north of the Sugar Creek, Missouri community operated for about 80 years before closing in the early 1980s. The plant has a documented history of benzene-containing gasoline leaks dating back to its first years of operation. The gasoline produced at this refinery that was shown to have leaked into water sources and flowed through the neighbourhood contained 0.7–5% benzene. It is estimated that more than 6 million gallons of unrecovered leachate remains in the ground beneath and surrounding the plant, including the residential community of Sugar Creek (Petty, 2005).

In this benzene-contaminated town, we have discovered a cluster of Hodgkin’s disease among the residents, all of which lived within 1 mile from the refinery. Since 1978, nine residents have been diagnosed with Hodgkin’s disease. Seven are still living. The average age of diagnosis is 26.77 years. The average time between initial exposure to the chemicals emanating from the refinery and diagnosis is...
14.55 years. Five of the seven subjects were exposed in utero, and their average age of diagnosis is only 20.4 years. See Table 1 for profiles of the residents diagnosed with Hodgkin’s disease. The most notable findings on this cluster are a known exposure to chemicals associated with lymphohaematopoietic malignancies, the severely high prevalence of Hodgkin’s disease, and the fact that the subjects are generally diagnosed at a much younger age than compared with the rest of the United States.

The production of fatal aplastic anaemia in workers exposed to benzene was originally recognized in the 19th century (Santesson, 1897). Reports of benzene’s carcinogenicity have been accumulating (Selling, 1910) since the 1920s (Boditch and Elkins, 1939; Hine, 1950; Selling and Osgood, 1935; Wilson, 1942; Winslow, et al., 1926).

In 1948, the American Petroleum Institute (API) published a toxicological review on benzene, wherein the API advised that there were well-documented instances of the development of leukaemia as a result of chronic benzene exposure. The API also recognized that the occurrence of delayed toxic effects, years after the initial exposure, appears likely, and concluded that in as much as the body develops no tolerance to benzene, and as there is a wide variation in individual susceptibility, it is generally considered that the only absolute safe concentration for benzene is zero (API, 1948).

### Methods and materials

#### Exposure to benzene within 1 mile from the AMOCO refinery

We obtained the AMOCO plant’s emissions data from the US Environmental Protection Agency (EPA) – Toxic Release Inventory (TRI) Web site. The US EPA requires that companies estimate the amount of hazardous material they release into the environment beyond the plant’s borders. The EPA TRI data from the AMOCO Plant (Facility Name: BP Products North America Inc. Sugar Creek Terminal; Mailing Address: 1000 N Sterling, Sugar Creek, MO 64054; TRI Facility ID Number: 64054BPMCS1000N; RCRA ID Number: MOD007161425; Latitude 39-07-18.2568 Longitude 94-26-35.2428) notes that thousands of pounds of toxic chemicals, benzene included, have been released into the environment over recent years despite the plant being closed for over a decade (U.S. EPA, 2005).

Exposure estimates for four residents of Sugar Creek were also determined using reports by a Certified Industrial Hygienist (CIH). He calculated exposure estimates and utilized Monte Carlo simulations of benzene levels based on recollections of gasoline odours in air, odour thresholds, and the benzene content of gasoline. The homes of these

<table>
<thead>
<tr>
<th>Subject</th>
<th>Date of birth</th>
<th>Date of diagnosis</th>
<th>Age of diagnosis</th>
<th>Pre HD diagnosis (addresses)</th>
<th>Years 1 mile away pre HD diagnosis</th>
<th>Exposed in utero</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7/16/81</td>
<td>11/11/1997</td>
<td>16</td>
<td>11420 Scarritt</td>
<td>3</td>
<td>Yes</td>
<td>Born in SC, moved out in 1984, at age 3</td>
</tr>
<tr>
<td>2</td>
<td>7/12/52</td>
<td>12/96</td>
<td>43</td>
<td>219 N. Huttig</td>
<td>9</td>
<td>No</td>
<td>In 1962, moved to SC at age 10, left in 1971 (9 years)</td>
</tr>
<tr>
<td>3a</td>
<td>04/04/1964</td>
<td>7/80</td>
<td>26</td>
<td>3001 N. Osage</td>
<td>13</td>
<td>No</td>
<td>In SC from age 5 to 18; diagnosed 8 years later</td>
</tr>
<tr>
<td>4</td>
<td>07/11/1958</td>
<td>10/84</td>
<td>25</td>
<td>301 Marcia St.</td>
<td>20</td>
<td>No</td>
<td>In SC from age 3 to 23 (1961–1981)</td>
</tr>
<tr>
<td>5</td>
<td>7/8/51</td>
<td>02/01/1980</td>
<td>28</td>
<td>10836 Scarritt</td>
<td>25</td>
<td>Yes</td>
<td>In SC for 50 years and was diagnosed age 28</td>
</tr>
<tr>
<td>6b</td>
<td>8/29/34</td>
<td>10/78</td>
<td>44</td>
<td>221 North Ash</td>
<td>8</td>
<td>No</td>
<td>In SC from 1970 until the time of his death</td>
</tr>
<tr>
<td>7</td>
<td>21/02/1961</td>
<td>8/1979</td>
<td>18</td>
<td>117 Novack</td>
<td>16</td>
<td>Yes</td>
<td>In SC from birth to age 16; was diagnosed 2 years later</td>
</tr>
<tr>
<td>8</td>
<td>26/03/1976</td>
<td>3/6/1997</td>
<td>20</td>
<td>120 N Oxford</td>
<td>21b</td>
<td>Yes</td>
<td>In SC from birth to age 26; was diagnosed at age 20</td>
</tr>
<tr>
<td>9</td>
<td>08/11/1962</td>
<td>1/1983</td>
<td>20</td>
<td>705 Marcia St</td>
<td>16</td>
<td>Yes</td>
<td>In SC from birth to age 16; was diagnosed 4 years later</td>
</tr>
</tbody>
</table>

*aDeceased as of 1998 and therefore not factored into 2007 prevalence.

*bDiagnosed just before birthday.
four residents are depicted in Figure 1. One of these residents for whom exposure estimates were calculated was diagnosed with Hodgkin’s disease in 1980. The calculations of these residents’ exposures are assumed to be similar to those of the subjects with Hodgkin’s disease, as they all lived within the same air and soil plume area.

Benzene in air concentration was determined by the use of gasoline odour threshold data of Drinker, et al. (1943). Human exposure data from this era was used because no such data are available in more recent years, because of ethical issues of exposure to individuals without their knowledge to chemicals containing known carcinogens.

Based on the Drinker data (1943), the following values were used to determine gasoline vapour concentrations by odour response in modelling an individual’s benzene exposure: With a weak, detectable odour and no physical responses, the gasoline vapour concentration is estimated to be 150 ppm. With a moderate to strong odour and slight to moderate eye irritation, the gasoline vapour concentration is estimated to be 300 ppm. With a strong to very strong odour and moderate eye and throat irritation, the gasoline vapour concentration is estimated to be 600 ppm.

Because no gasoline vapour-related physiological response was noted in any of the four cases, a conservative gasoline vapour concentration of 150 ppm was used whenever one reported smelling the odour of gasoline.

The Monte Carlo simulation looks at the effect of varying key parameters to determine their impact on results. To accomplish this, a program called Crystal Ball was utilized. It is an add-on program to Microsoft Excel and is accessed as a custom tool bar.

Variables used for the Monte Carlo Analysis allowed to vary, and the degree to which they were varied include percent time at home (mean ± 5%), percent time smelled gasoline (mean ± 5%), and for

Figure 1  Satellite Image of 1 mile buffer zone surrounding plant. Illustrates the residences of the Hodgkin’s subjects in reference to the AMOCO refinery and the zero to low population density in the area north of the refinery.
a gasoline concentration of 150 ppm the range used was 100–200 ppm. Benzene percentage in gasoline for means of 2.75%, range used was 0.5–5%. Each range of values was considered to be distributed normally. The simulation was run 10,000 times.

Prevalence of Hodgkin’s disease in sugar creek

The current value for the prevalence of Hodgkin’s disease in Sugar Creek, MO, depends on how the population is determined. The 2000 census obtained a population of 3,839 residents (Census, 2000). The Sugar Creek city clerk estimated the town’s population to be no greater than 4,000 residents, a value ascertained during a phone conversation on 23 July 2007 (personal communication with city clerk, Jana Oliverez-Dickenson). The Agency for Toxic Substances and Disease Registry (ATSDR) estimated the population to be 9,708 (ATSDR AmocoSugarCreek092404-HC). Upon scrutiny however, this is a very unrealistic value. Instead of using the 3,839 census value for the population of Sugar Creek made available to them, the ATSDR used the population density value in the same census report and multiplied that value by the area within a 1 mile radius of the AMOCO plant. What they neglected to factor in is that only half of the area is residential while the latter half is farmland. The satellite images of the area provided by Google maps confirm this low or no density value. See Figure 1. Therefore the value the ATSDR should have reported is half of their 9,708 value, which equals 4,854. Although this is still 25% greater than the 2000 census, it more closely approximates the other population values within 1 mile from the AMOCO plant.

Finally, in an effort to check all of these numbers, we used Google Maps to obtain a highly detailed satellite image of the Sugar Creek community and counted by hand the number of homes within a 1 mile radius of the plant. Any structure on the map that was not obviously a public enterprise was counted as a home. We multiplied this value by the average number of persons per US household (2.4) and estimated the population to be 5,318 within 1 mile from the plant, as we counted 2,216 homes. Based on the 2003 census and the conversation with the city clerk, this figure, although clearly an overestimate for the town of Sugar Creek, better represents the population within 1 mile from the AMOCO refinery than the value reported by the ATSDR. As stated above, the town of Sugar Creek’s population according to the 2000 Census and the city clerk is approximately 4,000 residents. To account for the difference in populations between these figures and that by counting via satellite is the explanation that approximately 550 homes (1,300 residents) fall outside of Sugar Creek’s official border. These homes are south of RT 24 Independence Avenue. One limit of our technique is that we did not factor in the possibility of apartment complexes, which generally hold more residents than the average household, but by the same token counted properties with possible separate garages and guest homes as two homes as opposed to one.

The population used in the calculations of prevalence of Hodgkin’s disease was the average of the populations reported in the 2000 census, city hall’s highest estimate, half the ATSDR value, and the estimated population from the satellite image estimation. The ATSDR value of 9,708 was ignored. The population used therefore in the calculations is the average of 3839, 4000, 4854 and 5318, which equals an estimated 4502.75 people within 1 mile from the refinery.

The prevalence was determined for each population value along with a prevalence for the average of the population values. Values were then broken down by age. Given that seven still living residents of Sugar Creek in 2007 have been diagnosed with Hodgkin’s disease, the following equation for prevalence used was:

\[ \text{Prevalence} = \left( \frac{7}{N} \right) \times 100,000, \text{where } N = 4502.75 \text{ people}. \]

Statistical analysis was performed using Stata 9.0 Statistical Software.

Results

Exposure to benzene within 1 mile from the AMOCO refinery

TRI data

Based on the data published on the EPA-TRI website, the AMOCO facility’s average for total on- and off-site disposal or other releases for benzene was in excess of 586 pounds of benzene per year with a range of 351–960 pounds per year.
It is important to note the following points when analyzing the data:

- The EPA-TRI exposure data for the AMOCO refinery in Sugar Creek is not available for the years before 1997 and after 2005 online.
- The exposure data that are available is based on company reports and are not validated in any way.
- The AMOCO-refinery has not been in operation since the early 1980s so all emissions are from residual waste, either underground or still inside storage vessels, not removed following cessation of operations.

**Supplemental exposure calculations**

Detailed historic benzene exposure assessments were completed for four residents of Sugar Creek. In these cases, inhalation exposure in ppm-years were determined. This summary provides background information and an overview of results of these exposure assessments. These exposures are listed in Table 2 and were based ultimately on the time gasoline odours were smelled, gasoline odour threshold levels, and the benzene content of gasoline.

**Prevalence of Hodgkin’s disease in sugar creek**

The prevalence was determined to be 155.46 cases of Hodgkin’s disease per 100,000 people. Given that the prevalence of Hodgkin’s disease in the United States is 22 per 100,000 among whites (SEER, 2003), the value of 155.46 exceeds the prevalence of a generally non-overexposed population by a multiple of greater than seven. Using the US prevalence all ages of 22 and Sugar Creek prevalence of 155.49 a test for the difference in the rates yields a p-value = 0.034 which is significant at the 5% level. A 95% (Poisson Exact) confidence interval for Sugar Creek prevalence rate is (62.5, 320.4).

For the subjects diagnosed with Hodgkin’s disease, the average age of diagnosis among the Sugar Creek residents is 26.77 years with a range of 16 to 45 years (see table 1). All of the subjects with Hodgkin’s disease lived within one mile of the AMOCO plant for an average of 14.55 years before the onset of their respective Hodgkin’s lymphomas, with a range of 3 to 25 years.

**Discussion**

With regard to exposure, benzene levels were still elevated in the late 1990s and 2000s in Sugar Creek despite the plant being closed since the early 1980s. The main source of benzene in Sugar Creek therefore could be due to off-gassing of the 6 million gallons of unrecovered gasoline leachate in the soil

<table>
<thead>
<tr>
<th>Case #</th>
<th>Exposure time (years)</th>
<th>Address</th>
<th>Exposure time (ppm-yrs)</th>
<th>Total Exposure (ppm-yrs)</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1986–1997</td>
<td>11414 Kentucky</td>
<td>11</td>
<td>20.6–22.3</td>
<td>21,4</td>
</tr>
<tr>
<td>3</td>
<td>1981–1985</td>
<td>101 N Brent</td>
<td>4</td>
<td>27.2–45.8</td>
<td>33,3</td>
</tr>
<tr>
<td>4</td>
<td>1951–1980</td>
<td>1110 Scarritt</td>
<td>29</td>
<td>47.0–163.8</td>
<td>102</td>
</tr>
</tbody>
</table>

Table 2. Background and exposure histories of four residents of Sugar Creek for whom exposures were calculated

<table>
<thead>
<tr>
<th>Source</th>
<th>Metabolite</th>
<th>Lymphohaematopoietic response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kolachana, 1993</td>
<td>Phenol</td>
<td>Induced oxidative stress to DNA in bone marrow</td>
</tr>
<tr>
<td>Pellegrin-Walker and Blumer, 1986</td>
<td>Benzoquinone</td>
<td>Produced breaks in DNA</td>
</tr>
<tr>
<td>Robertson, et al., 1990</td>
<td>Catechol and Hydroquinone</td>
<td>Produced a synergistic genotoxic effect in human lymphocytes</td>
</tr>
<tr>
<td>Wierda and Irons, 1982</td>
<td>Catechol and Hydroquinone</td>
<td>Selectively inhibited the maturation of LPS-activated marrow progenitors into end-stage PC-PFC</td>
</tr>
<tr>
<td>Witz, et al. (1989)</td>
<td>Trans, trans- muconaldehyde</td>
<td>Results in cell membrane changes, including loss of activity in NADPH-dependent oxidase and decreased in membrane lipid fluidity</td>
</tr>
<tr>
<td>Zhang, et al., 1993</td>
<td>1, 2, 4 Benzenetriol</td>
<td>Causes strand breaks, microtubule damage, micronuclei, and aneuploidy in human cells</td>
</tr>
<tr>
<td>Zhang, et al., 2005</td>
<td>Hydroquinone and benzenetriol</td>
<td>Affect the ploidy status of specific chromosomes</td>
</tr>
</tbody>
</table>
and underground water systems beneath the plant and Sugar Creek residential community. Other routes of exposure such as ingestion of contaminated water, dust and home grown fruits and vegetables are also probable but are not discussed here.

We have observed an excess in the prevalence of Hodgkin’s disease in Sugar Creek for 2007. In addition, the residents of Sugar Creek are generally diagnosed with Hodgkin’s disease at a younger age. According to SEER data, the average age of diagnosis in United States is 38 years of age compared to 26.77 years in Sugar Creek. The Sugar Creek subjects exposed in utero have an average age of diagnosis of 20.4 years with a range of 16 to 28 years. Given that the average age of diagnosis for the United States is in the 30 to 39 year age group, the younger age at diagnosis in Sugar Creek supports the idea that the fetus is especially susceptible to the toxic effects of benzene. Previous research reports in utero exposure to benzene induces alterations in the hematopoietic system that persist into adulthood (Keller, 1986). Thus, this cluster of Hodgkin’s disease provides evidence of benzene’s effect on development, especially of the lymphohematopoietic system.

While true that recovery of haematopoiesis has been reported following the termination of exposure, longer exposure periods resulted in ‘a considerable delay in stem cell recovery’. Because the residents of Sugar Creek, especially those within the 1 mile buffer zone of the petroleum facility, continue to be exposed to benzene emissions, it is contradictory to science to assume that they are experiencing a similar recovery and so are therefore still experiencing the effects of what the authors above referred to as a ‘residual haematopoietic injury’ (Cronkite, 1982, 1985, Gist, 1997).

Besides the seven subjects discussed throughout the paper, there were two additional Hodgkin’s disease diagnosed residents who had died before 2000. Their dates of deaths are 1981 and 1998, respectively. The resident who died in 1998 was diagnosed with Hodgkin’s disease at the age of 36, which would increase the already elevated prevalence rate and maintain the shift in bimodality. They too lived within 1 mile from the plant.

Previous research has shown that exposure to benzene is valid explanation behind the increased rate of Hodgkin’s for the Sugar Creek residents. Blood disorders, such as Hodgkin’s disease, are extremely well documented in Gist and Burg’s review of benzene toxicity, citing the toxin as a ‘known haematopoietic poison’. They show the earliest known blood disorders in response to benzene exposure were reported in 1897 (Santesson, 1897). The more recent literature they referenced provides unequivocal evidence for benzene’s ability to damage the human haematologic and lymphatic systems (Gist and Burg, 1997).

Occupational exposures to benzene have been associated with increased risks of Hodgkin’s disease. For example, Aksoy reports 6 out of 94 patients admitted to the 2nd International Clinic of Istanbul Medical School with Hodgkin’s disease had worked with benzene. Their exposure to benzene was in the range of 150–210 ppm with a mean duration of 11 years. “The fact that 6 of 94 patients with Hodgkin’s disease have a history of chronic benzene exposure suggests the possibility of a causal relationship between Hodgkin’s disease and chronic benzene exposure” (Aksoy, et al., 1974). Increased lymphoma occurrence was consistent with earlier studies, which showed 23.5 percent of a group of 217 healthy, benzene exposed workers experienced significant haematologic alterations (Aksoy, et al., 1971). Aksoy then reviews three additional cases of malignant lymphoma associated with chronic exposure to benzene. One of the three patients had Hodgkin’s disease (Aksoy, 1980).

The relative risk in a study by Olsson for Hodgkin’s disease was 6.6 ($P = 0.0005$) in benzene exposed workers (Olsson and Brandt, 1980). Persson reported occupational exposure to organic solvents showed a significant increased risk for Hodgkin’s disease (OR 3.4) (Persson, et al., 1993). Olin reported an increased occurrence of Hodgkin’s disease among chemistry graduate students who routinely used benzene as a solvent in the laboratory (Olin, 1976). Vianna reported a significant excess of deaths caused by lymphomas in men employed in occupations where benzene and/or coal tar fractions are used. The relative risk for Hodgkin’s disease was 1.6 (Vianna and Polan, 1979).

Hardell reported a statistically significant increase in relative risk for malignant lymphomas among workers exposed to benzene or to specific solvents such as trichlorothylene in Sweden.
RR = 4.6 (CI = 95%; 1.9–11.4). A statistically significant increase was also reported for a history of exposure to unspecified organic solvents, RR = 2.8 (CI = 95%; 1.6–4.8). Hardell also found a dose response; the higher the exposure the greater the risk. These researchers implicated benzene as a causal factor for malignant lymphoma (Hardell, et al., 1981).

Brandt 1987 reviewed lymphomas associated with solvents, benzene in particular, and noted an odds ratio of 2.8–6.6 for Hodgkin’s disease (Brandt, 1987). This article reports on several other studies documenting a significant association between benzene and an increased occurrence of Hodgkin’s disease.

La Vecchia found evidence of occupational exposure to chemicals, especially benzene, being related to the risk of Hodgkin’s disease as they report increased percentages of cases of Hodgkin’s disease for workers exposed to solvents, benzene in particular and calculated a significantly increased relative risk of 1.9 (95% CI = 1.2–3.0). (La Vecchia, et al.,1989).

Berlin reports an elevated standard incidence ratio (SIR) of 6.3 (CI = 95%; 0.8–22.7) for a diagnosis of Hodgkin’s lymphoma among Swedish workers with a suspected solvent-related disorder (Berlin, et al., 1995).

Yin compared 74,828 benzene exposed to 35,835 non-exposed workers in China in a study ‘designed specifically to avoid the disadvantages of earlier investigations’. Its extremely large cohort provides statistics of the highest reliability by eliminating differences between the case and control groups and also minimizes the healthy worker effect. Yin reports more than a doubling of the relative risk of all haematolymphoproliferative malignancies RR = 2.6 (CI = 95%; 1.5–5.0) and more than a tripling of malignant lymphoma RR = 3.5 (CI = 95%; 1.2–14.9) (Yin, et al., 1996).

Two industry sponsored studies by Divine and Tsai both found elevated standard mortality risks (SMRs) for Hodgkin’s disease, 108 and 199, respectively (Divine, et al., 1985; Tsai, et al., 1993).

A number of articles, not limited to occupational studies, have pointed to environmental factors in the etiology of Hodgkin’s disease. Dworsky described a clustering of Hodgkin’s disease in 5 graduates of the same junior high school (Dworsky and Henderson, 1974). Glaser reports on a Hodgkin’s cluster in San Francisco and writes, “the small, widely dispersed clusters detected here suggest late exposure to a ubiquitous environmental agent involved in the Hodgkin’s disease etiology” (Glaser, 1990). Wilkinson found a positive association between risk of Hodgkin’s lymphoma and proximity to a major petrochemical industry (Wilkinson, et al., 1999).

Raaschou-Nielsen found the risk of lymphomas increased in a dose-dependent manner for air pollution at the residence at the time the child was in utero. When measured against benzene levels in particular, the relative risk was 4.3 (CI = 95% 1.5–12.4) (Raaschou-Nielsen, et al., 2001). This study agrees with previous animal studies in which foetuses and offspring of benzene exposed pregnant mice showed long-term functional changes in haematopoiesis (Keller and Snyder, 1986, 1988, Schardein and Keller, 1989). Other animal studies show effects to haematopoietic stem cells and leukocytes of the exposed subjects (Cronkite, et al., 1982, 1985).

Researchers hypothesized Hodgkin’s disease represented an unusual response to a common environmental agent in individuals with a susceptible immune system (Dworsky and Henderson, 1974). Benzene or a benzene metabolite has reproducible effects on the lymphatic system and in particular on the B lymphocytes that give rise to the cancer cells that are the relevant cell type in Hodgkin’s disease, Reed-Sternberg cells (Aoyama, 1986; Lee, et al., 2005; Young, 1989). Table 4 is an incomplete summary of the literature with regard to the toxicity of several key benzene metabolites. It should be noted that there is a synergistic effect between combinations of metabolites, whereby the toxicity of one is enhanced by the presence of another (Barale, et al., 1990).

Through a series of enzymatic and non-enzymatic chemical reactions having been shown to begin mainly in the liver and then continue in bone marrow, benzene and its metabolites ultimately reach the multipotent stem-cells that subsequently differentiate into the mutated B-lymphocytes that define Hodgkin’s disease. The lymphohematopoietic system has been shown to be particularly susceptible because benzene and benzene metabolites phenol, catechol and hydroquinone levels are higher in the bone marrow than in other tissues (Rickert, et al., 1979). In addition, the
metabolites of benzene, hydroquinone and catechol, have also been shown to reduce the number of bone marrow and spleen progenitor B lymphocytes, another piece of evidence documenting benzene’s deleterious effect on the lymphohematopoietic system (Hseigh, et al., 1990; Wierda and Irons, 1982).

Snyder describes the metabolic pathways for benzene. One pathway involves the metabolic activation of benzene to species that covalently bind to DNA, which produces mutagenic events that are expressed as malignant lymphoma. The other pathway following metabolic activation involves oxidative stress, subsequent oxidative damage to DNA, and a mutagenic effect. Both pathways can cause cellular change that lead to Hodgkin’s lymphoma (Snyder and Hedli, 1996).

In conclusion, we have reported on a severely increased prevalence rate of Hodgkin’s disease among residents with a known exposure to benzene, which most likely results from off-gassing of the millions of gallons of benzene known to have leaked from the refinery during and after its years of operation. In determining the prevalence rate of Hodgkin’s disease, our methods are different than those that would have been calculated based on the ATSDR’s figures. The dichotomy in reasoning appears to lie in the differing values used to represent the relevant population. Despite the inflated population figure reported by the ATSDR, an increased prevalence was found for all figures representing the population and there was a shift in diagnosis toward a younger age. We believe our methodology is more accurate because the ATSDR made an assumption on population density in an area that is known to have zero or close to zero inhabitants (see Figure 1). The prevalence value reported in this report should therefore be given greater weight than what would have been calculated using data from the ATSDR and because of its significantly increased value compared to the rest of the United States provides evidence of benzene’s role as a causative agent in the etiology on Hodgkin’s disease.

Acknowledgements

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Keller, K, Snyder, CA (1986) Mice exposed in utero to low concentrations of benzene exhibit enduring changes in their colony forming hematopoietic cells. *Toxicology* 42: 171–181.

Keller, K, Snyder, CA (1988) Mice exposed in utero to 20 ppm benzene exhibit altered numbers of recognizable hematopoietic cells up to seven weeks after exposure. *Fundam Appl Toxicol* 10: 224–232.


Lee, E, Im, H, Oh, E, Jung, WW, Kang, HS, Sul, D (2005) DNA damage in T and B lymphocytes, bone marrow, spleens, and livers of rats exposed to benzene. *Inhal Toxicol* 17: 401–408.


Non – Hodgkin’s Lymphoma, Multiple Myeloma and Benzene Epidemiologic Considerations

HB Litigation
Benzene Litigation Conference

Howard M. Sandler, M.D.
Sandler Occupational Medicine Associates, Inc.
July 2009
What is “Causation?”

• Causation:
  The determination that an effect or change in a measured or observed event was brought about by or created through, or as the result of a preceding factor.

• Causation ≠ risk or association
Two Types of Causation

- “General” causation
- “Specific” (Individual) causation
Sound Science for General Causal Inference

- Structure analogy
- InVitro studies (Ames test)
- Animal studies (species to species, dosing)
- Pharmacokinetics
- Epidemiological approaches
- Conducting an experiment
Is the Study Acceptable/Good/Useable?

- Study type
- Power
- Bias
- Confounding (smoking level)
- Disorder determination (Sxs v ICD-10)
- Exposure determination
- Statistical analysis (multiple comparisons)
Critiquing the literature
Setting the “criteria/factors” (Hills?)

- Strength of association
- Consistency
- Temporality
- Biologic gradient

- Plausibility
- Coherence
- Experimental analogy
- Analogy
The Weighting Process

- Which criteria – e.g., Hill, Popper
- Yes/No criteria factoring
- Criteria weighting (Ax + By + Cz = causal?)
- Validated methodology (NIOSH 1997 – MSDs)
- Critical reviews and meta-analysis
The Weighting Process (cont’d)

• Quantitative Criteria Factoring
  – Strength of association, e.g., RR/OR of 1.2, 2, 3, 4, 10
  – “Hypersusceptibles”

• AE Quantitative Contribution Analysis

• Risk ≠ Causation
Causation Among the “Experts”

- Holman et al., 2001
- 159 Australian/New Zealand Epidemiologists
- Key Factors (in order)
  - Statistical significance (really?)
  - Reputation of alternative explanations
  - Strength of association
  - Adjunct information (coherence)
- Agreement – Only 12% Better Than Chance
- 2/3 Causation Present When No Other Explanation
### Background Rates in the General Population

<table>
<thead>
<tr>
<th>Cancer site</th>
<th>ICD9 codes</th>
<th>Annual incidence rate per 100,000 (NCI SEER data)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>US white males</td>
<td>US black males</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All ages</td>
<td>Aged 65+</td>
<td>All ages</td>
</tr>
<tr>
<td>NHL</td>
<td>200, 202</td>
<td>18.6</td>
<td>84.7</td>
<td>12.8</td>
</tr>
<tr>
<td>MM</td>
<td>203</td>
<td>3.4</td>
<td>24.4</td>
<td>7.2</td>
</tr>
<tr>
<td>Leukemias (all)</td>
<td>204-208</td>
<td>13.4</td>
<td>74.0</td>
<td>11.5</td>
</tr>
<tr>
<td>ALL</td>
<td>204</td>
<td>1.9</td>
<td>2.4</td>
<td>1.0</td>
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<tr>
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<td>205</td>
<td>3.0</td>
<td>17.6</td>
<td>2.7</td>
</tr>
<tr>
<td>CML</td>
<td>205.1</td>
<td>1.7</td>
<td>10.0</td>
<td>1.9</td>
</tr>
</tbody>
</table>
Lymphocytes

- Regulate Other White Cells
- Make Antibodies
  - Proteins that act as flags to stick to bacteria and viruses
  - Tell other cells to eat things
- B-Cell
- T-Cell
History of NHL

- Malignant Lymphoma first introduced 1871
- Hodgkin’s Disease v. NHL – presence/absence of Reed – Sternberg Cells
- Before 1966 – NHL was either reticulum cell sarcoma or lymphosarcoma
- Groups of separate diseases or similar disorders with identical pathogenesis
# Classification of NHL

<table>
<thead>
<tr>
<th>Nodular</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphocytic, well-differentiated</td>
<td>0 to 1.6</td>
</tr>
<tr>
<td>Lymphocytic, poorly differentiated</td>
<td>18.4</td>
</tr>
<tr>
<td>Mixed, lymphocytic and histiocytic</td>
<td>7.9</td>
</tr>
<tr>
<td>Histiocytic</td>
<td>1.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diffuse</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphocytic, well-differentiated without plasmacytoid features with plasmacytoid featured</td>
<td>4</td>
</tr>
<tr>
<td>Lymphocytic, poorly differentiated without plasmacytoid features with plasmacytoid features</td>
<td>9.1</td>
</tr>
<tr>
<td>Lymphoblastic convoluted non-convoluted</td>
<td>8.3</td>
</tr>
<tr>
<td>Mixed, lymphocytic and histiocytic</td>
<td>4.4</td>
</tr>
<tr>
<td>Histiocytic without sclerosis</td>
<td>24.9</td>
</tr>
<tr>
<td>Histiocytic with sclerosis</td>
<td>2.9</td>
</tr>
<tr>
<td>Burkitt's tumor</td>
<td>2.0</td>
</tr>
<tr>
<td>Undifferentiated</td>
<td>2.0</td>
</tr>
<tr>
<td>Malignant lymphoma, unclassified composite lymphoma</td>
<td>14.7 to 16.4</td>
</tr>
</tbody>
</table>
Definition, Distribution and Incidence of Lymphoma

- Cancers of white blood cells at various stages of maturation
- Lymphomas can arise in virtually any organ
  - Lymph nodes
  - Bone marrow
  - Peyer’s patches (intestine)
Definition, Distribution and Incidence of Lymphoma (cont’d)

• NHL rate increasing
  – 1946-1988 – 150%
  – 1973-1991 – 73%
• Up to 80,000 cases per year (no national registry)
• Follicular NHL higher in the U.S.
• High – grade NHLs rapidly increasing
• Non – lymph node increasing more than nodular lymphomas
• NHL in children more non-nodal and highly differentiated from adult NHL
Classification of NHL

• Major Developments and Modifications since the 1960’s
• “Rappaport”
• Proposed WHO - >34 Lymphoma Types
  – Each type has own Genetic/Cytogenetic “Profile”
Potential/Known “Risk Factors Associations” for NHL

- HIV, Eptein-Barr Viruses – NCI, 2007
- Farming (Infectious Microbes, Pesticides) – Khuder, Hardell, 1999, 1998; Dudrow, 1998; Jurewicz, 2006; Meinert, 2000; Fritschi, 2005
- Parental Smoking – Magnani, 1990
- Rubber and “General Chemical Industries” (B-Cell) – Burkowski, 2003
Potential/Known “Risk Factors Associations” for NHL (cont’d)

- SLE – Benatsky, 2005, Vinesis, 2000
- Parental TB – Vinesis, 2000
- Alcohol (protective?) – Chang, 2004
- Metalworking and equipment – Zhong 2002; Fritschi, 2002
Potential/Known “Risk Factors Associations” for NHL (cont’d)

- Agriculture
- Forestry
- Logging
- Motor vehicles and MV equipment
- Telephone equipment
- Welders and soderers

• Immune disorders – NCI, 2007; Smedby, 2006; Brulich, 2007
• Age (over 65) race (Caucasian) gender (male) – NCI, 2007
• Smoking (Neg.) – NCI 2007
Potential/Known “Risk Factors Associations” for NHL (cont’d)

- Cancer chemotherapy – Krishan, 2007
- Childhood leukemia and lymphoma – Male, 2007
- Obesity (Pos. and Neg.) – Chiu, 2007; Chang, 2005; (Reeves, 2009 – 1.17 (1.03-1.34) in females)
- PCP/TCP – Demors, 2006; Garabedian, 1999
- Ionizing Radiation – Boice, 1991
- EMR – Schroeder; 1997
Benzene – NHL Epidemiology

- Cohort – RR, SMR
- Case – Control – OR
- Approx – 85 studies
- Vast majority are negative/negative findings
Studies of Workers Exposed to Benzene
Yin et al. (1996)

**Study design:** Historical cohort mortality/cancer incidence study

**Study population:** 74,828 workers employed in 1,427 benzene-exposed departments at factories in a variety of industries 1972-7987 in 12 cities in China and 35,805 workers not exposed to benzene

**Follow up:** 1972-1987

**Exposure classification:** Individual estimates (but not used in analysis in the paper)
**Studies of Workers Exposed to Benzene**

*Hayes et al. (1997)*

**Study design:** Historical cohort mortality/cancer incidence study

**Study population:** 74,828 workers employed in 1,427 benzene-exposed departments at factories in a variety of industries 1972-1987 in 12 cities in China and 35,805 workers not exposed to benzene

**Follow up:** 1972-1987

**Exposure classification:** Individual estimates (cumulative exposure, average exposure and other exposure indices)
Studies of Workers Exposed to Benzene
Hayes et al. (1997)

Risk of NHL by cumulative benzene exposure

<table>
<thead>
<tr>
<th>Cumulative exposure</th>
<th>No. of cases</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexposed</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>&lt;40 ppm-years</td>
<td>6</td>
<td>3.3</td>
</tr>
<tr>
<td>40-99 ppm-years</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>&gt;100 ppm-years</td>
<td>9</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>3.0</td>
</tr>
</tbody>
</table>
## Studies of Workers Exposed to Benzene

**Hayes et al. (1997)**

### Risk of NHL by cumulative benzene exposure

<table>
<thead>
<tr>
<th>Average exposure</th>
<th>No. of cases</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unexposed</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>&lt;10 ppm</td>
<td>7</td>
<td>2.7</td>
</tr>
<tr>
<td>10-24 ppm</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>&gt;25 ppm</td>
<td>7</td>
<td>4.7*</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>3.0</td>
</tr>
</tbody>
</table>

*statistically significant*
Studies of Workers Exposed to Benzene  
Dosemeci et al. (1994)

Major concerns in estimates developed by Dosemeci:

- Walk-through IH surveys at a few of the 672 factories only
- Lack of standardization of local procedures and subsequent interpretation of historical changes
- Benzene contents in solvents before 1970 assumed to be 40% (too low)
- Worker exposure assumed to be 4 hours per day (too low)
- Only 10% estimates before 1970 based on measurements
Studies of Workers Exposed to Benzene
Dosemeci et al. (1994) – (cont’d)

• Only 2-6% estimates before 1970 labeled “high confidence” by Dosemeci
• Estimates not consistent with and considerably lower than actual measurements from other documented sources
# Studies of Workers Exposed to Benzene

*Dosemeci et al. (1994)*

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Exposure estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray painter</td>
<td>22.2 ppm</td>
</tr>
<tr>
<td>Drip painter</td>
<td>32.2 ppm</td>
</tr>
<tr>
<td>Upper shoe gluer</td>
<td>26.2 ppm</td>
</tr>
<tr>
<td>Shoe glue mixer</td>
<td>24.3 ppm</td>
</tr>
<tr>
<td>Rubber glue applicator</td>
<td>52.6 ppm</td>
</tr>
<tr>
<td>Rubber modelling worker</td>
<td>51.6 ppm</td>
</tr>
<tr>
<td>Organic chemical worker</td>
<td>37.9 ppm</td>
</tr>
<tr>
<td>Benzene production worker</td>
<td>26.4 ppm</td>
</tr>
<tr>
<td>Insecticide worker</td>
<td>28.4 ppm</td>
</tr>
</tbody>
</table>
**Historical Benzene Levels in the US 1930’s**

Reports cited in the NIOSH Benzene Criteria Document (1974)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Benzene Level</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing</td>
<td>10-1,060 ppm</td>
<td>Greenberg, 1939</td>
</tr>
<tr>
<td>Artificial leather, rubber goods &amp; shoes</td>
<td>100-500+ppm (1936-1938)</td>
<td>Bowditch &amp; Elkins, 1939</td>
</tr>
<tr>
<td>Rubber Coating</td>
<td>96-260 ppm (1935-1937)</td>
<td>Pagnotto, 1972</td>
</tr>
</tbody>
</table>
### Benzene Levels in the US & Europe

<table>
<thead>
<tr>
<th>Activity/Location</th>
<th>Benzene Level</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoe factory, 1956</td>
<td>318-470 ppm</td>
<td>NIOSH, 1974</td>
</tr>
<tr>
<td>Small garages, summer, 1980s</td>
<td>1.6 mg/m³</td>
<td>Bolmberg, 1985</td>
</tr>
<tr>
<td>Small garages, winter, 1980s</td>
<td>6.8 mg/m³</td>
<td>Bolmberg, 1985</td>
</tr>
<tr>
<td>Tobacco smoke</td>
<td>47-64 ppm</td>
<td>Lauwery, 1979</td>
</tr>
<tr>
<td>Service stations</td>
<td>0.2-3.2 ppm</td>
<td>NIOSH, 1980</td>
</tr>
<tr>
<td>Pumping gas</td>
<td>&lt;2 mg/m³</td>
<td>Bolmberg, 1982</td>
</tr>
<tr>
<td>Urban streets</td>
<td>7.8-190 ppb</td>
<td>IARC, 1982</td>
</tr>
<tr>
<td>Highway</td>
<td>153 ppb</td>
<td>IARC, 1982</td>
</tr>
<tr>
<td>Residential neighborhood</td>
<td>1.5 ppb</td>
<td>IARC, 1982</td>
</tr>
<tr>
<td>Business district</td>
<td>3.8 ppb</td>
<td>IARC, 1982</td>
</tr>
</tbody>
</table>
Studies of Workers Exposed to Benzene
Benzene exposures in China

Wong (2003) reported the following articles in the Chinese medical literature:

Zhang et al. (Industrial Health & Occupational Diseases 2002;28:308-12)

- Workers at a small leather bag shop in a private home, Hehei Province
- Benzene levels up to 639.5 ppm
- 17 benzene poisoning cases (5 deaths) [all in their early 20s]
Studies of Workers Exposed to Benzene
Benzene exposures in China (cont’d)

Nao and Lang (Industrial Health & Occupational Diseases 2002;28:319)

• 5 workers water-proofing a building basement in Tianjin (a city near Beijing)
• Benzene levels: 176 & 236 mg/m³ near openings and 55,463 mg/m³ inside
• All 5 workers passed out and subsequently 2 died
## Benzene Exposure Data Reported in China

*Liang, Wong, et al. (2005)*

Distribution of 621 sets of benzene measurements* reported in Chinese medical journals, 1960-2003

<table>
<thead>
<tr>
<th>Benzene level (mg/m³)</th>
<th>No. of data sets</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>264</td>
<td>42.4%</td>
</tr>
<tr>
<td>40-100</td>
<td>142</td>
<td>22.9%</td>
</tr>
<tr>
<td>100-500</td>
<td>147</td>
<td>23.7%</td>
</tr>
<tr>
<td>500-3,000</td>
<td>53</td>
<td>8.5%</td>
</tr>
<tr>
<td>&gt;3,000</td>
<td>15</td>
<td>2.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>621</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*consisting of approximately 50,000 measurements.*
### Benzene Exposure Data Reported in China

**Liang, Wong, et al. (2005)**

Industries with high reported benzene measurements, 1960-2003

<table>
<thead>
<tr>
<th>Industry</th>
<th>Average (mg/m³)</th>
<th>Range* (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoe manufacturing, leather</td>
<td>149.9</td>
<td>0.4-466.6</td>
</tr>
<tr>
<td>Toy manufacturing</td>
<td>132.9</td>
<td>0.5-82.8</td>
</tr>
<tr>
<td>Leather products</td>
<td>124.2</td>
<td>1.2-83.9</td>
</tr>
<tr>
<td>Construction</td>
<td>122.2</td>
<td>0.4-108.2</td>
</tr>
<tr>
<td>Electronic manufacturing</td>
<td>120.2</td>
<td>1.4-79.9</td>
</tr>
<tr>
<td>Rubber products</td>
<td>114.6</td>
<td>40.1-198.6</td>
</tr>
<tr>
<td>Coal products</td>
<td>79.8</td>
<td>4.0-40.9</td>
</tr>
<tr>
<td>Office supplies, sports equipment</td>
<td>79.4</td>
<td>3.3-80.2</td>
</tr>
</tbody>
</table>

*Note the wide ranges.*
### Studies of Workers Exposed to Petroleum Products

#### Examples of Petroleum Workers’ Exposure to Benzene

<table>
<thead>
<tr>
<th>Task/Location</th>
<th>Benzene level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauging contents in storage tanks</td>
<td>50% samples &lt;1 ppm</td>
</tr>
<tr>
<td>Monitoring &amp; servicing crude distillation unit</td>
<td>&lt; 1 ppm</td>
</tr>
<tr>
<td>Monitoring &amp; servicing catalytic cracking unit</td>
<td>&lt; 1 ppm</td>
</tr>
<tr>
<td>Monitoring &amp; servicing benzene unit</td>
<td>&lt; 1.5 ppm</td>
</tr>
<tr>
<td>Terminal tank truck drive</td>
<td>0.21 ppm</td>
</tr>
<tr>
<td>Ship and barge product receipt</td>
<td>5.1 ppm</td>
</tr>
<tr>
<td>Top loading of tankers</td>
<td>6.1 ppm</td>
</tr>
<tr>
<td>Drum filling</td>
<td>27.2 ppm</td>
</tr>
<tr>
<td>Cleaning of gasoline storage tanks</td>
<td>64-1,680 ppm</td>
</tr>
</tbody>
</table>
**Studies of Petroleum Workers**

*Wong et al. (1989)*

**Study design:** Review summary and meta-analysis of studies of petroleum workers potentially exposed to benzene

**Study population:** 200,000+ workers employed in the refining, marketing and production/pipeline divisions of the petroleum industry in the US, Canada, UK, Australia and Japan

**Number of individual Studies:** 19 cohort studies

**Follow-up:** 1937-1986

**Exposure classification:** No individual estimates
## Studies of Petroleum Workers

**Wong et al. (1989)**

<table>
<thead>
<tr>
<th>Cancer site</th>
<th>Deaths</th>
<th>Meta-SMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cancer sites</td>
<td>6,450</td>
<td>0.85</td>
</tr>
<tr>
<td>Stomach</td>
<td>585</td>
<td>0.89</td>
</tr>
<tr>
<td>Pancreas</td>
<td>336</td>
<td>0.95</td>
</tr>
<tr>
<td>Lung</td>
<td>1903</td>
<td>0.77</td>
</tr>
<tr>
<td>Prostate</td>
<td>445</td>
<td>0.96</td>
</tr>
<tr>
<td>Kidney</td>
<td>147</td>
<td>0.98</td>
</tr>
<tr>
<td>Brain</td>
<td>210</td>
<td>1.00</td>
</tr>
<tr>
<td>All lymphopoietic tissue</td>
<td>460</td>
<td>1.03</td>
</tr>
<tr>
<td>Lymphosarcoma</td>
<td>97</td>
<td>0.87</td>
</tr>
<tr>
<td>Leukemia</td>
<td>279</td>
<td>1.10</td>
</tr>
<tr>
<td>Other lymphatic tissue</td>
<td>122</td>
<td>1.15</td>
</tr>
</tbody>
</table>
Studies of Petroleum Workers
Wong et al. (2000)

Study design: Collect and analyze non-Hodgkin’s lymphoma data from authors of studies of petroleum workers potentially exposed to benzene

Study population: 308,000+ workers employed in the refining, marketing and production/pipeline divisions of the petroleum industry in the US, US, Canada, Australia, Italy and Finland

Number of individual studies: 26 cohort studies

Follow-up: 1937-1996

Exposure classification: No individual estimates
Studies of Petroleum Workers
Wong et al. (2000)

Comments:
• Examine individual studies as well as the combined data
• NHL reported for the first time for many cohorts
• No excess for any individual study
• Large sample size of the combined study data (308,000+)

Conclusion:
No increase of NHL in petroleum workers.
**Studies of Workers Exposed to Benzene**

*Rinsky et al. (2002)*

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>No. of deaths</th>
<th>SMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>All causes</td>
<td>656</td>
<td>1.0</td>
</tr>
<tr>
<td>All lymphopoietic tissue cancers</td>
<td>25</td>
<td>1.70*</td>
</tr>
<tr>
<td>All leukemias</td>
<td>15</td>
<td>2.56*</td>
</tr>
<tr>
<td>NHL</td>
<td>5</td>
<td>1.0</td>
</tr>
<tr>
<td>MM</td>
<td>5</td>
<td>2.3</td>
</tr>
</tbody>
</table>

* * statistically significant*
Cancer Risks in a Historical UK Cohort of Benzene Exposed Workers

Sorahan et al. (2005)

- 5514 workers
- Benzene exposure – 1966/67 and earlier
- Single benzene exposure estimate for 130 of 233 participating facilities
- Follow-up from 1968-2002
- SMR – 94 (53-156)
# Case-control Studies of NHL & Benzene Exposure

<table>
<thead>
<tr>
<th>Author, year</th>
<th>Location</th>
<th>NHL cases</th>
<th>Exposure as stated</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schumacher, 1988</td>
<td>North Carolina</td>
<td>510</td>
<td>Benzene</td>
<td>0.77 whites 0.94 blacks</td>
</tr>
<tr>
<td>Ott, 1989</td>
<td>West Virginia</td>
<td>52</td>
<td>Benzene</td>
<td>1.0</td>
</tr>
<tr>
<td>Scherr, 1992</td>
<td>Boston</td>
<td>303</td>
<td>Benzene</td>
<td>1.2</td>
</tr>
<tr>
<td>Blair, 1993</td>
<td>Iowa &amp; Minnesota</td>
<td>622</td>
<td>Benzene</td>
<td>1.1</td>
</tr>
<tr>
<td>Siemiatycki, 1991</td>
<td>Montreal</td>
<td>215</td>
<td>Benzene</td>
<td>0.7</td>
</tr>
<tr>
<td>Franceschi, 1989</td>
<td>Northeast Italy</td>
<td>208</td>
<td>Benzene &amp; solvents</td>
<td>1.2</td>
</tr>
<tr>
<td>Cartwright, 1988</td>
<td>Yorkshire, UK</td>
<td>158</td>
<td>Benzene</td>
<td>0.5</td>
</tr>
<tr>
<td>Bernard, 1984</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass, 2003</td>
<td>Australia</td>
<td>14</td>
<td>Benzene</td>
<td>1.0</td>
</tr>
</tbody>
</table>
### Case-control Studies of NHL & Benzene Exposure (cont’d)

<table>
<thead>
<tr>
<th>Author, year</th>
<th>Location</th>
<th>NHL cases</th>
<th>Exposure as stated</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seidler, 2007</td>
<td>Germany</td>
<td>710</td>
<td>Solvents &amp; benzene (at &gt; 130 ppm-years)</td>
<td></td>
</tr>
<tr>
<td>Whitworth, 2008</td>
<td>United States</td>
<td>977 (childhood)</td>
<td>Benzene (EPA models)</td>
<td>0.99</td>
</tr>
<tr>
<td>Vineis, 2007</td>
<td>Italy</td>
<td>1,428</td>
<td>Benzene</td>
<td>16.3 (not SS) 29.8 (SS – with FHx)</td>
</tr>
</tbody>
</table>
NHL “Critical” reviews – Benzene and O/E as “Risk Factors”

- Peach, 2001 – Smoking (neg.)
- O/E (pos.)
- Wong, 2005 – Benzene (neg.)
- Lamm, 2005 – Benzene (neg.)
- Smith, 2001 – Benzene (pos.)
- Mehlman, 2006 – Benzene (pos. causal)
Benzene Exposure and Risk of Non-Hodgkin Lymphomas

Smith et al. (2007)

- 93% of studies showed some elevation of risk
- 53% of studies showed a SS risk elevation for NHL
- “Numerous studies have also reported associations between benzene exposure and the induction of lymphomas in mice. Further, because benzene is similar to alkylating drugs and radiation in producing leukemia, it is plausible that it might also produce lymphoma as they do and by similar mechanisms.”
Multiple Myeloma

- Plasma cells, final product of B-cell differentiation
- MM produces elevations of IgA, IgD, IgE, IgG, or light chains, IgM and heavy chains
- 10% of hematological cancers
- 1% of cancer deaths in western nations
- 28% five year survival rate
- MGUS
- Incidence **not** increasing from 1970 – 2000 unlike NHL
- Increasing age – primary risk factor
Studied/Potential/Known Risk Factors/Associations for MM

- Socio-economic status
- Autoimmune disorders
- Allergies and allergy treatment
- Infections
- Familial aggregation
Studied/Potential/Known Risk Factors/Associations for MM (cont’d)

- Ionizing radiation (atomic bomb survivors, occupational, therapeutic)
- Agricultural work and pesticides
- Obesity (Reeves, 2009 Million Woman Cohort Study), 1.31 SIR (1.04-1.65)
- Alcohol and Smoking (Fernberg, 2007 (Nationwide Swedish Cohort) – Smokers 0.96 IRR (0.77-1.20))
- Various occupational exposures (asbestos, wood products, paint, rubber and plastics, engine exhaust, metals)
Key Benzene Exposure/Multiple Myeloma Epidemiology Studies

- Gun, 2005 (Australian Health Watch) – 1.1 SIR (0.6-1.8)
- Rinsky, 2002 – 2.5 RR (0.7-4.80), no pattern with cum. exposure
- Ireland, 1997 – 2.3 RR (0.7-5.3), no increased risk for highest exposed group
- Hayes, 1997 – no increased risk
- Kirkeleit, 2007 (Norwegian petroleum workers) increased risk in one group with earlier exposures
Key Benzene Exposure/Multiple Myeloma Epidemiology Studies

- Costantini, 2008 (Italian MC case-control) – 1.9 OR (0.9-3.9), BUT no correlation for AML!
- Heineman, 1992 (case-control) – no increased risk
- Linet, 1987 – (case-control) – no increased risk
- Chen and Seaton, 1996 (meta-analysis of 55 cohort mortality studies and organic solvent exposure) – 1.1 SMR (0.8-1.6)
- Sonoda, 2001 (meta-analysis of case control studies from 1986-1994 and organic solvent exposure) – 0.7 OR (0.6-0.9)
Detailed Meta-Analysis of MM and Benzene Exposure

Infante, (2006)

• Pooled 7 cohort studies – 2.13 RR (1.31-3.46)
• Petroleum studies provide some support
• Biological plausibility
• Selective data from studies
Schottenfeld and Fraumeni, 2006

“Limited evidence from cohort studies that occupational exposure to benzene is associated with myeloma incidence is contradicted by largely negative results from studies of petroleum and rubber workers, arguing against a role of benzene as a strong risk factor for myeloma.”
# Common Genetic Disorders

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Mutation</th>
<th>Chromosome</th>
</tr>
</thead>
<tbody>
<tr>
<td>22q11.2 deletion syndrome</td>
<td>D</td>
<td>22q</td>
</tr>
<tr>
<td>Angelman syndrome</td>
<td>DCP</td>
<td>15</td>
</tr>
<tr>
<td>Canavan disease</td>
<td></td>
<td>17p</td>
</tr>
<tr>
<td>Celiac disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charcot-Marie-Tooth disease</td>
<td></td>
<td>Poo Disease</td>
</tr>
<tr>
<td>Color blindness</td>
<td>P</td>
<td>X</td>
</tr>
<tr>
<td>Cri du chat</td>
<td>D</td>
<td>5</td>
</tr>
<tr>
<td>Cystic fibrosis</td>
<td>P</td>
<td>7p</td>
</tr>
<tr>
<td>Down syndrome</td>
<td>C</td>
<td>21</td>
</tr>
<tr>
<td>Duchenne muscular dystrophy</td>
<td>D</td>
<td>Xp</td>
</tr>
<tr>
<td>Haemophilia</td>
<td>P</td>
<td>X</td>
</tr>
<tr>
<td>Klinefelter syndrome</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>Neurofibromatosis</td>
<td></td>
<td>17q/22q/?</td>
</tr>
<tr>
<td>Phenylketonuria</td>
<td>P</td>
<td>12q</td>
</tr>
<tr>
<td>Prader-Willi syndrome</td>
<td>DC</td>
<td>15</td>
</tr>
<tr>
<td>Sickle-cell disease</td>
<td>P</td>
<td>11p</td>
</tr>
<tr>
<td>Tay-Sachs disease</td>
<td>P</td>
<td>15</td>
</tr>
<tr>
<td>Turner Syndrome</td>
<td>C</td>
<td>X</td>
</tr>
</tbody>
</table>
Some Cytogenetic Translocations Associated with NHL

Left, from top to bottom: t(2;18)(p11;q21), t(14;18)(q32;q21), t(18;22)(q21;q11), G- banding - Courtesy Jean-Luc Lai and Alain Vanderhaegen; and, right: t(14;18)(q32;q21), R- banding - Editor
Cytogenetics and NHL, MM and Benzene Exposure

• Peter Aplan, MD, NCI – 2006
• Oncogenic chromosomal translocations found in healthy individuals (exposure?)
• Complementary mutations are required to produce a frank malignancy (inadequate latency?)
Cytogenetics and NHL, MM and Benzene Exposure (cont’d)

- Rabkin, 2008 – Translocations t(14;18) associated with risk of follicular lymphoma
- Zhang, 2007 – t(14;18) translocations increased in highest benzene exposure group
- McHale, 2008 (same researchers) – t(14;18) translocations not useful as biomarker of increased lymphoma risk for benzene exposure
- Mohame, 2007; Liebisch, 2006 – great variety of reported abnormalities in MM; 64% had hyperdiploid karyotype
“One of the main challenges in toxicogenomics and environmental genetics is managed and making sense of the abundance of the data to elucidate the interaction between genes and the environmental in the development and progression of human diseases.”
“...most of these newer biomarkers have not been adequately validated, and their role in the causal paradigm is not clear. There is a need for the systematic validation using principles and criteria established over the past several decades in molecular cancer epidemiology.”
“In conclusion, there are limitations to the use of translocations as biomarkers of early effect for hematologic malignancies. Current detection methodologies may lack the necessary sensitivity for their detection at biologically meaningful levels. Also, although translocations are thought to be initiating events in leukemia, their presence alone does not cause leukemia.”
Thank You For Your Interest

“We invite you to visit our newly designed website at www.somaonline.com!”
Jury Selection and Strategy in Benzene Cases
Richard Gabriel

Benzene Litigation Conference
July 24, 2009
San Francisco

Decision Analysis
www.decisionanalysisinc.com
(310) 979-0999
Jury Selection:
9 Top Voir Dire Strategies
Voir Dire Strategy #1

Identify Juror Bias Issues
(Step into Opposing Counsel’s Shoes)
Voir Dire Strategy #2

Develop a Jury Selection Plan
Voir Dire Strategy #3

Create Open-Ended Questions
Voir Dire Strategy #4

Ask Hard Questions

(Then Watch and Listen Carefully)
Hard Question Examples

• What do you think of how companies balance profit with product safety? (D)

• My client smoked for ten years and used this solvent for 30 years. What do you think of him coming in and saying that the solvent was a substantial factor in causing his cancer? (P)
Voir Dire Strategy #5

Create a Dialogue Among Jurors
Voir Dire Strategy #6

Don’t Indoctrinate Jurors
Voir Dire Strategy #7

Don’t Worry about “Poisoning the Panel”
Voir Dire Strategy #8

Don’t Use the Phrases: “Fair and Impartial” or “Set it Aside”  
(Unless Trying to Rehabilitate a Juror)
Voir Dire Strategy #9

Look at the Whole Panel When Making Strikes
Juror Strike Dimensions in Benzene Trials

- Leadership
- Hazardous Material
- Fear/Disenfranchisement
- Rules
- Identification/Professional
- Corporate/Product Attitudes
- Intelligence
- Lawsuits
Voir Dire Strategy #10

Use Your Panel Profile and Language
Voir Dire Process

• Mini-openings
• Ask “What do you think?”
• Watch the nonverbals
• Look for rules
• Look for the story they have already made up
• Check on interpretation of legal standards “preponderance” “substantial factor”
Jury Strategy
Concept #1: POWER AND RULES

• Expertise, Knowledge and Experience = POWER

• He who has the POWER makes the rules.

• They then have to abide by the rules.

• Caveat: The rules are much stricter for those that make the rules.
Concept #2:
FORESEEABLE AND PREVENTABLE

She who has the power has the ability to anticipate and prevent harm.
Concept #3: Framing

- Role of the Jury
- Where You Spend Your Time
- What is the Case *Really* About
Framing

Manufacturer Knowledge

Vs.

Worker Exposure
Concept #4: Story of the Case

- Defensive vs. Affirmative
- Power of the Negative
- Context
- Education – Ability to Teach
- Simplicity vs. Complexity
- Concrete vs. Abstract
Jury Instructions and Verdict Forms Use
“defective design” “warning”

1200 Strict Liability—Essential Factual Elements

Edgar Williams claims that he was harmed by a product manufactured by Chextron that:

(a) was defectively designed;

or

(b) did not include sufficient warning of potential safety hazards.
Edgar Williams claims that Chextron Solvent 250 and/or Chextron Solvent 325’s design caused him harm. To establish this claim, Edgar Williams must prove all of the following:

1. That Chextron manufactured, distributed or sold Chextron Solvent 250 and/or Chextron Solvent 325;

2. That, at the time of the use, Chextron Solvent 250 and/or Chextron Solvent 325 were substantially the same as when it left Chextron’s possession;

3. That Chextron Solvent 250 and/or Chextron Solvent 325 was used or misused in a way that was reasonably foreseeable to Chextron; and

4. That Chextron Solvent 250 and/or Chextron Solvent 325’s design was a substantial factor in causing harm to Edgar Williams.

If Edgar Williams has proved these four facts, then your decision on this claim must be for Edgar Williams unless Chextron proves that the benefits of the design outweigh the risks of the design. In deciding whether the benefits outweigh the risks, you should consider the following:

a. The gravity of the potential harm resulting from the use of Chextron Solvent 250 and/or Chextron Solvent 325;

b. The likelihood that this harm would occur;

c. The feasibility of an alternative safer design at the time of manufacture;

d. The cost of an alternative design; and

e. The disadvantages of an alternative design.
Edgar Williams claims that Chextron Solvent 250 and/or Chextron Solvent 325 lacked sufficient instructions and warnings of potential risks. To establish this claim, Edgar Williams must prove all of the following:

1. That Chextron manufactured, distributed and/or sold Chextron Solvent 250 and/or Chextron Solvent 325;

2. That Chextron Solvent 250 and/or Chextron Solvent 325 had potential risks that were known or knowable by the use of scientific knowledge available at the time of manufacture, distribution and/or sale;

3. That the potential risks presented a substantial danger to users of Chextron Solvent 250 and/or Chextron Solvent 325;

4. That ordinary consumers would not have recognized the potential risks;

5. That Chextron failed to adequately warn or instruct of the potential risks;

6. That Chextron Solvent 250 and/or Chextron Solvent 325 was used in a way that was reasonably foreseeable to Chextron;

7. That Edgar Williams was harmed; and

8. That lack of sufficient instructions and/or warnings was a substantial factor in causing Edgar Williams’ harm.
“cause” vs. “contribute”

430 Causation: Substantial Factor (Revised December 2007)

A substantial factor in causing harm is a factor that a reasonable person would consider to have contributed to the harm. It must be more than a remote or trivial factor. It does not have to be the only cause of the harm.

Conduct is not a substantial factor in causing harm if the same harm would have occurred without that conduct.
1207 Strict Liability—Comparative Fault—Contributory Negligence (New September 2003)

Chextron and Solv-Central claim that Edgar Williams’ harm was caused, in whole or in part, by Edgar Williams’ and/or the Los Angeles News’ negligence. To succeed on this claim, Chextron and Solv-Central must prove both of the following:

(1) Edgar Williams and/or the Los Angeles News negligently used Chextron Solvent 250, Chextron Solvent 325, and/or Solv-Central Mineral Spirits or that Edgar Williams and/or the Los Angeles News were otherwise negligent;

and

(2) That this negligence was a substantial factor in causing Edgar Williams’ harm.

If Chextron Solvent 250, Chextron Solvent 325, and/or Solv-Central Mineral Spirits were misused in a way that was reasonably foreseeable to Chextron & Solve-Central, it may still succeed on this claim if you decide that the misuse was negligent and was a substantial factor in causing Edgar Williams’ harm. If Chextron & Solve-Central prove the above, you must find that Edgar Williams and/or the Los Angeles News were negligent.

If Chextron and Solv-Central prove the above, Edgar Williams’ damages are reduced by your determination of the percentage of Edgar Williams’ and/or the Los Angeles News’ responsibility. I will calculate the actual reduction.

• “negligence”

• “reduced”
QUESTION NO. 1: Was the Cheextron Solvent 250 and/or Cheextron Solvent 325 used or misused in a way that was reasonably foreseeable to Cheextron?

ANSWER: ___ Yes
       ___ No

If your answer to question 1 is “Yes,” then answer the next question. If you answered “No,” go to question 6.

QUESTION NO. 2: Was Cheextron Solvent 250’s design a substantial factor in causing harm to Edgar Williams?

ANSWER: ___ Yes
       ___ No

If your answer to question 2 is “Yes,” then answer question 3. If you answered “No,” go to question 4.

QUESTION NO. 3: Did the risks of Cheextron Solvent 250’s design outweigh the benefits of the design?

ANSWER: ___ Yes
       ___ No

Answer the next question.
QUESTION NO. 9: Was there a defect in Chextron’s product, Chextron Solvent 250, in that there was a failure to warn of the potential risks which were generally known or knowable at the time of its manufacture and distribution?

   ANSWER:  
   ___ Yes
   ___ No

Answer the next question.

QUESTION NO. 11: Was the defect found by you in your answer to Questions Nos. 9 and/or 10 a substantial factor in causing Edgar Williams’ injuries?

   ANSWER:  
   ___ Yes
   ___ No
QUESTION NO. 14: Based on the facts and evidence that you have heard, and without taking into account any fault by Mr. Williams or Los Angeles News, what is the total amount of damages that you find for Plaintiff?

ANSWER: $______________

QUESTION NO. 15: If 100% represents the total fault that was the cause of Edgar Williams’ injury, what percentage of this 100% was due to the fault of defendants Chextron and/or Solv-Central and the others listed below?

ANSWER:

To Chextron: __________________________ %

[If you answered “No” to at least one question in each of the three of the following groups of questions: (a) 1, 2 or 3; (b) 1, 4 or 5; and (c) 9, 10 or 11, then you must fill in 0%]

To Solv-Central: ______________________ %

[If you answered “No” to one question in each of the following groups of questions: (a) 6, 7, or 8; and (b) 12, 13, or 14, then you must fill in 0%]

To Los Angeles News: ____________________ %

To Edgar Williams: ____________________ %

TOTAL: ________________ 100%

Dated: ________________

______________________ FOREPERSON
Analysis of Jury Decisions in a Benzene Mock Trial
At each point, were you leaning towards favoring one side over the other?

- **Voir Dire**: 16% Lean Plaintiff, 16% Lean Defense
- **Opening**: 33% Lean Plaintiff, 16% Lean Defense
- **Chem. Engineer**: 50% Lean Plaintiff, 16% Lean Defense
- **PMK - P**: 41% Lean Plaintiff, 16% Lean Defense
- **PMK - Causation Expert**: 50% Lean Plaintiff, 8% Lean Defense
- **Closing**: 75% Lean Plaintiff, 67% Lean Defense
(Opening) How strongly convinced are you by:

- The plaintiff's case: Average Rating 5
- The defense's case: Average Rating 6.5
(Post Edgar Williams Testimony)

How strongly convinced are you by:

- The plaintiff's case: 4.4
- The defense's case: 6.3
(Post-Closing) At this point, how much could Chextron foresee that its solvents would be used or misused?

- 17% could not have foreseen
- 8% could foresee partially
- 25% could foresee
- 42% completely foreseeable
(Final) At this point, how much of a factor was Chextron's Solvent 250 in causing harm to Edgar Williams?
(Post-Closing) At this point, how much do you feel the risks of Chextron's design on their products outweighed the benefits?

- 42% of respondents feel the risks completely outweighed the benefits.
- 33% of respondents feel there was no risk at all.
- 17% of respondents have a different opinion.
(Post-Closing) At this point, how much defect did you find to be in Chextron's products?

- No defect at all: 25 respondants
- 17 respondants
- Completely defective: 33 respondants
(Post-Closing) At this point, how adequate or how much of a failure were Chextron's warnings on its products?
(Post-Closing) How strongly convinced are you by:

- The plaintiff's case: 7.3
- The defense's case: 4.4
Storyboarding the Case

Securities Example
Theme: Board of Directors failed to get best share price for company and failed to disclose information to shareholders prior to proxy vote
Bijou Farms Financially Stable, Improving Economic Conditions
Hurricane Wipes Out Surrounding Area and Local Economy of Bijou Farms
Bank Loans Come Due in 9 Months, Clock Ticking
Substantial Revenue Needed to Repair Properties
Hard Decision to Sell Because of Close Ties to Community, Family Held Company
Access of Shareholders to Sale Information
Frequent Communication Between Shareholders Approve of Sale
Unreliable, Financially Unstable and Shady Enterprises Bids Fall Out
98% of Shareholders Approve of Sale
Jury Strategy and Selection in Benzene Cases

By
Richard Gabriel
Jury Decision Making in Benzene Cases

1. Since jurors are always negotiating what they consider to be the important evidence in the case, the order and amount of time the parties spend on certain evidence creates inherent significance for these jurors. As a result, jurors will focus their attention on which evidence they see and hear the most in court, what they find most emotionally compelling, and what they relate to most easily. One of the most important purposes of jury research (focus groups or mock trials) is to look at what aspects of the case the jurors are drawn to.

2. Jury decision-making is changeable. It is important to study not only the characteristics of jurors who are plaintiff leaning or defense leaning from the beginning, but also which case issues cause jurors to shift their side preference from one party to the other.

3. Since jurors do not ordinarily have a working knowledge of product design, chemical composition, or medical causation, they are constantly looking for rules or standards to give them context and help them interpret the complex evidence in a Benzene trial. From a liability standpoint, jurors find it easier to blame whomever they feel has broken these established rules or violated these standards. The party who is better able to establish these fundamental rules or standards is better able to control the assignment of liability. Examples of places that jurors obtain these rules and standards include employer policy manuals, product design, labeling and manufacturing norms, industry standards, or medical diagnoses.

4. Completely aside from the evidence and the law, jurors create their own rules for what they think the parties should and should not do in a case. Many of these “rules” are drawn from a juror’s own personal experiences, references from television or the media, or internal beliefs about how they think the world should work.
5. Jurors usually believe that the party that has the most knowledge should get the most blame. In a Benzene case, jurors analyze who had the most information about the product and its potential risks. As a result, they try to understand whether the worker, the employer, or the manufacturer was in the best position to know about and protect against the potential harms of the product.

6. Juror certainty drives verdicts. If plaintiffs are able to establish that the defendants clearly violated established rules, they usually obtain better verdict results. On the other hand, defendants find it easier to prevail in these cases if they can establish uncertainty about the validity of the plaintiffs’ claims. This not only lowers juror apportionment of liability but also tends to reduce damages as well.

7. Jurors use today’s sensibilities to second-guess the choices and actions that the parties took five, ten, or even twenty years earlier. This hindsight view of the choices and actions of the parties creates more comprehensive knowledge of the risks of certain ingredients and products as well as the obligations of the employer. For example, jurors are much more aware of environmental hazards today than 20 years ago. Using today’s awareness, it is not unusual for them to believe that an employer or worker would have naturally used protective gear in handling a solvent or other Benzene product.

8. Jurors all process the case through a story model. One of the key components’ of any deliberation is how jurors assemble the story of what happened in the case. One of the key battles in any case is to control the primary discussion in deliberation of what this story actually is. Is the story about what the chemical company knew at the time it was selling its second version of its product? Was it about the employers’ ventilation in the work area? Was its about the workers use of protective gear or smoking history?
Juror Reactions to Benzene Cases

Richard Gabriel

**Jury Selection in Benzene Cases**

If a Judge allows you to use a supplemental juror questionnaire, this can obviously give you a strong indication of how jurors’ beliefs, opinions, and life experiences will inform how they see the case. If you have done jury research, such as focus groups or mock trials, you can include questions in your supplemental juror questionnaire that you know can identify a pro-plaintiff or pro-defense preference.

Follow-up voir dire questions will also help to clarify these initial juror ratings as well to see whether you can obtain cause challenges on certain jurors.

- Defense leaning jurors have difficulty with the preponderance standard. As one juror said, "you have to more than convince me... the 49%/51% scale doesn’t make sense to me."

- Obviously, some jurors may bring their own pre-formed opinions to the case. Some jurors have already concluded that Benzene is a "known carcinogen."

- Some jurors look strongly to who they perceive as neutral third parties to create objective standards in the action. As one juror said about his own work environment, "We use whatever safety standard that OSHA puts in place."

- Sometimes a litigator is confronted with how to interpret seemingly opposing information from a juror: both plaintiff and defense oriented responses. This is where counsel needs to identify one of the most challenging issues in the case (e.g. labeling) and ask this juror to opine on that issue. The answer will usually give you the final slant the juror will take on the case.

- One is always looking at strong leadership in a juror as a potential risk. Although he made many good defense oriented statements to voir dire questions, a juror in a mock trial also said, "A [manufacturing] company should take extra measures and extra precautions." You ultimately have to look at the entire panel composition in a trial to see whether this juror will stick with you. If not, he has the potential to pull a number of other jurors with him in his verdict. In a bad panel of jurors, you might decide to keep him, hope the plaintiffs would strike him or find another strong juror to balance out his strength.
• Jurors should also be rated on whether they are a low damage or high damage juror. For instance, one juror in voir dire said that safer alternative designs should be "economically viable." This response can indicate a more conservative approach to damages.

• A main concern for the plaintiffs in Benzene cases is the perceived culpability of the employee. In talking about knowledge of workplace hazards, if a juror says, "The employee should also be knowledgeable," this comment would indicate that the juror is already apportioning responsibility to the plaintiff.

• Anti-corporate bias can easily indicate a pro-plaintiff lean. For example, if a juror says "Big companies are always passing off something that is harmful as not harmful," this obviously tells you which way this juror is heading. However, it is important to also test very specific attitudes to case-specific issues. Some pro-defense jurors can generally believe that corporations care more about profit than people, yet still find little merit in a plaintiff’s defective design case.

• In Benzene cases, it is important to gauge a juror’s “fear factor.” A juror in a Benzene mock trial opined that she did not understand why businesses would need a commercial solvent. She said "They should use stuff we use in our [own] houses." This fear about the toxicity of a product translates directly into a juror’s estimation about the exposure length and dosage needed to cause a plaintiff’s AML.

In evaluating jurors, it is important to consider how they may react to ALL aspects of both your case and the opposing case. Some blue-collar jurors who may be sympathetic to the plaintiff and receptive to manufacturer negligence arguments may also be critical of the worker and the employer’s failure to take the proper precautions.

Smart jurors can also be a risk in the case. Those who understand that there may not be a strong causative link can also see that there may be a design flaw, which makes it a substantial factor.
Juror Reactions to the Issues in the Case

During a recent mock trial, jurors listened to the attorneys, witnesses, and evidence while registering their moment-to-moment reactions on Perception Analyzer dial instruments. These instruments graphically measured whether the evidence and arguments that were being made helped or hurt the respective plaintiff and defense cases. These spikes or dips in juror reactions help us to identify the issues that jurors react to in a positive or negative way.

- There were positive plaintiff reactions to the questions and statements, “Did the oil companies know?” “Benzene caused cancer and the oil companies knew,” and “Did they [the manufacturer] adequately warn him?” This tells us that knowledge of the risks is an important theme for plaintiff jurors.

- There was a positive defense reaction to “The employer has a non-delegable duty to provide a safe place to work.” and “[The employer] never instructed on proper use.” This tells us that the jurors in this mock trial were easily willing to take a hard look at the responsibility of the employer.

- There was also a positive defense reaction to their discussion of PPM and the phrase “further reduction of the formula.” This highlighted some juror doubts about the dosage amount that the worker was exposed to and that the manufacturer had been proactive in making the product safer.

- There was negative reactions from jurors to the phrases, “common disease”, “age specific disease” and “disease of everyday life.” These phrases made jurors feel like the defense was minimizing the cancer.

- There was also a negative reaction to the phrase, “These companies [the defendants] are concerned about families.” Jurors perceived this as an obligatory show of concern without any real compassion for the plight of workers or their families.

- Jurors tended to lose interest on some of the testimony involving statistics from the industrial hygiene and medical causation experts.
- Plaintiff jurors had a positive reaction to testimony on the differences between the solvent in question causing cracked hands vs. its cancer causing properties.

- Cross-examination of experts may not only serve to undermine their individual testimony but can also cause significant damage to the overall case. In this mock trial, there was a great deal of juror movement toward the defense side on the cross examination of plaintiff’s medical causation expert.

- There was a big jump for defense jurors on the standards set by government agencies. However, there was also widespread juror skepticism about the organizations that do not recognize mineral spirits as causing cancer. This tells the defense that these organizations need greater explanation as to HOW they arrived at their conclusions and more about the background of the organization to give them greater credibility.

- Plaintiff and defense leaning jurors split on their reaction to the phrase “years of exposure.” Plaintiff jurors believed that this was the time that the plaintiff was unknowingly exposed to the harms of the products and defense jurors believed this was the time that the plaintiff and his employer should have provided more on-the-job protections.

- There was a positive plaintiff reaction to the plaintiff arguments that the risks outweighed the benefits in the product design. Additionally, there was an additional pro-plaintiff reaction on the question, “If you know your product causes cancer, what do you do?”

- There was a positive defense reaction to the argument that you can’t hire product babysitters and that product use entails free will and responsibility, highlighting this as a strong theme for the defense.

- Every time the focus turned to the plaintiff and his actions, plaintiff support dropped. This uncertainty about the worker’s own culpability and especially the phrase “millions of dollars” caused jurors to be suspicious of his motives.

We also took discreet measurements at different phases of the mock trial to see if and how juror impressions of the issues changed after
hearing witness testimony and arguments. Notable among these measurements:

- Jurors were slightly more convinced by the defense’s case after opening statements, but interestingly they were leaning more toward favoring the plaintiff.

- Jurors then moved more strongly toward favoring the defense’s case after the plaintiff’s testimony.

- The plaintiff’s chemical engineer moved jurors toward favoring the plaintiff and predictably, the defense chemical engineer moved jurors back to the defense.

- Both plaintiff and defense PMKs created little movement in juror side preference.

- The plaintiff causation expert moved jurors strongly toward the plaintiff case and the defense causation expert did little to move them back.

- After the closing arguments, jurors thought that both the defendant companies could foresee how its solvents would be used or misused.

- Jurors thought that both of the defendants’ products were a substantial factor in causing harm to the plaintiff.

- Although less certain, 50% of the jurors felt that the risk of the product design (in this case, a solvent) outweighed the benefits.

- Almost 60% of jurors thought there was a substantial, if not a complete, defect in the defendants’ products.

- Although there was more uncertainty on this issue, 50% felt there was a substantial or complete failure of the defendants to adequately warn of the risks of the product.

- Throughout the trial there was only a moderate desire to compensate the plaintiff and a low desire to punish the defendants.
• Although the exact percentages varied, jurors assigned approximately 30% of fault to Defendant #1, 25% to Defendant #2, 35% to the employer and 10% to the plaintiffs.

Conclusions about Juror Reactions

1. Jurors use evidence in unexpected ways. Although the plaintiffs showed the warning label on the solvent product to prove that defendants did not warn of cancer risks, jurors actually saw the warnings about the solvent vapors and the drinking hazard and interpreted that as sufficient warning about ALL potential risks of the product. During the dial movement, every time jurors saw the warning labels, plaintiff sentiment dropped and defense inclination rose.

2. Some of the jurors who voted for the defense did so because of a technicality. The defendants “technically” did not have to list the specific health risks per OSHA guidelines; therefore they should not be held liable. This demonstrates the importance of objective “third party” evidence. Although jurors do not naturally give credibility to Government agencies in life, they do use (and sometimes misuse) regulatory statutes and guidelines to create objective standards in the case.

3. Defense jurors always wonder about other cases of benzene causing cancer. These jurors always want a causative link to show that if benzene is so dangerous, there must be numerous others who have become exposed and sickened by these products.

4. Jurors naturally gravitate toward a criminal standard. More than once, jurors spoke about whether the defendants were guilty or not guilty of the accused behavior. This poses difficulty for both plaintiffs and the defense.

5. Without a clear step-by-step case map for jurors to navigate the evidence to a plaintiff verdict, it is easy for a strong plaintiff case to get diluted. Although a majority of these jurors voted “Yes” on the failure to warn and product defect, they had a harder time on substantial factor and apportioned minimal or less liability on comparative fault. This points out how ANY confusion, uncertainty, or doubt serves to reduce plaintiff verdicts.
6. In Benzene cases, jurors are always drawn to the worker and the employer since they can easily relate to those parties. By focusing significantly on these elements, it is easy to increase the percentage of responsibility on both the worker and the employer. In this mock trial, by putting on the plaintiff first in evidence, the law of primacy determines that jurors scrutinize the worker’s claims: what they knew or didn’t know. What they did or didn’t do becomes central to the case.

7. By creating this focus, everything was seen through the eyes of the worker. Thus, even though the product labels were shown to demonstrate that the defendants did not warn about cancer risks, all jurors saw was the warning and language about washing it off of clothes and skin. That by itself created a warning that the plaintiff and his employer should have heeded.

8. Jurors draw on their own life experiences to interpret the evidence in a case. Thus, jurors interpret warning label evidence through how they interact with labels in their everyday life. Similarly, many jurors know someone who has had cancer. These jurors become their own medical causation experts on the subject.

9. Since jurors have their own work experiences, they will also judge the worker and employer through their own rules of how employers and employees should provide safe work environments, policies, procedures, and practices.

10. Context is extremely important in these cases. Since jurors will always use hindsight to judge the actions of the parties, it is important to understand how jurors will judge the actions of the parties. While there was no testimony about the standard job practices of workers who cleaned printing presses at the time that the plaintiff started his employment, jurors presupposed that he could have been wearing gloves and a mask.

11. Experts must be careful on how they present their findings. One juror noted what they felt was an error in statistical reliability from one of the data sheets. Some good defense jurors can scrutinize and be quite critical of expert testimony. They can even use discrepancies to shift over to the plaintiff side if they feel that the expert, and by association the defense is trying to “pull a fast one.”
12. One of the most interesting observations of the dial responses came toward the end of the mock trial. In looking at the responses, there was a distinctive juror shift toward the plaintiff preference during the defense case presentation. This highlights the challenging question for the defense: how much of a case should be presented? This underlines how important it is to test evidence through research. Sometimes when you are presenting what you consider to be the best evidence in the case, you may actually be harming the case.

Examples of Plaintiff Juror Comments in Deliberation

Focusing on the duty to warn and knowledge of the hazards of the product created a shift in responsibility from the employer and employee’s duty to protect to the defendants duty to safeguard their consumers. The key question for this shift was, “Who was in the best position to know the hazards associated with the product?”

- Basically, they [employer] bought a product and it didn't say there was benzene in there, so they have no idea. There was a warning label that said it was flammable, so they enforced don't smoke, and [the plaintiff] listened to that. The company that made the chemicals, they have a very limited warning on there. They kept saying, “Oh, there's no benzene in it, or maybe a little bit.” You need to let people know that there is some in it, regardless of how much is in it, so they can make the decision of whether or not they want to use it or not and how to protect themselves.

- The doctor made a good point: Within 19 to 33 inches, that's when you're exposed to that.

- They [the manufacturer] didn’t do enough research on how it affects people in large amounts.

- Do you think that if there was any mention of cancer, he would not have gone to Walgreen's and bought a pair of gloves?

- They gave him the warning. Now, extended use. What is extended use? 10 years? 5 years? 35 years is a long time to be in any job without using anything [for protection].

- The one thing I didn't understand was why at first they said there was no benzene, and then they're arguing that there was less benzene.
• The defense was very, very selective. And they used a lot of data and they construed their data the way that only went as far as they molded their opinion; they molded the facts.

• Should there have been a warning label on the back saying that it could cause leukemia? Because everybody in the insurance department is in agreement that the benzene can cause leukemia, and there was nothing on the back that said that. And is that because it was under the guidelines or because it was less than 1 percent? And if it was under the 1 percent, wouldn't you have to have it on there? I think that was a gray area in the defense, because, even though they were within the guidelines they did not put a lot of information about the benzene, which had probability of causing something depending on the way it was used.

Examples of Defense Juror Comments in Deliberation

Thematically, these jurors focused on the responsibilities of the employer and the worker to know best how to use proper precautions in handling a toxic product. These jurors also focused on the insufficiency of evidence showing the product harmed the plaintiff. These jurors felt that the company was technically within the allowed regulatory guidelines, therefore should not be found liable.

• I own a hair salon. I have girls that work for me. Okay? I -- it is their option if they want to put gloves on when they are shampooing or when they're doing color. They choose not to. Now, I took the precaution. You don't take time to read and find out about the product, the hair color product, and one of your workers ten years down the line shows up with skin cancer of the hands, you're liable because you didn't protect your-- you didn't protect your workers.

• People are going to do what they want. Okay? Maybe if they put a label on that said, "could cause cancer." It still means could, could maybe not. You know, there are warnings on alcohol, but the people that manufacture the alcohol don't tell me how to use it. I choose what to do with it.

• Yeah. But on the other hand, is, you know, what - you’re working with chemicals that have a warning on it that says, harmful, that could be fatal. Don’t you ask, well, why?
• If it says, avoid skin contact, avoid breathing for long amounts of time, don't swallow it. You know it's dangerous. You would think that [the plaintiff] would say, “Gee, if I can't touch it for a long time, should I get gloves?” His boss should have known that from the beginning. You need to tell me what to do. They need to have a standard.

• He [the plaintiff] chose to be ignorant and reckless in the way he worked with stuff. We don't know if after work a person who smokes all the time -- now I can't smoke for 8 hours. When I get off work, I'm going to go chain smoke. The plaintiff -- you're trying to get million dollars – they didn't bring forward one person from the company that made the solvent that got non-lymphoma cancer.

• The plaintiffs didn't present a case that says, “Your product really made him sick.” They presented a case that said, “Your product's got something to do with it.” But it wasn't good enough.

• Because OSHA said that the benzene level was within normal range and was not harmful. We would love to know if your product is going to kill us. But if you don't have to tell us, I don't expect you to tell us. Remember, they -- we're not saying that [the defendants] weren't dirt bags for not putting everything on there. They did what they had to do like every other company, you know.

• But the substantial factor to [the plaintiff’s] injuries is not the product; it's the fact that his company did not regulate how he used the product.

• He's not wearing a mask. He wasn't protected. [The defendant] covered their ass in this. They put a label on it. It was on there. It’s not [the defendant’s] fault. It's his fault. In 1971, you know how to read that label.

• I gave them [the employer] 45 percent because I felt that they could be knowledgeable and investigate what they were purchasing as well as enforcing procedures in their workplace. I also gave [the plaintiff] 30 percent because clearly, one label said that it was hazardous. And he, at that point, made a choice that he’d rather stay in a hazardous situation than fix it. And I think it was his responsibility to bring issues up to his supervisors.
• As you know, my opinion is not guilty. The only thing that could have changed that is if they would have been able to have evidence proving that someone else in the history of the world was affected by that product. That would have helped us.

• At first, I was for the plaintiff and I was sympathetic for this man. But the chemical companies, you know, that did a great job of protecting themselves. They were within guidelines and there was no -- there was no decisive studies and no solid proof that, you know, that benzene caused this man's lymphoma. So how can you rightfully say, legally blame the chemical company when there's no proof?

• And I give responsibility to [the plaintiff] because it's common sense. You know, if he's working with solvents, he's working in ways that he's feeling physically ill, you need to question that. That's something pretty much anybody would do improperly.

For more information on jury decision-making in Benzene or other product litigation, please feel free to contact Richard Gabriel at (310) 979-0999 or email him at rgabriel@decisionanalysisinc.com.

Richard Gabriel is President of Decision Analysis, one of the oldest and most respected litigation research and communication firms. For more than 24 years, Decision Analysis consultants have worked on thousands of complex and high exposure trials throughout the United States. Decision Analysis has developed a unique methodology for understanding and influencing case outcome in product liability cases. Our distinctive approach is to delve below the surface of fact finder impressions and identify the exact issues, attitudes, evidence, values, testimony, and perceptions that drive judicial and juror decision making at various points in the litigation. This is done through rigorous research methodologies in survey, mock trial, and focus group work to obtain precise quantitative and qualitative results. After defining these key factors, we translate the research results into persuasive communication strategies to positively impact trial outcome. Decision Analysis’ services are specifically designed to ease the uncertainty of trial risk and to control the case outcome by managing the dynamic issues that affect verdicts.
Voir Dire

Practices and Procedures In
Jury Selection

Presented by Ed Slaughter
Juror Questionnaire

• Will a questionnaire be allowed?
• When does the Court approve it?
• When will the panel fill it out?
• When will you have to review it?
• Other juror information available?
Hardships and Court Questions

• How will the Court handle hardships and general time qualification?
• Will the Court qualify a full panel before voir dire begins?
• How many will the Court seat?
• Will the Court question the panel?
• Should you supply questions?
Practical Constraints

- Will you be allowed to question?
- How much time will be allowed?
- Demonstratives allowed?
- Jury Consultants allowed at counsel table?
- Time to confer about challenges?
Challenges and Disqualification

• What hardships will be sufficient?
• What are the statutory disqualifications?
• What is required to support a challenge for cause?
• What is required to rehabilitate a juror?
• How are preemptory challenges exercised? How many?
• Strategic Decisions on challenges?
How you should prepare

• Hire a local jury consultant
• Draft jury questionnaire
• Draft specific voir dire questions tailored to the venue
• Identify the attitudes or profiles that concern you most
General Schools of Thought

• Voir Dire is an opportunity to introduce your trial themes and develop a rapport with the jury
• Voir Dire is an opportunity to learn about the background and identity of your jury
• Voir Dire is an opportunity to identify the attitudes of your jurors
• And get the bad ones off
• GENERAL AREAS OF QUESTIONING
Bias and Prejudice

• Bias is not bad
• Certain type of case where you are not comfortable serving as a juror
• You would TRY to be impartial, but you believe a different juror would be better suited to this case.
Prior Lawsuits

• Ever file a lawsuit?
• Made a claim for damages?
• Satisfied with the results?
• Satisfied with the legal system?
Benzene Exposure

- Ever been exposed to Benzene?
- Worked in a Refinery? Tire Plant?
- Handled Solvents?
- Have any concern for your health?
- Any other health concerns?
- Government doesn’t protect us?
Lawyers

• John Travolta – A Civil Action
• Erin Brochovich
• See Plaintiffs lawyers as crusaders?
• See lawyers who defend corporations as dishonest?
Burden of Proof

Defendants should have to prove they did nothing wrong?

Defendants should have to prove that their product could not have caused the harm?
Benzene

• Know anyone with a Benzene related disease?
• Believe that any amount of Benzene, no matter how small, will cause disease
• Any product with Benzene should be banned?
OPINIONS ABOUT LAWSUITS

True or False?

• If a defendant is in a lawsuit that makes it all the way to trial, the defendant must have done something wrong

• If the plaintiff has some damages, the defendant should automatically have to pay them

• Even if the plaintiff cannot prove the defendant did something wrong, defendant should have to pay the damages because they are here in the lawsuit
OPINIONS ABOUT LAWSUITS

True or False?

• When someone dies of cancer, there is usually someone at fault

• If someone dies and their family sues a big company, it’s OK to give the family some money regardless of whether the company did anything wrong
PRIOR JURY SERVICE
Personal Experience with Cancer

• Suffer from any form of Cancer?

• Family member with Cancer?

• Act as a caregiver for anyone with serious illness?
CORPORATE CONDUCT

• Corporations put profits before safety?

• Corporations are not accountable?

• Corporations conceal important safety information?
Punitive Damages

• Do you agree awarding punitive damages against large companies is the best way to get them to behave more responsibly?
Damages

• Damages in lawsuits tend to be:
  • Too high
  • Too Low
  • Just about Right
Pain & Suffering

Do you believe if someone files a lawsuit because he has been injured or has a terminal illness, damages for pain and suffering should always be awarded?
Government Regulation

• Government regulations tend to favor
• Mostly business
• Mostly the public
• Business and the public equally
Every Precaution?

- Do you agree when it comes to protecting workers, companies should take every conceivable precaution, no matter how impractical or costly these precautions might be?
Warning Needed?

• When should a manufacturer place a warning on a product? When there is:
  • *Any* indication of a hazard
  • Slight indication of a hazard
  • Significant indication of a hazard
  • Substantial indication of a hazard
Workplace Safety

• When it comes to workplace safety do most companies wait to take action until they are forced or take action on their own? Who believes companies:
  • Wait to take action
  • Take action on their own

Case Information

Mr. Plaintiff was born on February 10, 1962 (Int. Commercial Screen Supply: #1). He has been described as being diagnosed with myelodysplastic syndrome (MDS) in December of 2005 (2nd Int. 3M Company: #2). Mr. Plaintiff alleged occupational exposure through inhalational and dermal routes to solvents and “other products or pressroom chemistry” for use in the printing industry containing aromatic hydrocarbons (Complaint: #1). Specifically, he claimed exposure to a 3M Product called Super 77 Spray Adhesive, which contained n-hexane (Complaint: #38; Int. 3M Company: #1; Int. Commercial Screen Company: #20). In addition, he claimed exposure to petroleum-based products in inks and additives manufactured by Nazdar, Ink Dezyne, and K.C. Coatings (Int. Commercial Screen Supply, #3). Mr. Plaintiff has filed suit against Commercial Screen Supply because they distributed the spray adhesives, inks, and other additives at issue to his employer.

Work History

(Information from plaintiff’s answers to interrogatories. Locations where benzene exposure is alleged are shown in bold).

- **Solution Industries** (1979-1981): performed mounting work in the design department located in Framingham, MA (Int. 3M Company: #2).

- **Pentad Designs, Inc** (1981-2006): silk screen production manager located in Holliston, MA, until approximately 1999. Company was located in Ashland, MA, after July 1999 (Int. Commercial Screen Supply: #2). Plaintiff involved in closing of operations after he was diagnosed with his disease process. (MetroWest Clinic Note, 3-09-2006)

Occupational Exposure History

**Solution Industries (1979-1981)**

From 1989 to 1993, Commercial Screen Supply distributed Super 77 Spray Adhesive to Mr. Plaintiff’s employer (Int. Commercial Screen Supply: #3). His job activities involved the use of the 3M Super 77 Spray Adhesive to build sales models for presentations in trade show exhibits (2nd Int. 3M Company: #6A). More specifically, he stated that he mostly used this spray for mounting modeling materials, such as, paper, cardstock and “foamcare” (2nd Int. 3M Company: #6B). Mr. Plaintiff estimated that he used the spray adhesive an average of two to three days per week, three to five times daily (2nd Int. 3M Company: #6C). His estimated elapsed time of spraying during each use of the 3M Super 77 Spray Adhesive was approximately thirty seconds (2nd Int. 3M Company: #7A). While doing this work, Mr. Plaintiff stated he did not use a mask, respirator, or gloves (2nd Int. 3M Company: #24).
Pentad Designs, Inc (1981-2006)

From about 1981 to 2006, Mr. Plaintiff worked as a silkscreen printer in the printing industry for an entity known as Pentad Designs, Incorporated, located in Holliston, Massachusetts and thereafter in Ashland, Massachusetts (referred to as “Pentad”) (Complaint: #32). At Pentad Design, his job involved the use of the 3M Super 77 Spray Adhesive during the silk screen printing of textiles (such as tee shirts), to build sales models for presentations, and the printing of signage (2nd Int. 3M Company: #6A). More specifically, he stated that he mostly used this spray for mounting stencils, spraying the frames for tee shirts during a portion of the silk screen printing process for textiles, and for holding signs in position during the printing of signage (Int. 3M Company: #6B). Mr. Plaintiff worked at Pentad for 40-60 hours per week and estimated that he used the product an average of four to five days per week for one hundred to three hundred times daily (Int. Commercial Screen Supply: #2, 2nd Int. 3M Company: #6C-D). His estimated time elapsed during each use of the 3M Super 77 Spray Adhesive he estimated to be thirty seconds (Int. 3M Company: #7A). In addition, Mr. Plaintiff also used inks and additives manufactured by Nazdar, Ink Dezyne or K.C. Coatings, products he alleges contributed to his risk of developing his disease. From 1989 to 1999 the inks and additives were supplied by Commercial Screen Supply (Int. Commercial Screen Supply: #3).

From the mid-1990s to 2006, Mr. Plaintiff used masks, respirators, and gloves (2nd Int. 3M Company: #24). This timing appears to correspond to his tenure at Pentad. He used particle masks when using spray adhesives during the silk screen printing process, and wore gloves of uncertain composition when handling inks and solvents. He also used a respirator when washing inks and residue with cleaning solvents and when spray-finishing signage (2nd Int. 3M Company: #24).

Safety

Mr. Plaintiff received instruction on the use of masks, respirators, and gloves from information provided by Commercial Screen Supply (Int. 3M Company: #23). He did not recall the manufacturer of the respirators and gloves and believed one of the manufacturers of the masks was the 3M Company (Int. 3M Company: #23). He recalled reviewing the labels and MSDSs for the products by Commercial Screen Supply (Int. Commercial Screen Supply: #5). MSDSs for the Super 77 Spray Adhesive showed that the product contained hexane, cyclohexane and n-hexane (Int. 3M Company: #5).

Review of Specific Opinions

1. I believe that Mr. Plaintiff’s disease, chronic myelomonocytic leukemia, is most likely to have arisen as a primary, de novo process. The exact factors leading to his disease, as in the majority of individuals with CMML, is unknown, but these may have been influenced by a genetic predisposition to malignant disease.

2. I do not believe that Mr. Plaintiff’s disease was caused by exposure to solvents or trace quantities of benzene. The chromosomal changes seen in his case are typical of individuals who have been diagnosed with CMML as a de novo occurrence of disease, particularly when CMML occurs relatively early in life. The lack of complex chromosomal changes is also consistent with a de novo incidence of disease.
3. The amount of exposure necessary to lead to an increased risk for CMML cannot be reasonably described, since CMML has not been adequately associated with exposure to solvents and/or benzene. However, it is my belief that if such an association were at some point established, that such an association would likely have a threshold level of exposure that would be necessary prior to a person acquiring an increased risk of disease. This relationship has been demonstrated in the case of acute myelogenous leukemia (AML) to be on the order of 40 to 400 ppm-years of exposure to benzene. A similar association has not been made between solvent exposures and the risk of AML; thus, there is no threshold level that can be estimated for solvents exposures in general and the risk of hematopoietic malignancy.

I reserve the right to amend these opinions should detailed supplier and ingredient composition data become available specific to the contemporary and historical products used by Mr. Plaintiff, or if other additional information becomes available that provides further understanding regarding particular areas of this case. I may also provide responses or comments pertaining to other expert opinions that may be offered.

References


Table 1

**Occupations Historically Associated with Benzene Exposure**

- Leatherwork/shoemaking
- Chemical manufacturing
- Petrochemicals (refining, distribution, service station operators)
- Scientific laboratories (particularly glassware cleaners)
- Rubber manufacturing
- Printing (particularly rotogravure printers and commercial pressmen)
- Coal-based coke production (metallurgical and steel manufacturing)
- Plastics manufacturing
- Steel workers

Source: ATSDR, 2006

Table 2

**Human Health Effects of Inhalational Benzene Exposure**

<table>
<thead>
<tr>
<th>Exposure Level (LOAEL)</th>
<th>Length of Exposure</th>
<th>Health Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,000 ppm</td>
<td>5 – 10 minutes</td>
<td>Death</td>
</tr>
<tr>
<td>300 – 3,000 ppm</td>
<td>30 minutes</td>
<td>Dizziness, headaches, LOC</td>
</tr>
<tr>
<td>150 ppm</td>
<td>4 mos. – 1 year</td>
<td>Pancytopenia</td>
</tr>
<tr>
<td>40 ppm</td>
<td>1 year</td>
<td>Leukopenia in first 4 mos.</td>
</tr>
</tbody>
</table>

Source: ATSDR, 2005
## Table 3

**History of Benzene Regulatory Standards**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>TLV (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 1946</td>
<td>100</td>
</tr>
<tr>
<td>1947</td>
<td>100</td>
</tr>
<tr>
<td>1948</td>
<td>50 (TWA)</td>
</tr>
<tr>
<td>1949-1957</td>
<td>35 (TWA)</td>
</tr>
<tr>
<td>1958-1963</td>
<td>25 (TWA)</td>
</tr>
<tr>
<td>1964-1969</td>
<td>25 (Ceiling)</td>
</tr>
<tr>
<td>1970 and beyond</td>
<td>10 (TWA)</td>
</tr>
<tr>
<td>*1987</td>
<td>1 (PEL – TWA)</td>
</tr>
</tbody>
</table>

Sources: Paustenbach, 1992; US Department of Health and Human Services, 2005

(TLV = threshold limit value, a recommended standard from the American Conference of Governmental Industrial Hygienists (ACGIH); PPM = part per million; TWA = time weighted average over 8 hour work day; PEL = permissible exposure limit, an enforceable standard created by OSHA)

* The OSHA 1987 standard is the only standard listed here that companies are compelled to follow, but most voluntarily reduced benzene concentrations in their products well in advance of the 1987 OSHA standard.
Review of Medical Records for Plaintiff

9-28-2005 Radiology Report from MetroWest Medical Center, Framingham Union Campus. Cervical spine films done for complaints of headache, vertigo, lower back, and neck pain after motor vehicle accident. Clinical note describing this visit is not provided. Films show evidence of muscle spasm but no fracture.

12-06-2005 MetroWest Medical Intern Admission Note, Dr. Estrada. 43 year old who has worked printing T-shirts with chemical exposures for 25 years, with progressive weakness for last two weeks, also SOB with exertion. Smokes ½ pack per week, occasional alcohol. Father with h/o lung cancer, grandfather had leukemia. Differential diagnosis: aplastic anemia ? secondary to chemical exposure, GI bleed from nonsteroidal medications, lymphoma/leukemia; has family history of leukemia, but white blood count not elevated. Addendum from second year medical resident, Dr. Morra, states: “Works with chemicals, ‘ink for T-shirts.’” Attending note (name difficult to decipher) states: “Works with chemicals painting tee shirts and various clothes.” Differential diagnosis felt to be MDS vs. aplastic anemia. Medical student note mentions “Anemia possibly due to exposure to chemicals in employment setting – once list is obtained from patient (list of chemicals) refer info to heme/onc.”

12-06-2005 Hematology/Oncology resident consult note. “Patient works with ink dyes for 20 years…works with ink in shirt shop.” Grandfather had leukemia, father alive after surgery for lung cancer. Assessment: “Due to age and labs, myelodysplastic syndrome is a probable diagnosis.” Patient will undergo bone marrow biopsy to clarify the diagnostic possibilities.

12-07-2005 Medical student progress note. List of chemicals provided that patient is exposed to at work. These include Sprayway Spray Adhesive, which contains:

- Heptane
- Acetone
- Pentane
- Propane
- Liquefied petroleum

and “lacquer thinner,” containing:

- Toluene
- Acetone
- Aliphatic petroleum gas
- Methyl alcohol
- Isobutyl isobutyrate

“Patient states he has been working with such compounds for about 20 years. Both listed compounds are sprayed onto clothing at close range and no protective face gear is worn. Patient also works with organic/industrial dyes at place of employment, but they are not sprayed onto clothing.”

12-07-2005 Initial consult note from Hematology/Oncology – Dr. Sleeper. Referred for weakness and anemia. Fatigue for six weeks, worst for last 1 – 2 weeks. SOB walking up stairs, had car accident 3 months previously. Works in printing industry with ink-based dyes. Smoker,
grandfather had leukemia, father still alive, with lung cancer. Physical exam unremarkable. Labs show Hct of 15.8, increased MCV at 105, increased RDW. Retic. count 2.8%, normal LDH. Assessment: 43 year old man with 3-6 week h/o weakness, no bleeding noted, found to have platelet count of 70,000 and low hct. Differential includes MDS with CMML, aplastic anemia, paroxysmal nocturnal hemolytic anemia. To have bone marrow biopsy, including flow cytometry and cytogenetics. Being transfused, will see as outpatient.

12-08-2005 MetroWest discharge summary by Dr. Marie Ngom, admitted on 12-05-2005. Discharge diagnosis: pancytopenia of unknown etiology. Received bone marrow biopsy, transfused with 6 units of packed RBCs. Drinks and smokes occasionally. Works with chemicals, painting T-shirts and various clothes. Bone marrow biopsy results and associated studies pending. “Patient has a known 25-year history of exposure to chemicals but other etiologies needed to be ruled out.”

12-12-2005 Dr. Sleeper Hem/Onc Clinic note. Seen in followup from recent hospitalization. Working full-time, able to do “all his normal activities.” Has not had a primary care physician “all his life.” Biopsy showed markedly hypercellular marrow, with maturation of erythroid elements, but many immature elements observed. Findings consistent with myelodysplastic or myeloproliferative disorder with “some features of CMML.” Awaiting cytogenetics. Discussed possibility of bone marrow transplant, option for supportive care, to see another hematologist for a second opinion. Plan to review studies and send test to rule out CML.

12-28-2005 Evaluated by Dr. Leonardo Sirulnik at Dana Farber Cancer Institute. Notes from that encounter are not provided in the records received. However, a discharge summary by Daniel Peraza at Brigham & Women’s states that Dr. Sirulnik ordered repeat bone marrow and chromosomal studies, and asked that the pathologists at Brigham & Women’s review the slides from the MetroWest bone marrow biopsy.

12-29-2005 Pathology review of MetroWest slides by Dr. Janina Longtine. Overall findings most compatible with a myelodysplastic or myeloproliferative disorder. With elevated monocyte count in peripheral blood, best classified as chronic myelomonocytic leukemia.

1-05-2006 Dr. Sleeper Hem/Onc Clinic note. Mr. Plaintiff has diagnosis of CMML and has been receiving weekly Procrit. Saw Dr. at Dana Farber for second opinion; was told that bone marrow transplant was the only way to cure his disease. To get pretransplant workup end of January. Felt to have CMML with myelodysplastic features. Plan to transfer care to Dr. Marvin Adner when Dr. Sleeper leaves MetroWest.

1-30-2006 Pathology Report from Brigham & Women’s, Dr. Hayes. Bone marrow biopsy and aspirate smear performed; trilineage dysplasia was again seen, overall findings consistent with known “myeloproliferative/ myelodysplastic syndrome, best classified as chronic myelomonocytic leukemia-I.” Cytogenetic testing shows 18/20 metaphase cells containing monosomy 7, two with 9q deletion. “Monosomy 7 is a typical cytogenetic aberration in MDS, but can also be found in secondary AML, and in other myeloid disorders.” Flow cytometry does not show signs consistent with a lymphocytic leukemia. BCR-ABL studies were negative (done to rule out CML, chronic myelogenous leukemia).

3-09-2006 MetroWest Clinic Note – Dr. John Yawes. Arrives for transfusions. “Having easy fatiguability and some occasional dizziness…” Otherwise feeling well. “He is having a lot of social issues with the closing of his business…He does do silk screen process and printing.” Testing revealed that his sister and brother were a match for the proposed transplant.
4-19-2006 MetroWest Emergency Department visit. Seen by Dr. Chander with “sharp abdominal pain” in the left upper quadrant. CT scan of the abdomen obtained, shows incidental finding of pericardial cyst, 9 cm x 2.5 cm. Blood tests relatively normal, found to have mildly enlarged spleen. Sent home on pain medications, to follow with oncologist in AM.

4-20-2006 MetroWest Emergency Department visit leading to hospital admission. Seen by Dr. Sopko 12 hours later for complaints of epigastric pain, radiating to back, gradually worsening in intensity. Given IV narcotics with little change in complaints of pain. Admitted for pain control and evaluation. CT of abdomen and pelvis negative for aortic aneurysm, but angiography showed incidental finding of possible spontaneous hemorrhage into left adrenal gland. Pain gradually brought under control, was discharged on 4-24-2006. To follow for possible repeat bone marrow biopsy and consideration for transplant.

4-21-2006 Inpatient Consultation Note, Dr. John Yawes. “My concern of his significant rise in LDH may predict progressive transformation. He is scheduled for his bone marrow transplant in June, but certainly the sooner he can proceed on to transplant the better.”

4-26-2006 MetroWest Clinic Note – Dr. John Yawes. Seen in follow up after recent hospitalization. To go to Dana Farber for evaluation for possible transplant. “He may be entering into a more accelerated phase of his illness and require treatment sooner.” Weight noted to be 272, at 5’7” tall.

5-07-2006 Southboro Medical Group Urgent Care, Dr. Howe. Seen for left eye pain for three days; hurts to move eye. Found to have L eye conjunctival edema and erythema; given antibiotic ointment and referred to ophthalmology; refused to go to ED for evaluation.

5-11-2006 Ophthalmology clinic visit, Milford –Franklin Eye Center, Dr. Hatch. Seen for eye irritation; felt to be allergic response, given Tobradex drops. To follow if problems.

5-24-2006 MetroWest Pathology Report, repeat bone marrow biopsy. Results, in view of persistent peripheral blood monocytosis, most consistent with CMML. Concern, however, that with increased blast forms seen on this biopsy, that could be consistent with refractory anemia with excess blasts, type II.

6-13-2006 Dana Farber Cancer Institute, Dr. Schwarz. Signed consent for upcoming bone marrow transplant for chronic myelomonocytic leukemia. Procedure explained, including Cytoxan and total body irradiation treatments, followed by infusion of peripheral blood stem cells from HLA matched sister. To receive immunosuppressants to prevent graft versus host disease (GVHD). Planned admission in one week.

6-23-2006 Admission Note to Dana Farber Cancer Institute, Dr. Schwarz. “44 year old male with CMML and increased blasts admitted for MRD transplantation from an HLA-matched sibling.” Curiously, Dr. Schwarz states that “There is no family history of hematologic disorders” when previous records make it clear that the patient’s grandfather had leukemia. Social history: “Mr. Plaintiff has worked for many years in the silkscreening industry, owning his own company. He has been exposed to various chemicals used in the printing industry.” Assessment: 44 year old man with CMML admitted for transplantation.

6-29-2006 Radiation Therapy Completion Note, Dr. Peter Mauch. Patient has “chronic myelomonocytic leukemia.” Received total dose of 1,400 cGy; tolerated total body irradiation well.
7-24-2006  Discharge Summary from Brigham & Women’s Hospital, primary physician Dr. Schwarz; followed by Dr. Robert Soiffer during inpatient stay. History, laboratory findings and indications for transplant reviewed, findings “consistent with chronic myelomonocytic leukemia.” Social history: “He has worked for many years in the silk screening industry, owning his own company.” Received transplant 6-29-2006. Post-transplant course complicated by severe oral inflammation, diarrhea, and eye redness. Underwent sigmoidoscopy with biopsies on 7-18-2006, pathology of colonic biopsy indicated mild graft vs. host disease. Discharged home 7-24-2006 on immunosuppressants, dietary supplements, oral antifungal and antiviral therapy and GI medications, to follow with Dr. Schwarz in 4 days.

7-28-2006  Outpatient Progress Note, Dana Farber, Julie Vanderklish N.P.  Seen 29 days after stem cell transplant.  No signs of upper respiratory infection, no sign of GVHD, GI tract stable.  To return on August 1, then every week.

8-1-2006  Outpatient Progress Note, Dana Farber, Dr. Schwarz.  32 days after SCT for “myelofibrosis.”  Suspects that GVHD may not have ever really occurred, plans to taper steroids.

8-18-2006  Outpatient Progress Note, Dana Farber, Dr. Schwarz.  50 days after SCT for “myeloproliferative disorder, probably best classified as CMML.”  Liver function studies improved, continue Prednisone, adjust immunosuppression.

9-1-2006  Outpatient Progress Note, Dana Farber, Dr. Schwarz.  64 days after SCT, no evidence of GVHD, taper steroids.

9-15-2006  Outpatient Progress Note, Dana Farber, Dr. Schwarz.  78 days after SCT, taper Prednisone, doubt GVHD.

9-26-2006  Outpatient Progress Note, Dana Farber, Dr. Schwarz.  3 months out from SCT.  On steroids for possibility of GVHD, but biopsies never convincing.  No acute problems.

10-10-2006  Outpatient Progress Note, Dana Farber, Dr. Schwarz.  3 ½ months s/p SCT.  Continuing to taper steroids for GVHD.  “Doing nicely after transplant.”

10-24-2006  Outpatient Progress Note, Dana Farber, Dr. Schwarz.  4 months after transplant.  Completing steroid taper today for “unclear GI pathology.”  Hopes to have steroids DC’d within 2 weeks.

10-25-2006  Milford Regional Medical Center Emergency Department, Dr. DeFazio.  Seen for complaints of 15 minutes of being unable to speak.  No other focal neurologic deficits.  Non-contrast head CT did not show any acute findings.  Planned to admit patient to hospital for observation; however, patient refused admission, stating he would follow up in the morning to schedule radiologic studies and would check with his doctors at Dana Farber.  Dr. Dayan provided a neurology consult on the patient.  Mr. Plaintiff signed a form stating he was acting against medical advice and accepted the consequences of his actions.

10-31-2006  Letter from Dr. Martin Bielawski to Dr. James Howe.  Neurology consultation note summarizes history of inability to speak in “disabled screen printer.”  A subsequent MRI/MRA were performed, which were normal.  No similar symptoms in the past.  Neurologic exam found to be normal.  Impression was of possible “migraine equivalent,” as there was a family history of migraines.  Plan to do EEG and echocardiogram, placed on baby aspirin.
11-20-2006 Electroencephalogram Report from MetroWest Medical Center. EEG showed no signs of “epileptiform abnormalities,” deemed to be “normal study during wakefulness.”

11-21-2006 outpatient Progress Note, Dana Farber, Dr. Schwarz. Almost 5 months after transplant. Seen for TIA, no cause determined. LFTs continue to improve, no evidence of recurrence of his CMML.

12-19-2006 Letter from Dr. Martin Bielawski to Dr. James Howe. Follow-up neurology consultation note describes normal EEG findings, but on reviewing MRI of brain, noted possible signs of sinusitis and placed patient on Amoxicillin, which the patient did not take as he was asymptomatic. Reports no further neurologic symptoms; no headaches. Can continue aspirin, all studies normal, no other follow-up visits scheduled.

12-29-2006 Outpatient Progress Note, Dana Farber, Julie Vanderklish N.P. 6 months after transplant. Complaining of frequent loose stools, not felt to be GVHD. Given Imodium, to follow up in one month.

1-30-2007 Outpatient Progress Note, Dana Farber, Dr. Schwarz. 7 months after SCT, receiving less immunosuppressants, no sign of GVHD; having some changes in his liver function tests, thought due to iron overload from multiple transfusions. Consider therapeutic phlebotomy.

2-28-2007 Outpatient Progress Note, Dana Farber, Julie Vanderklish N.P. 8 month visit, having some cold symptoms. Still no sign of GVHD; check CXR (normal) and do swabs for nasal viruses. Note that alkaline phosphatase continues to rise slightly.

3-30-2007 Outpatient Progress Note, Dana Farber, Dr. Schwarz. 9 months after SCT, doing very well. Alkaline phosphatase lower, decreased immunosuppressants again, monitor LFTs.

4-27-2007 Outpatient Progress Note, Dana Farber, Julie Vanderklish N.P. 9 (actually ten) months after SCT, performance status is “90% of normal.” No signs of GVHD or infection. Spleen of normal size, LFTs trending downward.

6-1-2007 Outpatient Progress Note, Dana Farber, Julie Vanderklish N.P. Unscheduled visit for complaints of 10 days of a rash which spread from forearms and triceps areas to upper chest. Also has dry cough, some peripheral edema, joint stiffness and muscle aches. LFTs found to be significantly elevated compared to last results. Assessment was worrisome for GVHD; patient placed on Prednisone, immunosuppressant doses raised, skin biopsy performed of rash. Plan PFTs and CT scan of chest to look for possibility of bronchiolitis obliterans or pulmonary infiltrate.

6-12-2007 Outpatient Progress Note, Dana Farber, Julie Vanderklish N.P. Rash less impressive on chest; arm rash resolved. LFTs remain elevated, felt to have acute GVHD of “skin and likely liver” and given increased doses of Prednisone and “therapeutic tacro/rapa.” Chest CT showed mild bronchiectasis with no infiltrates; PFTs showed mild restrictive changes; the N.P. interpreted these as being essentially normal.

6-19-2007 Outpatient Progress Note, Dana Farber, Dr. Schwarz. 11 months, 20 days out from SCT, on high-dose steroids for chronic GVHD involving skin, liver and musculoskeletal system. Rash almost resolved, denies SOB; LFTs were felt to have “plateaued,” plan to continue steroids and adjust immunosuppressants after seeing blood levels. “Myeloproliferative disease in remission.” Return in 10 days to check LFTs.
Key Opinions

1. De novo, or primary disease is vastly more common in the myelodysplastic syndromes (MDS) and in chronic myelomonocytic leukemia (CMML) than secondary disease.

2. CMML has been classified as a distinct disease category from MDS and has many clinical characteristics that distinguish it from MDS; thus, prior studies looking at these conditions as synonymous should not be considered valid.

3. Myeloproliferative diseases have not been heavily associated with environmental or occupational exposures. Studies that have looked for an association between CMML and exposure to solvents, generally; or exposure to benzene, specifically, have not found a convincing relationship.

4. Chromosomal changes that have been considered to be evidence of “secondary” hematopoietic disease are commonplace in CMML and should not be deemed, by themselves, to be proof of significant exposures to toxic agents.

5. Solvent studies evaluating occupational and environmental exposures have historically had many flaws that should be considered when assessing the weight of their findings.

6. Occupational studies of silk screen printers that likely had much greater exposures to solvents have not reported measured solvent levels in excess of regulatory standards. Moreover, when benzene has been looked for specifically, it has either not been detected, or has been observed at very low levels.

7. The products used by Mr. Plaintiff are highly unlikely to have contained sufficient quantities of benzene to pose a health hazard under the given conditions of exposure during the time that he worked as a silkscreen printer.

Historical Notes on Benzene

Benzene has been used as an industrial solvent in a variety of different industries (Table 1). Although there have been few detailed descriptions of occupational exposures in the pre-1950 time frame, Greenburg provided a rather comprehensive array of measurements, with benzene concentrations ranging from 0 ppm to over 4000 ppm across a range of different industries. (Greenburg, 1926) Some of the human effects of benzene at different concentrations are presented in the following summary (Table 2). Since the late 1800s, there has been awareness that significant exposures to benzene would frequently result in suppression of one or more of the blood forming elements and with a sufficient dose and duration could result in aplastic anemia.

Prior to the 1970s, the linkage between benzene and leukemia largely consisted of occasional case reports and small groups of patients, generally with known heavy benzene exposures. Aksoy, a Turkish hematologist, is largely credited with performing the first major epidemiologic study examining the effects of benzene on a specific occupational subgroup; that of shoe and leather workers, which was published in 1974. Aksoy himself measured the workplace concentrations of benzene, a chemical widely used in the glues and solvents of the industry, finding them to be between 150 and 210 ppm, with occasional readings up to 650 ppm. (Aksoy, 1974)
Over the years, there has developed general regulatory and scientific agreement that substantial levels of benzene over an extended period will result in a heightened risk for developing AML in populations of workers so exposed. This was perhaps best demonstrated by the classic studies looking at the Pliofilm workers in Ohio performed by Rinsky and his colleagues at NIOSH starting in the late 1970s. (Infante 1977; Rinsky 1981, 1987, 1989, 2002) These studies were relatively unique, in that worker exposures had little potential confounding from other industrial chemicals, as well as having relatively comprehensive exposure assessment data, allowing dose/response relationships to be developed. Rinsky et al reported a standardized mortality ratio of 3.37 for all leukemias in the entire population, with workers having less than 40 ppm – years of exposure not observed to have any measurably increased risk. Workers at higher levels of exposure did demonstrate an increased mortality trend for leukemia, with the highest exposure group (more than 400 ppm – years) being 66 times more likely to die from leukemia than control subjects. (Rinsky, 1987)

The increasing realization that high levels of benzene exposure were potentially harmful to human health resulted in progressive voluntary reductions by companies regarding benzene usage and allowable worker exposures (Table 3), ultimately leading to the enforceable OSHA standard of a 1 ppm permissible exposure limit (PEL), measured over an 8 hour time weighted average (TWA) in 1987.

Benzene, of course, has been categorized as a carcinogen by several health authorities (ATSDR, IARC, EPA). In compliance with the OSHA hazard communication standard (HCS), companies producing products containing carcinogens at a level of >0.1% must list these chemicals on the product labels and describe them on the material safety data sheets for these products. Note that in OSHA’s 1988 Benzene Standard, referred to as OSHA 29 CFR 1910.1028, “…work operations where the only exposure to benzene is from liquid mixtures containing 0.1 percent or less of benzene by volume or the vapors released from such liquids” were exempted from the monitoring requirements. (Department of Labor, 2007) As a result, many manufacturers have either not listed benzene in their products, or have stated that benzene, if present, is <0.1% of the product. The 0.1% threshold was considered to be a level at which airborne concentrations of even carcinogenic materials would be so negligible as to not present a meaningful risk to workers using such products in an occupational environment.

While the heavy exposures to benzene experienced by the Pliofilm cohort demonstrated increased risk for AML, evaluation of cohorts with average exposures to lower levels of benzene have not demonstrated increased rates of AML or combined leukemias. (Bloemen, 2004; Bond, 1986; Ott, 1978; Wong, 1995) In the petroleum industry studies, for example, workers generally experienced mean exposures of less than 1 ppm, with lifetime exposures less than 45 ppm-years.

Myelodysplastic Syndromes

The myelodysplastic syndromes (MDS) constitute a variety of disorders that are believed to involve the hematopoietic stem cell, often resulting in dysplasia, or altered maturation, to one or more of the cell lineages produced by the bone marrow. (Wintrobe, 2004) This altered maturation process can, in many cases, lead to excessive levels of immature precursors in the bone marrow, generally resulting in reduced levels of normal blood products released into the body. Sampling of peripheral blood may demonstrate a low platelet count (thrombocytopenia), low red blood cell levels (anemia), or abnormally low or high levels of white blood cells (leucopenia or leukocytosis). In cases of elevated white blood cell levels, these elevations are generally due to the presence of abnormally high levels of blast forms (immature blood cells).
Similar to the case of acute myelogenous leukemia (AML), myelodysplastic syndromes can occur as primary disease processes (de novo), or as secondary events, such as following treatment for a variety of malignant and nonmalignant diseases, or following exposure to environmental agents, such as radiation. Overall, 80% of MDS represents de novo disease. (Strom, 2005)

While little compelling evidence has been demonstrated for associating solvents and/or benzene to the myelodysplastic syndromes in general, there is even less scientific evidence linking benzene, solvents, or occupational exposures more generally, to the myeloproliferative hematopoietic diseases (MPD), individually or collectively.

Since mounting scientific evidence suggests that CMML has many characteristics in common with the MPDs, it stands to reason that a reassessment of CMML and its risk factors is necessary to better understand both the optimal treatment of this disease, and to direct future efforts in understanding the possible genetic and environmental factors involved in its evolution, as well as developing an improved understanding of the molecular basis for its pathogenesis.

“The molecular mechanisms behind CMML are largely unknown because CMML has been seldom investigated as a separate entity. Instead, it has been investigated as a subtype of MDS….Future studies should consider CMML as a separate entity to promote a better understanding and identify more effective therapy for patients with this disease.” (Cortes, 2003)

**Chromosomal Changes and CMML**

Monosomy 7 lesions are not at all unusual in CMML, and in most series, constitute the most commonly observed chromosomal abnormality in patients with no known exposures to environmental or occupational mutagens or carcinogens; or history of treatment for preexisting malignancies. The lack of complex chromosomal changes, as seen in Mr. Plaintiff, is completely consistent with de novo, or primary hematopoietic disease; and his young age at diagnosis has been demonstrated in the literature to be associated with a much higher rate of monosomy 7, particularly as the sole abnormality. There is insufficient data to conclude that exposure to benzene, or more broadly, exposure to industrial solvents, leads to an increased risk for developing MDS. The lack of association is particularly evident in the case of CMML, where studies focusing on it as a distinct disease process have failed to observe any association between environmental or occupational exposures, and an increased risk for developing this disorder. Studies of MDS that have provided detail as to MDS subtype, at a time when CMML was classified within that disease category, have not shown any significant associations between benzene or solvents exposures and the risk for developing CMML.

**Solvent Studies**

Studies looking at environmental, occupational and household exposures to solvents have been performed to evaluate the risk of developing myelodysplastic syndrome (MDS) in various populations. In contrast to AML, however, the association of benzene exposure to the risk of developing MDS in these studies appears far less clear.

Suggestions have been made in case reports over the years (Aksoy, 1974) that myelodysplastic syndromes may be related to benzene exposure, since a few cases of acute myelogenous
leukemia, related to heavy quantities of benzene exposure (i.e., 200 to 500 ppm chronic exposures in shoe workers and Italian leather workers over a period of many years), were said to have had a “preleukemic phase” prior to developing overt AML.

A more comprehensive review of this hypothesis was performed by Crane et al at the MD Anderson Cancer Center. In their study, they looked at 270 patients with acute nonlymphocytic leukemia (ANLL), 46 of whom had a “prior preleukemic condition,” and 224 who experienced disease with sudden onset. They looked at occupational exposures to a wide variety of agents, including benzene, dyes, glues, varnishes, paints, spray paints, and a variety of other environmental, personal and occupational factors. They concluded that: “There is little evidence to support the hypothesis that a preleukemic onset is a strong marker for environmentally induced leukemia.” (Crane, 1991)

One of the first studies to test the hypothesis of exposure to genotoxic agents leading to an increased risk for myelodysplastic syndrome was performed by Goldberg et al, who evaluated 52 cases of primary MDS, i.e., patients who had not been diagnosed with a prior malignancy and received treatment. The researchers discovered that the patients with MDS had a 46% exposure rate to implicated genotoxic agents, and the control group had a 40% rate of exposure. In addition, the chromosomal changes that had been associated with AML “…were found equally in both exposed (55%) and nonexposed groups (50%)…” The researchers concluded that: “Implicating a relationship between exposure to pesticides and solvents in ANLL and MDS is difficult. All the previous studies indicating such a relationship did not use a control group of patients. Our findings indicate the pitfalls of historical data without investigating the bias of obtaining an exposure history.” (Goldberg et al, 1990)

West et al performed a comprehensive case-control study looking at lifetime exposures through occupation, environment or hobby of 400 patients with MDS and were compared to matched controls for age, sex, and area of residence. Their findings were mixed: while reporting that both “organic chemicals” and “halogenated organics” “…may be associated with myelodysplasia,” “…the odds ratio for no individual chemical was high or statistically significant.” Solvents, glues, and paints/varnishes were also separately evaluated, and in most cases were associated with a reduced risk for developing MDS; any elevated risks were slight in magnitude and not statistically significant. (West, 1995)

Overall, the studies looking at historical exposure to solvents in patients with MDS have been unsatisfying in terms of providing a clear association between exposure to solvents and increased risk for disease. This uncertainty extends to the case of benzene, specifically, where epidemiologic studies have demonstrated compelling evidence only for acute myelogenous leukemia.

Silkscreen Printers and Health Risks

In the process of performing silk screen printing onto fabrics, most operations employ some form of adhesive system to provide stability to a stencil that is sometimes placed upon the fabric prior to the printing or spraying process. Because fabrics are so flexible and difficult to reposition in exactly the same orientation on the printing surface, they are generally not removed or shifted if multiple colors are to be applied to the fabric. (Ukena, 2007) The most common mechanism for applying adhesive to the backs of the stencils that are used is to spray the backs of them with
aerosol cans, similar to products that are alleged to have been used by Mr. Plaintiff at his shop. These adhesives can be either water or solvent-based preparations.

These spray adhesives generally contain three elements: a propellant (usually a compressed petroleum gas such as propane, or “liquid petroleum”), a solid adhesive, and a solvent that is used to accompany the solid adhesive to the surface of the object being applied, in this case, the stencil. The solvent that is used, be it water or petroleum-based, then evaporates from the surface, leaving the adhesive solid over the sprayed area. The stencil is then applied, allowing the worker to spray or print over the stencil to achieve the desired pattern being created on the shirt or other fabric. Quick-drying solvents are usually advantageous, allowing a more rapid workflow, making petroleum-based solvents often preferable. In addition to spray adhesives, there are also products called “web adhesives,” which spray a liquid stream of material instead of a fine mist. These are more commonly used in large jobs, where much larger surface areas are being addressed, and more rapid and diffuse applications of adhesive may be appropriate.

NIOSH has performed Health Hazard Evaluations (HHEs) for several facilities that have employed silk screen printing operations, as either an incidental or primary function of various businesses. In 1995, NIOSH was asked by the Ohio Department of Transportation to evaluate worker exposures to vapors and gases sustained during the silk screen printing of highway signs. Workers at that time were complaining of “lethargy and a feeling of inebriation” that they associated with the use of certain inks. NIOSH evaluated MSDS sheets for the products being used at the facility, and reviewed ingredient information from the manufacturers, eventually deciding to performed area and personal air sampling for three specific chemicals: cyclohexanone, xylene and 2-methoxyethanol. None of the three chemicals sampled were present above occupational exposure guideline criteria.

Based on sampling data, none of the occupational standards for any of the chemicals described in four individual categories were exceeded. No explanation for the worker complaints of lethargy and inebriation could be determined, although they theorized that “Repetitive, monotonous tasks associated with silk screening could also be the primary contributing cause of lethargy.” They also speculated that combinations of chemicals could somehow be leading to an additive effect, even though no individual chemical was noted to be present in excess, nor was any chemical singled out as being likely to be involved in the worker complaints. (NIOSH, 1996)

Other NIOSH evaluations at screen printing facilities throughout the United States have obtained working environmental samples of various solvents in the workplace, including benzene, and reported that all samples obtained were “well below OSHA and NIOSH standards.” (NIOSH, 1980)

There have been few articles in the literature dealing specifically with the screen printing industry; most have focused on earlier commercial printing operations, looking at occupational exposures of lithographers, typesetters, and rotogravure printers. However, White et al performed a study looking at neurobehavioral effects of mixed solvents in workers of a medium-sized (27 employee) screen printing business. The media upon which the workers printed was not described, and it is uncertain how similar solvent exposures would be for these workers compared to Mr. Plaintiff, since he was never involved in manufacturing processes with equivalent volumes of finished products.

Most small commercial screen printing operations focus on advertising graphics, such as road and real estate signs, billboards, posters, decals, banners or other graphic arts displays. (EPA, 1994) In these operations, the silk screens can be quite large, and the cleaning operations to remove
excess inks and colorings can involve a much larger solvent requirement; a situation that would be less likely to occur for the limited silk screen sizes employed in a tee-shirt operation. Thus, while available studies do not address the exact working environment of Mr. Plaintiff, the reported working conditions from larger production facilities do not exceed OSHA and NIOSH standards and would not be expected to pose a significant health hazard.
Rule 701  Opinion Testimony by Lay Witnesses – If the witness is not testifying as an expert, the witness' testimony in the form of opinions or inferences is limited to those opinions or inferences which are (a) rationally based on the perception of the witness, and (b) helpful to a clear understanding of the witness' testimony or the determination of a fact in issue, and (c) not based on scientific, technical, or other specialized knowledge within the scope of Rule 702

Rule 702  Testimony by Experts – If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of any opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Rule 703  Bases of Opinion Testimony by Experts – The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence in order for the opinion or inference to be admitted. Facts or data that are otherwise inadmissible shall not be disclosed to the jury by the proponent of the opinion or inferences unless the court determines that their probative value in assisting the jury to evaluate the expert's opinion substantially outweighs their prejudicial effect.

Rule 704  Opinion on Ultimate Issue –
(a) Except as provided in subdivision (b), testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier of fact.
(b) No expert witness testifying with respect to the mental state or
condition of a defendant in a criminal case may state an
opinion or inference as to whether the defendant did or did not
have the mental state or condition constituting an element of
the crime charged or of a defense thereto. Such ultimate
issues are matters for the trier of fact alone.

Rule 705 Disclosure of Facts or Data Underlying Expert Opinion
The expert may testify in terms of opinion or inference and give
reasons therefore without first testifying to the underlying facts or
data, unless the court requires otherwise. The expert may in any
event be required to disclose the underlying facts or data on cross-
examination.

Rule 706(a) Court Appointed Experts: Appointment
The court may on its own motion or on the motion of any party enter
an order to show cause why expert witnesses should not be
appointed, and may request the parties to submit nominations. The
court may appoint any expert witnesses agreed upon by the parties,
and my appoint expert witnesses of its own selection. An expert
witness shall not be appointed by the court unless the witness
consents to act. A witness so appointed shall be informed of the
witness' duties by the court in writing, a copy of which shall be filed
with the clerk, or at a conference in which the parties shall have
opportunity to participate. A witness so appointed shall advise the
parties of the witness' findings, if any; the witness' deposition may be
taken by any party; and the witness may be called to testify by the
court or any party. The witness shall be subject to cross-examination
by each party, including a party calling the witness.

Rule 706(b) Court Appointed Experts: Compensation
Expert witnesses so appointed are entitled to reasonable
compensation in whatever sum the court may allow. The
compensation thus fixed is payable from funds which may be
provided by law in criminal cases and civil actions and proceedings
involving just compensation under the fifth amendment. In other civil
actions and proceedings the compensation shall be paid by the
parties in such proportion and at such time as the court directs, and
thereafter charged in like manner as other costs.
Rule 706© Court Appointed Experts: Disclosure of Appointment
In the exercise of its discretion, the court may authorize disclosure to the jury of the fact that the court appointed the expert witness.

Rule 706(d) Court Appointed Experts: Parties’ Experts of Own Selection
Nothing in this rule limits the parties in calling expert witnesses of their own selection.
Benzene Litigation Caselaw

A few citations


MINIMIZING THE FINANCIAL IMPACT OF BENZENE LITIGATION: THE INTERACTION OF INSURANCE, DEFENSE, AND CORPORATE CONSIDERATIONS

Barry Buchman, Esq.
Dickstein Shapiro LLP

Brad Carl, Esq.
Vice President & Assistant General Counsel
Safety-Kleen Systems, Inc.

Laura Foggan, Esq.
Wiley Rein LLP

Fred Ufkes, Esq.
Hinshaw & Culbertson LLP

HB Benzene Litigation Conference
July 24, 2009
Parc 55 Hotel
San Francisco, CA
Why Insurance Coverage Matters

- Important to policyholder finances
  - Helps to pay for the costs of defense and any ultimate liabilities
- For both policyholders and insurers, it can be important to investors and other important market participants
- It can affect how both policyholders and insurers approach defense of underlying claims
- “It may not be the sexiest of topics, but the intricacies of insurance policies may prove to be paramount in deciding who winds up footing the bill . . . .” See “Policies may not cover the drywall,” Herald Tribune, June 6, 2009, at D1.
Benzene Litigation Is Increasingly Causing Insurance Coverage Disputes

- Large claimant pool/prevalent substance
- Broad range of potential defendants
- “Quasi-signature” disease (AML)
- Plaintiff successes – drives additional cases
  - Large verdicts and settlements
  - Forum victories/consolidations
  - Appellate victories
Benzene Litigation Is Increasingly Causing Insurance Coverage Disputes (2)

- Increase in “trace” benzene litigation
- Significant defense costs
- Benzene included on Insurance Services Office’s list of emerging issues (July 2009)
- “Benzene liability claims are likely to prompt disputes [over] insurance coverage in the coming years.” Laura A. Foggan, *Emerging Risks In Insurance*, Practising Law Institute All Star Briefing (June 2008).
Benzene Litigation Is Increasingly Causing Insurance Coverage Disputes (3)

- Insurance company lawsuits
Basic Insuring Agreements In CGL Insurance Policies

- Typical CGL policies promise that insurance companies will:
  - pay on behalf of the insured “all sums” which the insured shall become legally obligated to pay “as damages” because of:
  - (a) “bodily injury” or “property damage” caused by an “occurrence” . . .
Typical CGL policies further promise that:
- the insurance company shall have the right and . . .
  the duty to defend any suit against the insured seeking damages on account of such injury or property damage, even if any of the allegations of the suit are groundless, false or fraudulent . . .
Important Points Regarding The “Duty To Defend”

- The “duty to defend” is broader than the “duty to indemnify”
  - “Litigation insurance”
  - “8 corners rule” and exceptions
  - Potential coverage above and beyond policy limits
  - Insurers often agree to pay for defense subject to reservation of rights to deny coverage later
Does The Pollution Exclusion Bar Coverage?

- "‘One of the most hotly litigated insurance coverage questions’” of the past twenty years. See Clendenin Bros., Inc. v. U.S. Fire Ins. Co., 889 A.2d 387, 394 (Md. 2006) (emphasis added) (citation omitted).

- 1970 – introduction of “qualified” pollution exclusion:
  - “This policy shall not apply . . . to any liability of any insured arising out of the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, solids, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water unless such discharge, dispersal, release or escape is sudden and accidental.”

- Exception allowing coverage for “sudden and accidental” discharges.
Does The Pollution Exclusion Bar Coverage? (2)

- 1986 – introduction of so-called “absolute,” or “total,” pollution exclusion:
  - “This Insurance does not apply to:
    - f. (1) ‘Bodily Injury’ or ‘property damage’ which would not have occurred in whole or part but for the actual, alleged or threatened discharge, dispersal, seepage, migration, release or escape of pollutants at any time.
      * * *
    - Pollutants means any solid, liquid, gaseous, or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acid, alkalis, chemicals and waste. Waste includes material to be recycled, reconditioned or reclaimed.”
- Deletion of “sudden and accidental” exception
Does The Pollution Exclusion Bar Coverage? (3)

- Some insurance companies are taking aggressive position with benzene
  - Coverage denials – are not even agreeing to defend subject to reservation of rights
  - Initiating litigation
      - Case stayed pending settlement since Aug. 29, 2008; parties must submit closing documents by Aug. 7, 2009
Does The Pollution Exclusion Bar Coverage? (4)

- Initiating litigation (continued)
    - Court ruled, based on “Pollution Buyback Endorsement,” that policy provided coverage for defense costs associated with benzene-related occupational exposure claim
    - Court assumed that, but for buyback endorsement, pollution exclusion would have barred coverage under Texas law
Main debate centers on the distinction between environmental claims and product liability claims

- Product liability/occupational exposure is where benzene claim growth has been
- Localized exposure, often indoors, resulting from the ordinary and intended use of a substance or a product containing the substance

Does The Pollution Exclusion Bar Coverage? (6)

- In many states, court have ruled that the exclusion does not apply to product liability claims
  - Courts have rendered these decisions in the context of asbestos, lead paint, welding fumes, and carbon monoxide claims

- Other states, e.g., Minnesota, have extended the exclusion beyond the environmental contamination context

- Choice-of-law (and forum) can be critical in insurance coverage disputes
Does The Pollution Exclusion Bar Coverage? (7)

- Going-forward projections
  - This “most hotly litigated” issue may evolve significantly over the next couple of years in the context of disputes over coverage for drywall-related claims. See Christie Smythe, “Drywall Cases Could Hinge On Pollution Clause,” Insurance Law360 (June 29, 2009)
Interplay Between Insurance and Defense Considerations – Right To Select/Control Defense Counsel

- Issue comes up most where insurer is defending under reservation of rights

- Most states – policyholder has right to its own counsel where insurer has reserved rights and the reservation relies on factual and/or legal premises that are contrary to the positions that the policyholder may take in underlying litigation
  - California has statute – Cal. Civ. Code § 2860 (“Cumis counsel”).
  - Other states have case law – see, e.g., Public Serv. Mut. Ins. Co. v. Goldfarb, 425 N.E.2d 810, 815 (N.Y. 1981)
Interplay Between Insurance and Defense Considerations – Right To Select/Control Defense Counsel (2)

- Not all states may accept notion of a policyholder right to its own counsel – see, e.g., Finley v. Home Ins. Co., 975 P.2d 1145, 1151 (Hi. 1998). The Hawaii Supreme Court still noted that the policyholder is the defense counsel’s sole client.


- If have agreement on indemnity coverage, the tension is resolved.
Interplay Between Insurance and Defense Considerations – Cooperation and Consent to Settlement Clauses

existence of duty

- Disputes arise mostly where insurer has issued reservation of rights
  - If insurer denies coverage, courts often consider that a breach, leaving policyholder free to protect own interests
Interplay Between Insurance and Defense Considerations – Cooperation and Consent to Settlement Clauses (2)

- Consequences of alleged policyholder breach
  - Excess insurer that is not paying defense costs, at least under ROR, may not be able to defeat coverage based solely on breach of these clauses.
    - See, e.g., Fuller–Austin Insulation Co. v. Highlands Ins. Co., 135 Cal. App.4th 958, 985 (Cal. Ct. App. 2006) (“we find it difficult to permit appellants to rely, without qualification, on a consent provision that is designed to protect defending insurers.”)
  - Where dispute involves a defending insurer, policyholder still may have coverage if it had “skin in the game” in the underlying settlement and the settlement otherwise was reasonable
    - Law is mixed/unsettled
Interplay Between Insurance and Defense Considerations – Cooperation and Consent to Settlement Clauses (3)

- Does duty to cooperate entail sharing privileged and work product information when insurer has reserved its rights to deny coverage?
Interplay Between Insurance and Defense Considerations – Cooperation and Consent to Settlement Clauses (4)

- Even outside of Illinois, policyholders still have a duty to facilitate access to information that is not privileged or work product. See, e.g., *In re Envtl. Ins. Declaratory Judgment Actions*, 612 A.2d 1138, 1342–43 (N.J. Super. Ct. App. Div. 1992)

- There are mechanisms to facilitate such access – e.g., monthly conference calls with defense counsel, but not counsel’s memos to policyholder’s in-house counsel.
Interplay Between Insurance and Defense Considerations – Reasonableness of Defense Costs

- Disputes typically arise in context where policyholder is using independent counsel
- Insurers often will provide billing guidelines
- Guidelines should take into account the particular type of litigation the policyholder is defending (including the amount at stake), and the skill and experience of defense counsel. See, e.g., Kirk A. Pasich, “Insurers Bear Burden of Proof When Disputing Attorney Fees,” Daily Journal (Oct. 31, 2005)
Interplay Between Insurance and Defense Considerations – Reasonableness of Defense Costs (2)

- If policyholder is paying defense counsel in first instance and there is uncertainty about whether, and/or to what extent, policyholder will get reimbursement from insurers, some courts treat the policyholder payments as indicia of reasonableness. See, e.g., Taco Bell Corp. v. Continental Cas. Co., 388 F.3d 1069, 1075–76 (7th Cir. 2004); Knoll Pharm. Co. v. Auto. Ins. Co. of Hartford, 210 F. Supp.2d 1017, 1024–25 (N.D. Ill. 200)

- Uncertainty may result from initial coverage denial, disputes about insurer’s proportional share of costs (allocation), possibility of insurer withdrawal from defense, or possibility of later insurer claim for reimbursement.
Interplay Between Insurance and Defense Considerations – Reasonableness of Defense Costs (3)

- Interim defense agreements with insurers typically provide ADR mechanisms for resolving reasonableness disputes
- Some disputes do get tried in court
- In California, under the “Cumis counsel” statute mentioned earlier, disputes over independent counsel’s fees go to arbitration
- Negotiate up-front % reduction? It depends.
- Special funds for expenses like expert fees to ensure timely payment?
- Coverage for time spent by corporate counsel?
Conclusions/Practical Pointers

- Existence of adequate policy documentation is important
  - Includes older policies and policies that may provide additional insured coverage

- Choice-of-law and forum issues can be critical

- Timely notice to insurers also can be important; consequences of failure to provide such notice depend on applicable law

- Evaluate potential right to independent counsel – analyze ROR letters closely and consider potential underlying liability issues

- Establish mutually agreeable mechanism for facilitating insurer access to defense info, but be mindful of privilege issues.

- Analyze billing guidelines and discuss specific components that may interfere with best defense tactics; adapt guidelines to particular litigation; develop procedures for promptly resolving disputes
“CLEARING THE AIR”: REBUFFING INSURANCE COMPANY EFFORTS TO EXTEND THE SCOPE OF THE POLLUTION EXCLUSION TO BENZENE-RELATED PRODUCT LIABILITY CLAIMS

Barry I. Buchman¹

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I. INTRODUCTION

“The terms ‘irritant’ and ‘contaminant,’ when viewed in isolation, are virtually boundless, for ‘there is virtually no substance or chemical in existence that would not irritate or damage some person or property.’ Without some limiting principle, the pollution exclusion clause would extend far beyond its intended scope, and lead to some absurd results. [For example], reading the clause broadly would bar coverage for bodily injuries suffered by one who slips and falls on the spilled contents of a bottle of Drano, and for bodily injury caused by an allergic reaction to chlorine in a public pool. Although Drano and chlorine are both irritants and contaminants that cause, under certain conditions, bodily injury or property damage, one would not ordinarily characterize these events as pollution.”³

Maryland’s highest court cited these statements just two years ago in the course of ruling that the so-called “absolute” pollution exclusion, which is contained in many post-1985 general liability insurance policies, does not bar coverage for product liability lawsuits involving exposure to welding fumes. The statements serve as a useful reminder to the insurance industry today, as insurance companies decide how to respond to the increased prevalence of benzene-related product liability lawsuits. Companies that are defending such lawsuits increasingly may be turning to their standard-form comprehensive general liability (“CGL”) insurance policies to

¹ Copyright 2008. Barry Buchman is Counsel at the law firm of Dickstein Shapiro LLP. Mr. Buchman represents policyholders in addressing a wide variety of insurance issues, including insurance coverage for benzene claims and other toxic tort claims. The views expressed in this article are solely those of the author, and do not necessarily reflect the views of Dickstein Shapiro or any of its clients. Mr. Buchman would like to thank his colleagues Barry Fleishman and Erin Webb for their contributions to this article.

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provide coverage for the costs of defending the lawsuits and for any liabilities that these companies may incur as a result of judgments and settlements.

If the past is any indicator, however, insurance companies may argue that the “absolute” pollution exclusion, and possibly even its predecessor, the “qualified” pollution exclusion, bar coverage for benzene-related product liability claims. Insurance companies engaged in similar efforts in response to other types of analogous product liability claims, including asbestos claims, lead paint claims, and, most recently, welding fumes claims. These claims, like benzene-related claims, typically arise in a traditional product liability context: the claims typically involve localized – as opposed to widespread – exposure to a toxic substance, and the exposure usually results from the ordinary and intended use of the substance or a product containing the substance.

In these other product liability contexts, insurance companies tried to extend the scope of both the “qualified” and the “absolute” versions of the pollution exclusion beyond their original, intended purpose, which was to bar coverage for claims arising out of traditional environmental contamination (such as discharges of hazardous waste). As a result of these insurance company efforts, the scope of the pollution exclusion in standard CGL policies has been “‘[o]ne of the most hotly litigated insurance coverage questions’” of the past twenty years.4

During this time period, a body of case law has developed interpreting the scope of the “qualified” and “absolute” versions of the pollution exclusion. The majority of these cases have rejected insurance company efforts to extend the exclusion’s reach to traditional product liability claims.5 Although courts have decided these cases in the context of product claims that do not

4 See Clendenin Bros., 889 A.2d at 394 (citation omitted).
5 See Mackinnon v. Truck Ins. Exch., 73 P.3d 1205, 1209 n.2 (Cal. 2003) (noting that “the narrower interpretation of the pollution exclusion appears to be in the majority”). Cases decided since Mackinnon, such as the Maryland Court of Appeals’ above-referenced decision in Clendenin Brothers, have continued this majority trend.
specifically involve benzene, the rationale of the decisions applies equally to benzene-related product liability claims.\(^6\)

Companies that are facing, or that may face, benzene-related product liability claims need to be aware of the major issues and decisions so that they do not forfeit their rights. Toward that end, this article provides an overview of (a) underlying benzene-related product liability litigation; (b) the evolution of the pollution exclusion in standard CGL policies; (c) the case law that largely has rejected insurance company efforts to extend the scope of the pollution exclusion to traditional product liability claims; and (d) some pointers to help policyholders navigate around the minority of decisions that are unfavorable on this issue.\(^7\)

II. BENZENE-RELATED PRODUCT LIABILITY LAWSUITS

Benzene and benzene-related product liability lawsuits have gained significant attention recently, including in the media.\(^8\) This attention has been due largely to the increased prevalence

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\(^6\) There do not appear to be any published decisions determining the scope of the pollution exclusion specifically in the context of benzene-related product liability claims, i.e., claims alleging localized exposure to benzene resulting from the ordinary and intended use of benzene or benzene-containing products. In the spring of 2008, an insurance company that previously had filed a declaratory judgment action against its policyholder sought summary judgment that the absolute pollution exclusion barred coverage for an underlying benzene-related product liability claim. See Cincinnati Ins. Co. v. RBP Chem. Tech., Inc., No. 1:07-CV-699 (E.D. Tex. filed Oct. 3, 2007). Although the parties completed briefing on that motion in late May 2008, the court stayed the case in late August 2008, pending finalization of a settlement of the coverage dispute. Materials from this case are on file with the author.

\(^7\) This article does not provide legal advice. For legal advice on the pollution exclusion or any of the other numerous insurance issues that arise in connection with benzene-related product liability claims, companies should consult with experienced insurance coverage counsel.

of so-called “trace” benzene product liability lawsuits. With greater frequency, users of products that contain benzene as one of their many components, such as paint products, soft drinks, gasoline, rubber, and certain automotive care products, are bringing lawsuits against the manufacturers of those products. This upsurge in litigation activity has caused some commentators to wonder whether benzene-related lawsuits could join asbestos litigation as one of the major battlegrounds in the area of toxic torts.9

Benzene-related product liability lawsuits typically fall into one of two categories. First, workers who use benzene or benzene-containing products in the ordinary course of their job duties, such as painters, auto mechanics, auto body shop workers, gas station attendants, and tire plant workers, are bringing product liability claims against manufacturers and distributors of those products.10 These claims typically involve allegations of exposure on the jobsite.11 Second, purchasers of consumer products that contain benzene, such as soft-drinks, are bringing lawsuits against the manufacturers and distributors of those products.12

All of these lawsuits have a critical feature in common. These lawsuits typically arise out of the plaintiffs’ use of benzene, or a product containing benzene, for its ordinary and intended

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9 See supra note 8.


11 See supra note 10.

purpose. The claims typically do not arise of out a widespread, accidental spill or other discharge of benzene into the environment. The lawsuits therefore also typically involve localized – as opposed to widespread – exposure to benzene or benzene-containing products.

III. EVOLUTION OF THE POLLUTION EXCLUSION IN STANDARD-FORM CGL INSURANCE POLICIES

Beginning in 1970, in response to environmental disasters like the one at Love Canal, and the corresponding increase in civil lawsuits and government regulation related to environmental pollution, the insurance industry inserted the “qualified” pollution exclusion into its standard-form CGL policies as a mandatory endorsement. That standard exclusion provides:

This policy shall not apply . . . to any liability of any insured arising out of the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, solids, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water unless such discharge, dispersal, release or escape is sudden and accidental.

This exclusion is referred to as the “qualified” pollution exclusion, or the “sudden and accidental” pollution exclusion, because it contains an exception allowing coverage for “sudden and accidental” discharges.

In incorporating this “qualified” pollution exclusion into standard CGL policies, the insurance industry stated that the exclusion was intended to preclude coverage only for intentional environmental polluters. The insurance industry explained that “

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13 See MacKinnon, 73 P.3d at 1210.
14 See, e.g., Insurance Services Office, Inc., ISO Policy Forms, Form Number CG 00 01 11 88.
pollution continued to be insured under a CGL policy, but deliberate polluters would remain uncovered, unable to use insurance to avoid the financial consequences of their acts.”

This “qualified” exclusion was used throughout the 1970s and early 1980s. But by the mid-1980s, environmental liabilities of policyholders had increased significantly, and the insurance industry was frustrated by what it viewed as courts’ overly broad interpretation of the “sudden and accidental” exception to the “qualified” exclusion.

These circumstances caused the insurance industry to incorporate the so-called “absolute,” or “total,” pollution exclusion into standard CGL policies beginning in 1986. That standard exclusion provides:

“This Insurance does not apply to:

f. (1) ‘Bodily Injury’ or ‘property damage’ which would not have occurred in whole or part but for the actual, alleged or threatened discharge, dispersal, seepage, migration, release or escape of pollutants at any time.

* * *

Pollutants means any solid, liquid, gaseous, or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acid, alkalis, chemicals and waste. Waste includes material to be recycled, reconditioned or reclaimed.”

16 Id. (citation omitted).


18 See Richardson, 826 A.2d at 318-19 (“insurers were distressed by judicial decisions holding that the [qualified] exclusion did not preclude coverage for gradual but unintentional pollution” (citation omitted)).

19 See Clendenin Bros., 889 A.2d at 390 & n.1 (quoting standard absolute pollution exclusions that were at issue, and noting that “[t]he relevant language of the total pollution exclusions contained in the [pertinent policies] are [sic] indistinguishable for our purposes”); see also Commercial General Liability Coverage Form § I.2.f (ISO Properties, Inc. 2003).
Consistent with the impetus for its adoption, the new exclusion removed the “sudden and accidental” exception that was contained in the “qualified” exclusion.20 The new exclusion also removed the language regarding the discharge of pollutants “‘into or upon land, the atmosphere or any watercourse or body of water.’”21

Shortly after drafting the “absolute” exclusion, the insurance industry represented to state regulatory agencies that the exclusion still applied only to traditional environmental pollution. For example, in a February 1985 filing by the Insurance Services Office (“ISO”) to the Texas State Board of Insurance, ISO wrote that the “absolute” exclusion did not bar coverage for product liability claims:

This endorsement introduces a total pollution exclusion for bodily injury and property damage arising from the discharge of pollutants. The exclusion does not apply to damages arising out of products or completed operations nor to certain off-premises discharges of pollutants.22

Despite this drafting history, the insurance industry has repeatedly tried to extend the pollution exclusion to traditional product liability claims. As discussed below, those efforts have largely been unsuccessful.

IV. CASE LAW ADDRESSING THE POLLUTION EXCLUSION IN THE CONTEXT OF PRODUCT LIABILITY CLAIMS

A. Overview Of Favorable Case Law

The majority of courts addressing the scope of the “qualified” and “absolute” versions of the pollution exclusion have rejected insurance company efforts to extend the exclusion’s reach

20 See MacKinnon, 73 P.3d at 1210 (citing Koloms, 687 N.E.2d at 79-81).

21 See id. (quoting Koloms, 687 N.E.2d at 81). As discussed below, most courts have rejected the view that the deletion of this language extends the reach of the “absolute” exclusion to traditional product liability claims.

22 Record of Official Action of the State Board of Insurance, Feb. 19, 1985 (emphasis added). ISO is the insurance industry organization that promulgates templates for use in preparing standard-form CGL policies.
to traditional product liability claims. These cases include a significant number of recent decisions from the highest courts of several states.

One of the most recent and instructive of these cases is the Maryland Court of Appeals’ decision in Clendenin Brothers, Inc. v. United States Fire Insurance Co. In that case, Maryland’s highest court ruled that the “absolute” pollution exclusion was not as absolute as the insurance company contended, and did not bar coverage for product liability lawsuits involving exposure to welding fumes.

In reaching that decision, the court relied on the fact that the underlying claims for which the policyholder sought coverage were traditional product liability lawsuits:

“The plaintiffs in the underlying suits are individuals who allege that proper use of the Insureds’ welding products produced harmful localized fumes containing manganese which caused bodily harm and neurological damage.”

The court noted that “‘products, despite their toxic nature, are not “pollutants” or “contaminants” when used intentionally and legally.’” Applying that principle, the court ruled that, “[t]he form taken of the manganese used here, as used in the ordinary course of the

23 See MacKinnon, 73 P.3d at 1209 n.2 (“the narrower interpretation of the pollution exclusion appears to be in the majority”).
24 889 A.2d 387 (Md. 2006).
25 See id. at 389.
26 See id. (citation omitted).
particular business involved, would not be considered by a reasonably prudent person to be excluded through a pollution exclusion provision.”

Consistent with this rationale, most courts to decide the issue have ruled that the pollution exclusion does not bar coverage for product liability claims involving allegations of bodily injury and/or property damage due to the presence of lead-based paint. Several courts likewise have held that the pollution exclusion does not bar coverage for product liability claims involving allegations of bodily injury and/or property damage due to the presence of asbestos-containing products, such as insulation.

In addition, many courts have ruled that the pollution exclusion does not bar coverage for claims arising from numerous other “toxic” substances, such as paint and solvent fumes, pesticides, and carbon monoxide, where the exposures are localized and where the substances are associated with products that are used in the normal course of business. Courts similarly have

28 See Clendenin Bros., 889 A.2d at 396.


31 See, e.g., NAV-ITS, Inc. v. Selective Ins. Co. of Am., 869 A.2d 929 (N.J. 2005) (absolute pollution exclusion did not bar coverage for claim arising out of exposure to fumes from floor coating/sealant); Belt Painting Corp. v. TIG
held that when edible products, such as consumer beverages, are contaminated with bacteria or faulty ingredients, the pollution exclusion does not bar coverage for property damage or bodily injury claims arising out of that contamination.\textsuperscript{32}

In all of these decisions, the courts have based their rulings on a combination of the language of the “qualified” and “absolute” exclusions themselves, the origin and limited purpose of the exclusions as reflected in their drafting history, and a commonsense understanding of what most people think of as a “pollutant.” Regarding the exclusionary language, for example, several courts have stressed that if insurance companies want to exclude claims arising from a particular product or substance, insurance companies easily can do that by including provisions in their policies that specifically exclude coverage for that particular product or substance.\textsuperscript{33} Indeed,

\begin{thebibliography}{9}


\item See \textit{Clendenin Bros.}, 889 A.2d at 398 n.4 (“[T]o ensure that localized, non-environmental workplace manganese welding fumes were excluded through the total pollution exclusion, the drafter of the insurance contract [i.e., the insurance company] could have included explicitly a provision doing so.”); \textit{Sullins}, 667 A.2d at 624 n.3 (“To be sure that lead paint poisoning claims were excluded from coverage, Allstate could have included a provision . . . explicitly excluding such claims.”); see also \textit{Nat’l Union Fire Ins. Co. of Pittsburgh, Pa. v. Am. Re-Ins. Co.}, 351 F. Supp. 2d 201, 210-11 (S.D.N.Y. 2005) (noting that if absolute pollution exclusion clause was as broad as insurance company argued, it would not have been necessary for insurance company to include separate asbestos exclusion in addition to pollution exclusion). This rationale is consistent with the principle that if, at the time of contracting, an insurance company was aware of policy language that would have made an exclusion or limitation clear, a court will not find such an exclusion or limitation by implication later. \textit{See Pan Am. World Airways, Inc. v. Aetna Cas. & Sur. Co.}, 505 F.2d 989, 1000-01 (2d Cir. 1974).
\end{thebibliography}
most post-1985 CGL policies have asbestos exclusions, and some post-1985 policies contain lead exclusions (though these exclusions are less common than asbestos exclusions).

In relying on the original, limited purpose of the pollution exclusion, courts have noted that the insurance industry changed from the “qualified” to the “absolute” version of the exclusion only to eliminate the “qualified” exclusion’s exception for “sudden and accidental” discharges. The insurance industry did not intend to broaden the pollution exclusion’s scope beyond the context of traditional environmental contamination to product liability claims:

[T]he 1986 amendment to the exclusion was wrought, not to broaden the provision’s scope beyond its original purpose of excluding coverage for environmental pollution, but rather to remove the “sudden and accidental” exception to coverage which, as noted above, resulted in a costly onslaught of litigation.34

Finally, in relying on a commonsense understanding of what most people think of as a “pollutant,” courts have expressed a reluctance “to adopt an interpretation that would infinitely enlarge the scope of the term ‘pollutants,’ and seemingly contradict both a ‘common speech’ understanding of the relevant terms and the reasonable expectations of a businessperson.”35 Consequently, the majority of courts have interpreted the pollution exclusion “as being limited

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34 See Koloms, 687 N.E.2d at 81. Not surprisingly, therefore, courts likewise have ruled that the absolute exclusion’s deletion of the language regarding the discharge of pollutants “‘into or upon land, the atmosphere or any watercourse or body of water’” does not broaden the pollution exclusion’s scope beyond the context of traditional environmental contamination. See id. (citation omitted). Among other things, because most “absolute” exclusions still contain the environmental terms “‘discharge, dispersal, seepage, migration, release or escape,’” the removal of the other language “simply removes a redundancy in the exclusion.” See Belt Painting, 795 N.E.2d at 20-21; see also Koloms, 687 N.E.2d at 81-82.

35 Belt Painting, 795 N.E.2d at 20; see also Clendenin Bros., 889 A.2d at 396 (the “‘terms “irritant” and “contaminant,” when viewed in isolation, are virtually boundless, . . . [and thus] [w]ithout some limiting principle, the pollution exclusion clause would . . . lead to some absurd results’” (citations omitted)).
to irritants and contaminants *commonly thought of as pollution* and not as applying to every possible irritant or contaminant imaginable.”

**B. Application To Benzene-Related Product Liability Claims**

Although the cases limiting the scope of the pollution exclusion have been decided in the context of product claims that do not involve benzene, the rationale of the decisions applies equally to benzene-related product liability claims. Benzene-related product claims typically allege localized exposure to benzene, resulting from the ordinary and intended use of benzene or benzene-containing products. In this regard, for purposes of analyzing the scope of the pollution exclusion, benzene-related product claims are analogous to product claims that allege injury or damage due to the presence of lead-based paint, asbestos-containing insulation products, or localized welding fumes. All of these claims arise in a traditional product liability context.

As the case law discussed above demonstrates, “toxic” substances such as asbestos, lead, manganese fumes, and benzene might be considered, in and of themselves, to be “irritants” or “contaminants” when “viewed in isolation.” But these substances do not implicate the pollution exclusion when they are used for their ordinary and intended purpose, when they are incorporated into a product that is used for its ordinary and intended purpose, or when they are emitted as a result of the ordinary and intended use of a product. Therefore, companies that are defending benzene-related product claims should be prepared to fight any contentions by their insurance companies that the pollution exclusion bars coverage for such claims.

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36 *MacKinnon*, 73 P.3d at 1216-17 (noting that insurance company’s interpretation would “cut[] a broad and arbitrary swath through CGL [insurance] protections” (emphasis in original) (citations omitted)).

37 *See Clendenin Bros.*, 889 A.2d at 396.
V. POINTERS FOR NAVIGATING AROUND UNFAVORABLE CASE LAW

Despite the case law discussed above, a minority of courts have held that the pollution exclusion extends beyond the context of traditional environmental contamination.\(^{38}\) These decisions are at odds not only with the majority rule in general, but with the recent trend among several states’ highest courts limiting the scope of the exclusion.\(^ {39}\) Nonetheless, companies that are defending benzene-related product liability claims may be forced to address this unfavorable case law, depending on which jurisdiction’s law applies to their insurance coverage dispute.

A. Distinguishing Unfavorable Case Law

To distinguish unfavorable case law, companies should focus on the facts surrounding the particular benzene exposures at issue and the language of the pollution exclusions in the companies’ particular CGL policies. For example, some unfavorable decisions do not arise in the context of traditional product liability claims, which typically involve localized exposure to a product that was used for its ordinary and intended purpose. Instead, some of the cases involve claims arising out of accidental, widespread, and/or industrial releases of a substance.\(^ {40}\) Even if such releases occurred during the ordinary course of business operations, their accidental, widespread, and/or industrial nature may sufficiently distinguish them from many traditional product liability contexts that some of the unfavorable case law may not apply.

\(^{38}\) See, e.g., *Cont’l Cas. Co. v. Advance Terrazzo & Tile Co.*, No. Civ. 03-5446MJDJS, 2005 WL 1923661, at *6 (D. Minn. Aug. 11, 2005) (although cases limiting scope of pollution exclusion to context of traditional environmental contamination represent majority view, court was compelled to follow Minnesota Supreme Court decision adopting minority view (citing *Bd. of Regents v. Royal Ins. Co.*, 517 N.W.2d 888 (Minn. 1994)), aff’d, 462 F.3d 1002 (8th Cir. 2006); *Peace v. Nw. Nat’l Ins. Co.*, 596 N.W.2d 929 (Wis. 1999) (absolute pollution exclusion barred coverage for lead paint claim).

\(^{39}\) See *Advance Terrazzo*, 2005 WL 1923661, at *6 (expressing hope that Minnesota Supreme Court would have opportunity to readdress pollution exclusion issue and adopt majority view in light of more recent precedent).

\(^{40}\) See, e.g., *id.* at *1 (pollution exclusion barred coverage for carbon monoxide claim where carbon monoxide was released widely, as gaseous exhaust and by-product of propane-powered floor grinders used in constructing part of addition to school building).
Unfavorable decisions also typically address the standardized 1970 and 1985 versions, respectively, of the qualified and absolute pollution exclusions. More recent CGL policies, however, sometimes have favorable variations on these standardized versions, including express exceptions for product liability claims. Even in an unfavorable jurisdiction, an insurance company will have difficulty arguing that such a pollution exclusion bars coverage for benzene-related product liability claims.

Companies also should review evidence regarding the underwriting of their particular CGL policies. For example, such evidence may reveal that the insurance company considered using language that would have clearly excluded benzene-related product liability claims, but then used the standard form of the pollution exclusion instead. Such evidence may make it difficult for the insurance company to now argue that it intended for the standard pollution exclusion to apply to benzene-related product liability claims.

For all of these reasons, it is important that companies closely review their policy language, their underwriting evidence, and the facts surrounding the operations and exposures that give rise to the particular benzene claims at issue. In addition to reviewing their own files for underwriting evidence and other policy information, companies that are in coverage litigation should demand that kind of information from their insurance companies as part of the pre-trial discovery process.

B. Accessing Policies That Have Only “Qualified” Pollution Exclusions, Or That Have No Pollution Exclusions At All

Companies also may be able to minimize the impact of unfavorable case law if they can access pre-1985 CGL policies that contain only the “qualified”, as opposed to the “absolute,” pollution exclusion. Companies also may be able to further minimize the impact of unfavorable
case law if they can access pre-1970 CGL policies that do not contain any pollution exclusion at all.

Being able to access pre-1985 CGL policies that contain only the “qualified” pollution exclusion may benefit companies in one of two ways. First, in a jurisdiction where courts construe the “absolute” exclusion broadly to encompass product liability claims, a court still may interpret the “qualified” exclusion more narrowly, as not extending to product claims. Second, in a jurisdiction where courts interpret even the “qualified” exclusion as encompassing product claims, companies still may be able to defeat application of the exclusion under the exception allowing coverage for “sudden and accidental” discharges. Relying on this exception, some courts have held that the “qualified” pollution exclusion bars coverage only when the “pollution” and resulting harm were “expected or intended” by the policyholder. Under this case law, merely discharging a “pollutant” is insufficient to defeat coverage; the policyholder must have intended the resulting bodily injury or property damage.


42 Most courts have interpreted the “expected or intended” concept in the “occurrence” definition as precluding coverage only when the policyholder engaged in an intentional act, such as selling a product, and when the policyholder intended the resulting bodily injury or property damage. See, e.g., supra note 41; see also Buckeye Union Ins. Co. v. New Eng. Ins. Co., 720 N.E.2d 495, 500 (Ohio 1999); Physicians Ins. Co. of Ohio v. Swanson, 569
Therefore, even if alleged bodily injury or property damage from benzene or benzene-containing products were deemed to arise from the “release,” “discharge,” “escape,” etc. of “pollutants,” a company defending benzene claims may still be able to get coverage as long as the company did not intend the alleged bodily injury or property damage. Tort plaintiffs typically do not allege, much less produce evidence, that a company specifically intended to injure them or damage their property. Rather, such plaintiffs typically allege that the company sold a product in disregard of its allegedly known risks. Thus, under this case law, companies may still be able to get coverage under their “qualified” pollution exclusion policies.

This discussion raises the question of how companies can access their pre-1985 CGL policies (with “qualified” pollution exclusions) and/or their pre-1970 CGL policies (with no pollution exclusions) in order to get coverage for benzene-related product liability claims.

CGL policies that cover periods before 1986 typically are “occurrence” policies, while some CGL policies covering periods after 1986 are “claims-made” policies. In general terms, claims-made policies cover only those underlying claims that are both filed against the policyholder and reported to the insurance company during the policy period. Occurrence policies, by contrast, do not impose such a requirement. Rather, in order for an underlying claim

N.E.2d 906, 909-10 (Ohio 1991) (in order to avoid coverage on basis of “expected or intended” exclusion, insurer had to demonstrate that injury itself was expected or intended and not merely that insured’s actions were deliberate); City of Johnstown, N.Y. v. Bankers Standard Ins. Co., 877 F.2d 1146, 1149-50 (2d Cir. 1989) (it is not enough that insured was warned that damage might ensue from its actions and proceeded anyway; insured must have intended the damage, or else have known with certainty that damage would flow directly and immediately from its intentional act); Pub. Serv. Mut. Ins. Co. v. Goldfarb, 425 N.E.2d 810, 814 (N.Y. 1981) (same); Armstrong World Indus., Inc. v. Aetna Cas. & Sur. Co., 52 Cal. Rptr. 2d 690, 722 (Ct. App. 1996) (insured must have known or believed injuries were “practically certain to occur”; general knowledge of product’s dangers is not sufficient to defeat coverage); Millennium Chems. Inc. v. Lumbermens Mut. Cas. Co., No. 411388 (Ohio Ct. Com. Pl. May 8, 2002), at 39 (CGL policies cover lawsuits in which claimants allege that companies sold lead-based paint despite knowing dangers of product, because “a party can intend to sell a deleterious product without specifically intending to cause bodily injury or property damage”), reported in Mealey’s Litig. Rep.: Ins. (May 21, 2002).
to implicate an occurrence policy, there simply must have been bodily injury or property damage during the policy period. If there was bodily injury or property damage during the policy period, then the policy must respond to the underlying claim, even if the claim was not filed and reported until years after the expiration of the policy period.\(^43\)

This concept is very important in the context of so-called “delayed discovery” claims, like lead paint claims, asbestos claims, and benzene claims. In the context of such claims, the alleged injury or damage often does not become manifest, and therefore a lawsuit often is not filed, until long after the alleged injury or damage begins (even though injury and damage may be occurring during the intervening periods).

The issue of how courts determine whether bodily injury or property damage occurred during the policy period of an occurrence policy – sometimes called the “trigger of coverage” issue – is beyond the scope of this article. The critical point to keep in mind is that benzene-related product liability claims, like asbestos claims and lead paint claims, often allege injury or damage going back several decades. A benzene-related product liability claim alleging bodily injury, for example, may allege exposure (and thus potentially injury) on the job-site as early as the 1970s, or even the 1960s. Such claims, therefore, may implicate pre-1985 policies that contain only the “qualified” pollution exclusion, and even pre-1970 policies that do not contain any pollution exclusion.

For this reason, it is important that companies facing benzene-related product liability claims collect, organize, and safeguard all of their CGL policies, going as far back in time as

\(^43\) If and when companies are served with benzene-related lawsuits, the companies promptly should give notice of those lawsuits to their insurers, absent relatively rare, case-specific circumstances that might justify refraining from giving such notice.
possible. Among other things, this process will help determine whether there are any missing policies for which secondary evidence, such as correspondence with brokers and receipts for premium payments, will be necessary. Policyholder attorneys have developed sophisticated “policy archeology” tools to help locate historical policies and secondary evidence of missing policies. Even if a company is not currently facing a significant number of benzene-related product liability claims, proactively addressing these types of documentation issues now will pay dividends, and likely save both money and aggravation, if and when a company does experience an upsurge in filings in the future.

VI. CONCLUSION

If history is any indicator, insurance companies may attempt to rely on the pollution exclusion in CGL policies, and particularly the “absolute” pollution exclusion in post-1985 policies, to avoid providing coverage for defense costs and potential liabilities associated with benzene-related product liability claims. The insurance industry’s previous, similar efforts in response to asbestos-related lawsuits, lead paint lawsuits, and, most recently, welding fumes lawsuits have been largely unsuccessful. The case law that has developed in these other contexts indicates that insurance companies likely will be largely unsuccessful in the context of benzene-related product liability claims as well. Companies dealing with such claims should not take coverage denials from their insurers at face value, and instead should aggressively pursue their rights to coverage under their CGL policies.
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Full article: http://www.paint.org/meetings/annual.cfm

Special Early Bird Registration Deadline for Marine Coatings Conference is Fast Approaching:
On May 18-20, NPCA/FSCT will sponsor the "International Marine and Offshore Coatings Conference" at the Wyndham Virginia Beach, in Virginia Beach, Va. This three-day Advancements in Coatings Series (ACSeries) program will provide a unique opportunity to learn about the latest advances in marine coatings from global experts and thought leaders. Tabletop Displays will be featured. The Early Bird registration deadline is April 24. Registration costs increase $100 after this date. In addition, Tabletop Display reservations are still being accepted.
Full article: http://www.coatingstech.org/Programs/index.cfm?event=ACSeriesDetail4

Benzene-related Litigation is Having an Increasing Impact on the Paint and Coatings Industry — Is Your Company Covered?:
Barry Buchman, an attorney at the law firm of Dickstein Shapiro LLP, tackles this burgeoning issue.

Bridge the Gap Between R&D and Implementation With Focused Sessions at CoatingsTech Conference:
The new CoatingsTech Conference, sponsored by NPCA/FSCT, will focus on the applications and technologies that will drive the coatings industry of the future. To be held in conjunction with the NPCA/FSCT Annual Meeting in Indianapolis, Ind., the CoatingsTech Conference is scheduled from April 28-29. The multi-track program will feature sessions on such critical areas as Waterborne Coatings, Application and Manufacturing, Hybrid Coatings, Emerging Markets, Weathering, Nanotechnology, and Green Coatings. Experts from coatings companies and educational institutions from around the world will lead the in-depth presentations.
Full article: http://www.coatingstech.org/Programs/index.cfm?event=FCAttendeeInfo

Business News

Ecology Coatings Names New Chief Financial Officer:
Full article: http://www.paint.org/news/04-15-09-issue02.cfm

M.F. Cachat Company Appoints Three Sales Positions:
Full article: http://www.paint.org/news/04-15-09-issue03.cfm
As benzene-related lawsuits continue to increase, so too do disputes over whether, and to what extent, general liability insurance policies cover companies that are named in such lawsuits. In the past two and a half years, insurance companies have initiated at least three different cases in which they have disputed the existence, or at least the scope, of their obligation to cover benzene-related lawsuits.2

According to some commentators, “U.S. corporate risk managers and their insurers see benzene . . . as supplanting asbestos as the next legal battlefield.”3 Another commentator likewise recently observed that “benzene liability claims are likely to prompt disputes [over] insurance coverage in the coming years.”4

Consistent with these observations, the Insurance Information Institute’s chief economist has referred to benzene as “a looming potential liability.”5 Additionally, benzene appears on the Insurance Services Office’s list of “Emerging Issues.”6

The increase in benzene litigation and in related insurance coverage disputes has direct implications for companies in the paint and coatings industry.7 Specifically, current and former...
painters have brought an increasing number of benzene exposure claims against various paint companies, and just a few weeks ago, an insurance company initiated litigation regarding the scope of its obligations to a major paint company for several benzene-related claims.  

Because of the relative infancy of benzene-related insurance coverage disputes, there have not been many court decisions addressing coverage for benzene claims under general liability insurance policies.

On the pro-policyholder side, a Texas appellate court ruled in February 2009 that an insurance company must cover the defense of a benzene-related occupational exposure claim, despite the pollution exclusion in the insurance company’s policies. Specifically, the court ruled that the policy provided coverage for defense costs associated with the claim based on a “Pollution Buyback Endorsement,” which restored coverage that otherwise was purportedly excluded under the pollution exclusion.  


9 Solvent Underwriters subscribing to Energy Ins. Int’l, Inc. v. Furmanite Am., Inc., --- S.W.3d ----, No. 14-07-00889-CV, 2009 WL 280500 (Tex. App. Feb. 5, 2009) (“Furmanite”). The court did not reach the issue of the insurance company’s duty to indemnify any ultimate liability incurred in the benzene-related claim, “because there is nothing in our record reflecting that liability has been determined in the [underlying] lawsuit.” See id. at *8 n.2. The insurance company has since filed a motion for rehearing with the appellate court, which remains unresolved as of the submission of this article.

10 See id. at *6-*8; see also Panel: Toxic Exposure Covered Under Pollution Buyback Endorsement, Mealey’s Litig. Rep.: Benzene (Feb. 2009). The policyholder apparently did not press the argument that, under Texas law (which governed the dispute), the pollution exclusion did not bar coverage as a threshold matter; instead, the policyholder apparently relied primarily, if not exclusively, on the Pollution Buyback Endorsement. See Furmanite, 2009 WL 280500, at *3 (“Relying on the Pollution and Operations buyback endorsements, Furmanite argued that the Policy
Conversely, in November 2007, a federal court in Texas ruled that an insurance company did not 
have to cover any defense costs or liabilities arising out of a benzene-related product liability 
claim.\textsuperscript{11} Specifically, the court ruled that a “products-completed operations hazard” exclusion in 
the policies barred coverage for the claim.\textsuperscript{12}

Fortunately, this pro-insurance company decision should have limited application. First, the 
policyholder did not even oppose the insurance company’s motion seeking the ruling that the 
exclusion applied; so the court accepted all of the insurance company’s assertions as true.\textsuperscript{13} 
Second, many standard general liability insurance policies do not contain “products-completed 
operations hazard” exclusions like the one that was at issue in this decision. This distinction is 
significant, because the court in this case relied solely on this exclusion in concluding that there 
was no coverage.\textsuperscript{14} The court did not address the insurance company’s other defenses, which are 
more common in insurance coverage cases.\textsuperscript{15}

Insurance companies likely will continue their efforts to establish that there is no coverage for 
benzene-related claims, or at least that such coverage is significantly limited. Fortunately, the 
insurance industry’s similar efforts in response to other toxic tort litigation, such as asbestos-
related litigation and litigation related to lead-based paint, largely have been unsuccessful.

Although there always could be a policy-specific issue, such as an applicable exclusion, that 
could limit or preclude coverage, the insurance industry is unlikely to escape having to cover 
benzene-related lawsuits. Companies defending benzene-related claims, therefore, should not

Nov. 27, 2007) ("Hammonds").

\textsuperscript{12} See id.; see also Court Finds Insurance Policy Excludes Coverage For Benzene Defendant, Litigation Watch: 

\textsuperscript{13} See Hammonds, 2007 WL 4206596, at *1, *3.

\textsuperscript{14} See id. at *4-*5.

\textsuperscript{15} See id. at *2, *4-*5.
assume that they do not have coverage simply because their insurance companies deny their
tender of those claims. Instead, policyholders should vigorously pursue their rights to coverage
under their insurance policies.

In that regard, there are steps that all companies can take now to put themselves in the best
possible position to secure coverage if and when the need arises.

First, companies should collect, organize, and safeguard all of their general liability policies,
dating as far back in time as possible. It is important to capture older policies, because some
benzene-related claims allege injury dating back several decades. These older policies can be a
particularly valuable corporate asset, as they are less likely to have potentially applicable
exclusions and/or high deductibles or self-insured retentions.

Second, if served with any benzene-related claims, policyholders should give notice promptly to
their insurance companies, absent relatively rare, case-specific circumstances that might justify
refraining from giving such notice. Companies also should take reasonable steps to keep their
insurance companies apprised of the status of benzene-related claims.

Third, companies should be prepared for a potential “race to the courthouse” after tendering
benzene-related claims to their insurance companies. To give themselves an advantage in
“choice of law” disputes, i.e., disputes over which state’s law governs their policies, insurance
companies often file preemptive lawsuits against their policyholders in jurisdictions that they
perceive to be the most favorable. “Choice of law” disputes are critical in insurance coverage
cases and can even be outcome-determinative, depending on the issue. Even if a policyholder,
for understandable business reasons, does not want to sue its insurance companies at any given
point, the policyholder should consider having a draft complaint ready to file if and when one or
more of its insurance company sues, so that the policyholder can file a competing suit in its
preferred jurisdiction immediately. This approach can pay significant dividends in the ensuing
fight over which jurisdiction is the most appropriate forum for the insurance coverage case.

General liability insurance policies can be extremely valuable corporate assets for companies
facing benzene-related claims, or any liability claims for that matter. Companies can maximize
the benefits of their insurance assets by approaching them proactively, rather than waiting for
their insurance companies to start a fight.
I. Challenging Insurers' Efforts to Obtain Insureds' Privileged Communications

December 2005
By Linda Kornfeld

Insureds embroiled in litigation with underlying claimants frequently are confronted with demands from their insurers that can place their litigation position at risk. One issue that often arises is whether an insured must and should provide requested privileged materials to its insurer in connection with the insurer's coverage investigation or in coverage litigation. Where the insurer has accepted the insured's defense of litigation and thus its interests appear to be aligned with the insured in a successful resolution of the underlying matter, the insured may have difficulty in refusing to provide certain materials. However, as is often the case, 1) an insurer will reserve rights and then seek all information relevant to the underlying matter, regardless of its privileged status, or 2) deny coverage and seek that information in the context of coverage litigation. Insureds should be aware of possible risks that can be created if they comply with requests for privileged information, and that despite the insurers' claims of a "common interest" or that the privileged information is "at issue," significant case law protects these materials from production.

Danger of Production

Courts have long recognized that the interests of a policyholder facing ongoing underlying litigation are divergent from those of an insurer who has refused to provide a defense for that litigation. See, e.g., Montrose Chem. Corp. v. Superior Court, 25 Cal. App. 4th 902, 910 (1994) (insured suffers prejudice when it "is compelled to fight a two-front war, doing battle with the plaintiffs in the third-party litigation while at the same time devoting its money and its human resources to litigating coverage issues with its carriers."). As a result, such an insurer is not entitled to access its policyholder's privileged or work product materials by asserting the legal fiction that it has a "common interest" with the policyholder in defeating the underlying claims. See Remington Arms Co. v. Liberty Mut. Ins. Co., 142 F.R.D. 408, 418 (D. Del. 1992). Rather, many courts have recognized that the insurer's interests in such a case are often more aligned with the underlying plaintiffs than with its embattled policyholder. See Montrose, 25 Cal. App. 4th at 910 ("the insurer must not be permitted to join forces with the plaintiffs in the underlying actions as a means to defeat coverage.")

Indeed, frequently insurers will refuse to fulfill their contractual obligations to provide a defense and to indemnify their insureds in underlying litigation, forcing their insureds to shoulder their own defense. The insurers' arguments for avoiding coverage often are similar to those of the underlying claimants. For example, both a claimant and an insurer may seek to argue that an insured acted "intentionally" or engaged in some other wrongful conduct. By doing so, the insurer effectively aligns itself with the underlying plaintiff against its insured.

Despite this alignment in opposition to its insured, an insurer may seek privileged materials related to that litigation all the while ignoring its adversarial position. Where underlying litigation is still ongoing there
exists a concern that production of privileged materials to an insurer seeking to support a coverage denial could provide an underlying claimant with an argument in favor of production in its lawsuit against the insured, claiming waiver of the protections afforded by the attorney-client privilege and attorney work product doctrine. While there is certainly a basis for the insured to argue against such a result, negative case law does exist. See, e.g., Bowne of New York City, Inc. v. AmBase Corp., 150 F.R.D. 465, 479 (S.D.N.Y. 1993) (“Waiver will be found even if ... the disclosure was made for a proper purpose to a person with an interest that is common to him and the privilege holder, unless that common interest is the receipt of legal services by an attorney.”); Dalen v. Ozite Corp., 230 Ill. App. 3d 18, 28 (2d Dist. 1992) (“[T]he court need only confirm that the document was made available to opposing counsel; 'the "confidentiality" of the document has been 'breached' by the disclosure, thereby destroying the basis for the continued existence of the privilege.”).

Insurers often will argue against any such waiver concern by claiming that it can be met by the protections of a protective order, or stipulated confidentiality agreement. However, at least some courts have found that these efforts may not be enough to avoid waiver claims. See, e.g., Hartford Fire Ins. Co. v. Guide Corp., 206 F.R.D. 249, 250-51 (S.D. Ind. 2001) (“[w]hile the parties might be able to bind themselves by agreeing to limit waivers resulting from inadvertent (or deliberate) disclosures, their agreement cannot limit waivers as to third parties.”); see also Griffith v. Davis, 161 F.R.D. 687, 699-700 (C.D. Cal. 1995) (“Waiver occurs despite any agreement by the parties that the information disclosed will remain confidential as against all the rest of the world.”).

Thus, when a non-defending insurer seeks production of privileged materials, the insured should think carefully about the possible danger of production, and, if the insurer pushes for the information, require that the insurer provide assurances that alleviate a waiver concern vis-à-vis underlying claimants.

**Common Interest Doctrine**

Ignoring the possible issues created by their demands for production of privileged materials, insurers frequently argue that they are entitled to this information because of an alleged "common interest" with the insured in minimizing liability in the underlying litigation. However, courts around the country have rejected this position, instead concluding that where an insurer has denied coverage, or reserved rights, not indicating an intent to do anything other than to deny coverage, there is no "common-interest" sufficient to warrant production.

For example, in *International Insurance Co. v. Newmont Mining Corp.*, 800 F. Supp. 1195 (S.D.N.Y. 1992), the court concluded:

while the insurer had the same 'desire' as its insured to have a successful defense of the said actions, for if coverage was later determined to exist, it would be responsible for any obligation of its insured remaining, this in my view is an insufficient 'common interest' to warrant invasion of the attorney-client relationship with the privilege attaching to confidential communications which the law rather zealously protects. *Id.* at 1196.

The court then added that the "common interest" doctrine, logically viewed and supported by New York law, only should apply "where an attorney actually represents both the insured and the insurer — joint representation — and accordingly both clients are working together with a single attorney toward a common goal." *Id.*

In *NL Industries*, a New Jersey court considered the "common interest" doctrine in connection with numerous insurers who had denied coverage and failed to defend the insured with respect to substantial liability claims against it. Initially, the *NL Industries* court noted:

Under the doctrine, there is no waiver of the attorney-client privilege by disclosure of privileged communications to third parties with a community of interest. A community of interest exists where
different persons or entities "have an identical legal interest with respect to the subject matter of a communication between an attorney and a client concerning legal advice. ... The key consideration is that the nature of the interest be **identical, not similar, be legal, not solely commercial.** [Citations omitted].

144 F.R.D. 225, 230-31 (D.N.J. 1992) (emphasis added); accord American Auto. Ins. Co. v. J.P. Noonan Trans., Inc., 12 Mass. L. Rep. 493, 2000 Mass Super. LEXIS 548, *19 (2000) ("But a common pursuit of a common legal enterprise is the doctrine's essential ingredient: 'The common interest doctrine ... has both a theoretical and a practical component. In theory, the parties among whom privileged matter is shared must have a common legal, as opposed to commercial, interest. In practice, they must have demonstrated cooperation in formulating a common legal strategy.'" (internal citation omitted)).

The **NL Industries** court then continued by adding that the doctrine applies only when the insurer's duty to defend has been established and only when the parties "have employed a lawyer to act for them in common." 144 F.R.D. at 231 (citations omitted). The court thus concluded:

It is clear, therefore, that use of the doctrine is warranted in a dispute between an insurer and insured regarding underlying litigation in which the insured was represented by an attorney appointed by the insurer. (Citations omitted). To permit insurers, however, unrestrained access to attorney-client communications and work product where those insurers refused to take part in litigation despite notice and an opportunity to do so would distort the 'common interest' doctrine. **Id.**

Numerous other courts have reached the same conclusion. See, e.g., North River Ins. Co. v. Phila. Reinsurance Corp., 797 F. Supp. 363, 367 (D.N.J. 1992) (common interest doctrine "completely unshackled from its moorings" when no dual representation); Remington, 142 F.R.D. at 417 (common interest doctrine not applicable where attorney never represented party seeking privileged materials); Bituminous Cas. Corp. v. Tonka Corp., 140 F.R.D. 381, 386 (D. Minn. 1992) ("the rationale which supports the 'common interest' exception to the attorney-client privilege simply doesn't apply if the attorney never represented the party seeking the allegedly privileged materials."); Pittson Co. v. Allianz Ins. Co., 143 FRD 66, 69 (D.N.J. 1992) (application of common interest doctrine warranted only "when there is a dispute between the insurer and the insured regarding underlying litigation in which the insured was represented by an attorney appointed by the insurer."); Vt. Gas Sys. v. United States Fidelity & Guar. Co., 151 F.R.D. 268, 277 (D. Vt. 1993) ("where there is an adversarial relationship between an insured and insurer as to whether coverage exists, the parties have never shared the same counsel or litigation strategy and the documents at issue were prepared in an atmosphere of uncertainty as to the scope of any identity of interest shared by the parties, a common interest, at this time, does not exist beyond the formal designations of insured and insurer."); First Pac. Networks v. Atlantic Mut. Ins. Co., 163 F.R.D. 574, 581 (N.D. Cal. 1995) ("For common interest doctrine to attach, most courts seem to insist that the two parties have in common an interest in securing legal advice related to the same matter — and that the communications be made to advance their shared interest in securing legal advice on that common matter."); Wisconsin v. Hydrite Chem. Co., 582 N.W.2d 411, 422 (Wis. Ct. App. 1998) (common interest doctrine not applicable where insured's attorneys not retained or consulted in common by insurers seeking production of privileged communications). Thus, the clear weight of authority across the country makes clear that where an insurer has not hired counsel for its insured, nor participated in the insured's defense in any manner, there is no "common interest" between the insurer and its insured that warrants the sharing of privileged materials.

The analysis of the Delaware district court in **Remington** is of particular interest:

The insurer asserts that the parties shared an interest in lowering the amount of damage in the underlying action. Even assuming this to be true, the parties did not then and do not now share an interest in characterizing how that damage occurred, what type of damage has occurred, or how [the insured] responded to the damage. These and other issues are interwoven into those issues in which the parties' interests may have overlapped. This litigation, as well as the common occurrence of insurance litigation in general, undermines the proposition that the Court should assume or imply that Remington did not intend
to keep its communications confidential from its insurer without an attorney acting on behalf of both parties. 142 F.R.D. at 418.

Thus, where an insurer refuses to provide coverage or to defend the insured in any way, just as the court in Remington found, there should be no basis for an insurer's claim of a "common interest" with its insured. See also NL Industries, 144 F.R.D. at 232, ("[m]ere status as an insurer or an insured is not enough to establish a commonality of interest)." 144 F.R.D. at 232.

'At Issue' Doctrine

As a fall back to their claims of a "common interest," insurers often argue that they are entitled to discover privileged materials based on the "at issue" doctrine, which they claim creates an implied waiver based solely on the fact that the insured has made a claim for coverage under an insurer's policy. If this were the case, however, then arguably every time an insurer denied coverage and sued its insured for declaratory relief, it would impose upon its insured a Hobson's Choice: Agree that there is no coverage or waive the attorney-client privilege and work product doctrine. Such a notion is nonsensical. The "at-issue" doctrine should not be applied to vitiate an insured's attorney-client privilege and work product protection solely because the insured chooses to contest an insurer's coverage position. The doctrine should be argued to have no application where the question of coverage turns on underlying facts, and the insured does not intend to rely upon the advice of counsel to prove its position. Cases across the country support this logical conclusion.

For instance, in Long Island Lighting Co. v. Allianz Underwriters Ins. Co., 749 N.Y.S.2d 488 (App. Div. 2002), the court held that the insured did not place "at-issue" the subject matter of a privileged report so as to waive any attorney-client privilege. Id. at 496. The Long Island court acknowledged that a privileged report may have contained information relevant to a disputed issue regarding the timeliness of the insured's notice of a claim against it. However, the court noted that fact did not place that report "at-issue," particularly where similar information about the insured's knowledge of the claim was apparently available from non-privileged sources and the insured did not seek to justify any delay in giving notice of claim as based upon advice of counsel. Id.

Likewise, in 670 Apartments Corp. v. Agricultural Insurance Co., No. 96 Civ. 1464, 1997 U.S. Dist. LEXIS 20689 (S.D.N.Y. Dec. 30, 1997), the court held that the insured did not place "at-issue" the privileged communications between it and its counsel:

By claiming that its attorney's fees or actions in the underlying litigation were reasonable, [the insured] does not forfeit its protection of the privileged documents, providing it does not rely on the exact nature of the legal advice made at that time or introduce its contents to prove these assertions as part of its legal case. That is the case here. [The insured] has not placed at issue the content of any of its attorney-client communications or the work product developed by counsel.

Indeed, a New York district court has clearly recognized, "If the mere bringing of a lawsuit waived the privilege, it would have little meaningful existence." Connell v. Bernstein-Macaulay, Inc., 407 F. Supp. 420, 422 (S.D.N.Y. 1976); accord Home Ins. Co. v. Advance Mach. Co., 443 So.2d 165, 168 (Fla. 1st Dist. Ct. App. 1983). Thus, where the insured has not placed at issue the information contained in the withheld documents, and its insurer seeks documents in an effort to support perceived defenses to coverage, the at-issue doctrine should not apply. In NL Industries, discussed above, the court found that a party impliedly waives the attorney-client privilege by "assert[ing] a claim or defense that he intends to prove through the use of privileged materials." 144 F.R.D. at 232. Indeed, the NL Industries court clearly stated:

Defendant insurers claim that NL has put its conduct in issue by attempting to obtain coverage, and therefore has impliedly waived any privileges with respect to the litigation files in issue. Such is not a
correct interpretation of the relevant case law; courts have rejected such a broad interpretation of the at issue doctrine for several reasons. Id. at 233.

In *Remington Arms Co. v. Liberty Mutual Insurance Co.*, 142 F.R.D. 408 (D. Del. 1992), the Delaware district court, applying Connecticut law, found:

Courts have generally rejected the idea that a party waives the attorney-client privilege by bringing a suit. [Citations omitted]. Contending that parties seeking relief voluntarily relinquish their attorney-client privilege overstates the intention of the party's action. The party would be forced to forsake a claim or reveal its privileged information. Id. at 414.

The court further concluded that "[f]airness concerns should focus on how a party plans to prove the elements of its case, not whether the ability to claim the privilege seems fair to a court in a particular case." Id.; see also *North River*, 797 F. Supp. at 370-71 (affirming denial of motion to compel on grounds that although challenged documents pertained to subject matter placed in issue by the plaintiff, because plaintiff did not intend to prove its case by relying on the documents, privilege was not impliedly waived). If the insured does not intend to rely upon privileged materials to demonstrate coverage, no implied waiver of the attorney-client privilege should be found.

As the above demonstrates, the vast weight of authority has found that simply "[b]ecause a plaintiff puts a question 'at issue' which would normally be, as in this case, creating a divergence of claims between the parties who would normally be on the same side, does not in itself mean that the plaintiff has to give up, blanket-wise, all of the privileges that have been bestowed upon attorneys by law." *Eastern Air Lines*, 716 So. 2d at 343-44, quoting *Remington*, 142 F.R.D. at 412; *accord NL Indus.*, 144 F.R.D. at 232-33. In addition, numerous courts have noted that although the privileged information sought may be relevant and its discovery would assist the insurer in its cross-examination or presentation of its case, that is not a basis to allow waiver of the applicable privileges. *See Remington*, 142 F.R.D. at 415 ("The Court cannot justify finding a waiver of privileged information merely to provide the opposing party information helpful to its cross-examination or because information is relevant."); *NL Indus.*, 144 F.R.D. at 233 ("while it is true the availability of the privileged materials sought in the instant case would make it much easier for defendants to develop their suits, such is not the criteria for a waiver of the attorney-client or work product privileges. If ease of application were the criterion, 'the privileges would cease to exist.'"); *Metro. Life*, 730 A.2d at 61. Therefore, the "at issue" doctrine should not be applied to function as an implied waiver of the privileges applicable to an insured's documents.

**When Privileged Communications Take Place**

Insurers often also attempt to obtain privileged materials by focusing on the "timing" of when particular documents were created (eg, before an insurer denied coverage or reserved rights). The gist of this illogical position is that the absence of an adverse interest necessarily then means that there exists a "common interest." However, as discussed above, to create a legally sufficient "common interest" there needs to be an actual joint effort by two parties to respond to litigation. Thus, unless an insurer can show that privileged communications took place or documents were created when the insurer was defending the insured or had hired joint counsel to assist the insured in responding to underlying litigation, an insured should argue against production.

**Conclusion**

While a significant body of legal authority severely limits the scope of privileged materials that insurers may obtain from their insureds, insurers continue to push for production. Thus, to the extent that an insured perceives a risk associated with such production, it is important to appreciate that there are grounds to fight the insurer's request. At the very least, insureds should require their insurers to provide legal support for their effort or to assist the insured in protecting its interests in underlying litigation.
Linda Kornfeld is the Managing Partner of the Los Angeles office of Dickstein Shapiro Morin & Oshinsky LLP. She may be reached at (310)-441-8462 or KornfeldL@dsmo.com.
Insurers Bear Burden of Proof When Disputing Attorney Fees

Focus Column
By Kirk A. Pasich

If an insurance carrier disputes the reasonableness of attorney fees, and attempts to overcome the presumption of reasonableness, then a court (or jury) might be called upon to consider various factors in assessing the reasonableness of fees.

The factors that courts often consider include "the nature of the litigation, its difficulty, the amount involved, the skill required and the skill employed in handling the litigation, the attention given, the success of the attorney's efforts, his learning, his age, and his experience in the particular type of work demanded ... the intricacies and importance of the litigation, the labor and necessity for skilled legal training and ability in trying the cause, and the time consumed." Marriage of Keech, 75 Cal.App.4th 860 (1999). See also California Rule of Professional Conduct 4-200 (identifying 10 factors to be considered "in determining the conscionability of a fee"). When the relevant factors are considered, many of the arguments that carriers make to reduce the fees they must pay will be rejected.

Thus, for example, carriers cannot refuse to pay fees simply because multiple attorneys or firms represented the insured. As one court held, "the number of attorneys who work on a case does not necessarily increase the number of hours spent or required to be spent on it." 305 East 24th Owners Corp. v. Parman Corp., 799 F. Supp. 353 (S.D.N.Y. 1992); see also Tasby v. Estes, 651 F.2d 287 (5th Cir. 1981) (authorizing award of fees even when work is partially duplicative).

Another court has recognized that "[t]here is nothing inherently unreasonable about a client having multiple attorneys, and they may all be compensated if they are not unreasonably doing the same work and are being compensated for the distinct contribution of each lawyer." Norman v. Housing Authority, 836 F.2d 1292 (11th Cir. 1988).

Moreover, the handling of cases by more than one lawyer and the use of paralegals is common. Harrington Haley LLP v. Nutmeg Insurance Co., 39 F. Supp. 2d 403 (S.D.N.Y. 1999); see also Automotive Products PLC v. Tilton Engineering Inc., 855 F. Supp. 1101 (C.D. Cal. 1994) (The use of 25 lawyers in a patent and antitrust case was not unreasonable when eight of those lawyers had billed 97 percent of the time and the other 17 lawyers were brought in only for occasional support).

Simply put, a carrier cannot refuse to pay based solely on the number of timekeepers involved. As the Harrington court held, the conduct of litigation frequently is a joint endeavor involving the efforts of a number of individuals. "[T]he economic interest of clients usually is served by [the use of more than one lawyer and the use of paralegals] because the more routine tasks can be done at lower cost by personnel with less training and experience who consequentially are paid less and billed at lower rates."

Furthermore, while carriers often challenge intra-office conferences as unreasonable, that challenge should be rejected. As the Harrington court explained:
"Any joint endeavor requires communication among those involved to ensure that everyone is working toward the same objective, that two people do not independently do the same thing twice, and that the insights and knowledge of all concerned are combined in the interest of achieving the [same] goal. In short, the right hand must know what the left hand is doing, and communication permits the transfer of that information. For these reasons, no one reasonably could suggest that the time spent by, for example, General Eisenhower and his officers discussing the invasion of Europe was not time reasonably devoted to the war effort and the national interest."

See also American Booksellers Association v. Hudnut, 650 F. Supp. 324 (S.D. Ind. 1986) ("time well spent in conference can prevent the unnecessary duplication of effort sometimes caused by poor communication" and holding that it is not unreasonable for a firm to "spend a considerable number of hours in coordinating efforts and planning strategy").

Indeed, courts have approved fees for many hours of conferences as being "reasonable." For example, in McKenzie v. Kennickell, 645 F. Supp. 427 (D.D.C. 1986), the court approved a claim for 752 hours spent solely in conferences. It explained that "conferences between attorneys to discuss strategy and prepare for oral argument are an essential part of effective litigation" and that meetings to discuss progress of research and review completed assignments are "appropriate means to secure proper supervision and efficient staffing."

Likewise, carriers should pay costs commonly incurred in litigation. According to a California court of appeal:

"[A]ttorneys' fees and expenses are inseparably intertwined as equally vital components of the costs of litigation ... [E]xpenses such as supplemental secretarial costs, copying, telephone costs and necessary travel, are integrally related to the work of an attorney and the services for which outlays are made may play a significant role in the ultimate success of litigation."


Courts have identified reasonable and recoverable expenses as including photocopying, postage, telephone costs and travel. See LeBlanc-Stemberg v. Fletcher, 143 F.3d 748 (2d Cir. 1998); see also Hall v. Harleysville Insurance Co., 943 F. Supp. 536 (1996) (court charges such as telephone charges, photocopies and reasonable costs stemming from computer research should be compensated). Courts also have found that computerized research costs are recoverable. See United Nuclear Corp. v. Cannon, 564 F. Supp. 581 (D.R.I. 1983) ("denial of reimbursement for Lexis charges in a proper case would be an open invitation to law firms to use high-priced attorney time to perform routine research tasks that can be accomplished quicker and more economically with Lexis").

Furthermore, fees for tasks characterized as "administrative" or "ministerial" are recoverable, even if performed by attorneys. See Assembly of State of California v. U.S. Department of Commerce, 1993 WL 188326, at *10 (E.D. Cal. 1993) (cite-checking services performed by attorneys were "not only reasonable but commendable"); William Ross, The Honest Hour 140 (1996) (proofreading "is another task that can sometimes be performed more capably by attorneys than by paralegals or clerical personnel.").

In fact, an insurance carrier should pay all fees and expenses, excepting only those that it can prove are unreasonable. "When it does not appear that the attorneys' fees and other expenses are obviously excessive, testimony of the amounts paid will constitute a prima facie case; and it will be assumed in such case that the attorneys' fees so paid were reasonable, unless the contrary appears."

(1946) ("the [i]nsurer is liable for any ... reasonable attorneys’ fees which [the insured] may incur in defending himself").

The California Supreme Court has confirmed that the burden should rest on the insurance carrier. In Buss v. Superior Court, 16 Cal.4th 35 (1997), the court addressed the burden of proof issue for a carrier that had defended its insured and then sought reimbursement of part of the defense fees on the ground that the policy did not cover some of the claims against the insured.

The court recognized that the carrier could obtain reimbursement of those defense costs "that can be allocated solely to the claims that are not even potentially covered." However, the court ruled that the carrier "must carry the burden of proof as to these costs by a preponderance of the evidence. And to do that ... it must accomplish a task that, 'if ever feasible,' may be 'extremely difficult.'" Therefore, the court recognized that even when a carrier performs its defense duty, it still must bear the burden of proof to obtain reimbursement.

This rule was confirmed specifically in the context of an insurance carrier's attempt to obtain reimbursement of fees that it had paid that it contended were unreasonable. In American Motorists Insurance Co. v. Superior Court, 68 Cal.App.4th 864 (1998), the insured had sued the carrier, contending that it had a duty to defend. The court ultimately granted the insured's motion for summary judgment on this issue. Thereafter, the carrier challenged the reasonableness of the fees incurred in the insured's defense in the underlying lawsuit. It argued that the insured had the burden to prove the reasonableness of those fees. The Court of Appeal disagreed, holding that the carrier had the burden to prove that the fees were unreasonable. It noted that the "party desiring relief must carry the burden of proof thereon."

Thus, when an insurance carrier has failed to defend, it should pay the reasonable rates charged by defense counsel, including for services such as conferences and cite-checking, and it should pay the ordinary costs associated with litigation. And, when a carrier assumes its defense duty, it still should pay all fees and costs that courts typically recognize as being reasonable.

Kirk A. Pasich is a partner in the insurance coverage practice of Dickstein Shapiro Morin & Oshinsky in Los Angeles. He may be reached at 310.441.8461 or PasichK@dsmo.com.
Assessing Conflicts of Interest in the Tripartite Relationship

By Laura A. Foggan and Elizabeth Eastwood

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The “tripartite” relationship refers to the relationship among the three parties when a lawyer is hired by an insurer to defend a suit against its policyholder. That multifaceted relationship can present actual or potential conflicts between the interests of the insurer and insured. This article reviews the sources of law governing whether a conflict exists and a series of scenarios that may pose actual or potential conflicts between the interests of the insurer and its policyholder. We also discuss how these issues may arise in the particular context of environmentally related liability and coverage cases.

A variety of sources of law should be consulted in determining whether a conflict exists in the tripartite relationship when a lawyer is hired by an insurer to defend a suit against its policyholder. In particular, state statutes, the insurance contract itself, insurance case law, standards of professional ethics for attorneys, or some combination of these may provide important guidance in determining whether any true conflict of interest exists.

State Statutes

A few states—Alaska, California, and Florida—have enacted statutes that address when a conflict of interest exists between an insurer and its policyholder with respect to the defense of an underlying lawsuit.

The California statute provides that a conflict of interest “may” exist, “when an insurer reserves its rights on a given issue and the outcome of that coverage issue can be controlled by counsel first retained by the insurer for the defense of the claim . . . .”1 The statute explicitly provides that a conflict of interest does not exist as to (1) allegations or facts in the litigation for which the insurer denies coverage; (2) claims for punitive damages; or (3) claims for damages in excess of the insurance policy limits. If a conflict does exist, the statute requires the insurer to “provide independent counsel to the insured,” unless the insured waives, in writing, the right to independent counsel after disclosure of the conflict.2

Unlike the California statute, which draws distinctions between situations that do give rise to conflicts of interest and those that do not, Florida’s Claims Administration statute assumes a conflict of interest between the insurer and the policyholder whenever the insurer asserts a coverage defense. When the insurer does assert a coverage defense, the statute requires the insurer either to (1) obtain a nonwaiver agreement from the policyholder, after “full disclosure of the specific facts and policy provisions upon which the coverage defense is asserted and the duties, obligations, and liabilities of the insurer during and following the pendency of the subject litigation”; or (2) retain “independent counsel which is mutually agreeable to the parties.”3
Cases applying the Florida Claims Administration Statute have held that the term “coverage defense” as used in subsection (2) means only a “defense to coverage that otherwise exists and does not include disclaimer of liability based on complete lack of coverage for loss sustained.”

The Alaska statute, which became effective on July 1, 1995, bears substantial resemblance to the California statute. Like the California statute, the Alaska statute provides that a conflict of interest is not created by (1) a claim for punitive damages; (2) a claim for damages in excess of the policy limits; or (3) claims or facts in a civil action for which the insurer denies coverage. The statute further states, however, that (c) Notwithstanding (b) of this section, if the insurer reserves the insurer’s rights on an issue for which coverage is denied, the insurer shall provide independent counsel to the insured . . . .

Other states have considered proposed legislation to govern when a conflict of interest exists between an insurer and its policyholder that entitles a policyholder to representation by independent counsel. For example, the Washington state legislature has considered a bill, opposed by the insurers, that would create an absolute policyholder right to select independent counsel to defend it at its insurer’s expense whenever an insurer reserves its rights to contest indemnity coverage for an environmental claim.

If the approach is even-handed legislation governing the existence of conflicts of interest and the necessity for independent counsel can benefit everyone. A statute that provides clear guidance as to what constitutes a conflict of interest giving rise to a need for independent counsel, and which fairly takes into consideration the legitimate interests of both policyholders and insurers, can eliminate uncertainty and reduce litigation between insurers and their policyholders over these issues.

The Insurance Contract Itself and Insurance Case Law

Obviously, a direct source of the mutual rights and obligations of the insurer and its policyholder is the insurance contract. Many insurance contracts are silent on what constitutes a conflict of interest between the insurer and the policyholder, or what impact such a conflict of interests has on the insurer’s contractual rights relating to the defense of suits against the policyholder. Some insurance contracts minimize the potential for conflicts of interest in the tripartite relationship. For example, defense reimbursement policies under which the policyholder controls its own defense but defense costs reduce the limit of liability sidestep much of the potential for conflicts of interest in the defense of the underlying action. There may still be disagreement—and potential conflict—on issues such as the selection of counsel and settlement, however.

Nevertheless, most insurance contracts at least set out the insurer’s right to control the defense and settlement of suits against the insured or to designate counsel to defend the policyholder. For example, general liability and automobile liability policies often expressly endow the insurer with the unqualified right to “defend any suit against the insured” seeking damages on account of bodily injury or property damage to which the policy applies, and to “make such investigation and settlement of any claim or suit as it deems expedient...”

Notwithstanding the insurer’s unqualified contractual rights under the policy, both courts and legislatures have engrafted limitations on the insurer’s involvement in the policyholder’s defense
where there is a conflict of interest between the insurer and its policyholder. Some courts addressing this issue have explicitly suggested that the insurance contract itself should speak to the conflict of interest problem.

In many jurisdictions there is substantial case law specifically addressing what constitutes a conflict of interest between an insurer and a policyholder, and what consequences flow from the existence of such a conflict. Even when there is no authority squarely addressing the conflict issue, guidance may be offered by insurance case law on related topics, including the application of the “common interest” doctrine and other issues surrounding the disclosure of information relating to underlying claims.

**Standards Governing Professional Ethics of Attorneys**

Guidance on insurer-policyholder conflict of interest issues is also afforded by standards governing the professional ethics of attorneys, which are found in sources including the Model Code of Professional Responsibility, the Model Rules of Professional Conduct, state-specific ethics rules, ethics opinions, and the Restatement (Third) of the Law Governing Lawyers (Proposed Final Draft No. 1, March 1996). Case law relating to attorney malpractice and attorney disqualification may also be relevant.

Many sources on attorney professional ethics provide guidance to insurers by way of analogy because they focus on the attorney-client relationship rather than the insurer-policyholder relationship. Model Rule 1.7 does include two comments that directly address the tripartite relationship. In discussing situations in which a party other than the client pays the attorney, one comment states that “when an insurer and its insured have conflicting interest in a matter arising from a liability insurance agreement, and the insurer is required to provide special counsel for the insured, the arrangement should assure the special counsel’s professional independence.”

A second relevant comment addressing the duties of independent counsel states that “[t]he representation of an insured by the insurance company’s lawyer also presents a potential conflict of interest. For example, problems arise when a course of action would be beneficial to the client-insured but would be detrimental to the insurer that employs or pays the lawyer. The Comment to Rule 1.7(b) states that while a lawyer’s fee may be paid by a source other than the client, the client must be informed of that fact and must consent . . . Rule 1.7 requires that the arrangement not compromise the lawyer’s duty to loyalty to the client.”

The Restatement (Third) of the Law Governing Lawyers may also have a direct application to these issues. Although the Restatement has not yet been finalized, drafts of the document have included specific, and highly controversial, comments concerning the tripartite relationship that arises when a lawyer is hired by an insurer to defend a suit against its policyholder.

**Common Situations Giving Rise to Potential Clients**

A host of situations may pose actual or potential conflicts between the interests of the insurer and its policyholder, and, in some of these situations, courts have explicitly concluded that independent counsel must be afforded to the insured. Examples of common areas where conflicts may arise are reviewed below, together with observations about whether they call for the use of
Assessing Conflicts of Interest in the Tripartite Relationship

independent counsel to protect the interests of the insureds. Several situations that may arise in cases involving coverage for environmental liabilities are highlighted.

Insurer Covers Multiple Insureds with Adverse Interests
In many cases an insurer will have a duty to defend two insureds whose interests are adverse to each other, and may be adverse to the insurer. The classic illustration of this situation is in the context of auto liability insurance. For example, in *Murphy v. Urso*, 430 N.E.2d 1079 (Ill. 1981), a passenger injured in an auto accident filed suit against the driver and the owner of the vehicle, and an issue existed as to whether the driver had permission to use the vehicle. The driver’s interests conflicted with those of the owner, and with those of the insurer, because the driver would not be insured under the owner’s policy unless he was operating the vehicle with permission. Under these circumstances, the Illinois Supreme Court held that the conflicts of interest prevented the insurer from controlling the defense of the driver. 430 N.E.2d at 1085.

It is also relatively common for two drivers who are involved in an accident, and who by coincidence are insured by the same carrier, to sue one another, thus triggering the insurer’s duty to defend each against the other. In this situation the insurer is not permitted to control the defense of either policyholder, and must retain independent counsel for each.10

Of course, the problem of multiple insureds whose interests conflict is not limited to the auto liability context.11 When the interests of multiple insureds conflict with one another, by definition the insurer cannot share all interests in common with each of its policyholders. In this situation, the insurer may be required to provide not only separate, but independent counsel for its insureds.

In environmental cases, there are several contexts where an insurer may have multiple insureds – sometimes with adverse interests – involved in the same claim. A claim may arise due to activities of a subcontractor or lessee that is an additional insured under the policy of an insured that is also named in the suit. Alternatively, multiple policyholders may be sued for cleanup at the same site, perhaps with different types of responsibility for the loss. For example, an insurer may have issued coverage to a site owner-operator, as well as to a generator or transporter of hazardous waste. In these cases, if a defense obligation exists, it is necessary for the insurer to ensure that the defense is conducted consistent with the interests of each insured.

Coverage not Disputed, but Policyholder’s Exposure Exceeds Limits
Claims for damages in excess of the applicable policy limits raise the potential for a conflict of interest between an insurer and its policyholder. This is true because the insurer and policyholder may take opposing views as to whether and when a claim should be settled. The policyholder will usually prefer to have a case settled quickly and within policy limits to minimize any possibility of an excess judgment. The insurer, whose exposure is capped at its policy limits, may prefer to try the case, or to attempt to negotiate a more favorable settlement than that initially offered by the claimant.12

The fact that a policyholder’s exposure in a given suit exceeds the coverage limits, standing alone, generally will not entitle the policyholder to representation by independent counsel.13 14 Instead, courts often give the insurer an additional incentive to consider its policyholder’s
interests in settlement by allowing the policyholder to recover against the insurer where the latter’s bad faith (or in some jurisdictions merely negligent) refusal to settle within limits ultimately results in an excess judgment against the policyholder.

Because environmental cleanups are often costly and because a responsible party can often be held jointly and severally liable for the entire cost, hazardous waste related actions frequently involve the potential for an excess verdict. As noted above, the potential of excess liability above the indemnity limits of a defending primary insurer will not—standing alone—create a conflict requiring independent counsel.

**Coverage not Disputed, but Policyholder Has Large Deductible**

Where the policyholder has a large deductible, the incentives discussed previously may be reversed—under these circumstances, a potential conflict exists because the insurer might prefer to settle for an amount within, or close to, the deductible while the policyholder might prefer to try the case in the hope of avoiding liability altogether. This potential conflict, however, generally does not entitle the policyholder to independent defense counsel.

Moreover, where the relevant insurance contract explicitly entitles the insurer to make any settlement it deems expedient, courts generally uphold the insurer’s right to settle, notwithstanding its policyholder’s objection, even when the settlement will require the policyholder to pay large deductible amounts. Still, a minority of courts, have held that where a substantial deductible is involved, the insurer must obtain the policyholder’s consent to settlement, even in the absence of policy language imposing such a requirement. However, even these courts have not suggested that the existence of a large deductible, standing alone, entitles the policyholder to representation by independent counsel.

**Coverage not Disputed, but Insurer Sharply Restricts Defense Expenditures**

The interests of the insurer and its policyholder may also conflict “when the insured expects the best possible defense and the insurer expects a cost-effective defense.” As one commentator points out, extreme cost containment measures imposed by insurers may expose the insurer to bad faith liability—and the defense counsel to malpractice liability – for inadequate defense preparation and trial presentation.

Douglas Richmond, “The Tripartite Relationship Between Insurer, Insured and Insurance Defense Counsel.” 73 Neb. L. Rev. 265 (1994), has observed that the opposite problem can arise if an insurance policy gives the insurer the right to control the defense but provides that defense costs reduce the policy limit.

Mr. Richmond states that in this situation, “[a]n insured is potentially prejudiced every time her appointed counsel acts, since every dollar the attorney earns in fees reduces the available coverage.” Richmond therefore opines that in such cases, “insureds must always be timely informed of defense expenditures and the amount of remaining coverage.” This situation is not likely to arise very frequently, however, because most insurance policies that contain defense-in-limits provisions require the insurer to reimburse the policyholder’s defense costs rather than giving the insurer the right to control the policyholder’s defense. Further, even Mr. Richmond
does not assert that the conflict he describes should require that the insured be afforded independent counsel subject to only the policyholder’s control of the defense.

The potential for conflict caused by cost-containment efforts plainly does not entitle the insured to independent counsel, however. Indeed, it is clear that the insurer need only pay reasonable fees of defense counsel, even when independent counsel is required.

Some environmental cases may be candidates for disputes over the necessity of expansive defense expenditures. For example, an insured may wish to obtain advice or testimony from multiple consultants on issues relating to liability or a cleanup plan. The question of whether the fees for such scientific testimony are necessary and reasonable can prompt disputes between the policyholder seeking a “gold-plated” defense and the insurer seeking to impose reasonable constraints on costs and attorney’s fees.

**Coverage Not Disputed, But Insurer and Policyholder Disagree on Manner in Which Defense Should Be Conducted**

A policyholder will occasionally contend that a conflict of interest exists between itself and its insurer because the two disagree at the outset—as a matter of judgment not tied to any objective conflict of interest—as to how the underlying claim should be defended. Where the insurance contract expressly gives the insurer the right to control the defense, courts usually enforce that right, but a policyholder may be entitled to independent counsel where the insurer proposes to handle the defense in a manner that could severely harm the policyholder (e.g., if it would put the policyholder out of business).

In *Roussos v. Allstate Insurance Co.*, 655 A.2d 40, 44 (Md. Ct. Spec. App.), cert. denied, 663 A.2d 73 (Md. 1995), one court has explicitly refused “to extend an insurer’s duty to provide independent counsel to a situation where the insured merely disagrees with the manner in which he or she is being defended.” In *Roussos*, the policyholder challenged her insurer’s right to control the defense of a personal injury action arising from an auto accident. The insurer believed the policyholder was likely to be found liable and wanted to settle the action expeditiously, while the policyholder, who believed that she had been sued unjustly and wished to maintain her clean driving record, opposed settlement. Based on this disagreement, the policyholder contended that she was entitled to be represented by counsel of her own choosing, at the insurer’s expense. Rejecting this argument, the Maryland Court of Special Appeals reasoned that “[a]lthough these objectives are not identical, they are simply not adverse.”22 The *Roussos* court also rejected the policyholder’s arguments that she was entitled to representation by independent counsel because (1) the claimant sought damages in excess of her policy limits; and (2) she and the insurer were adversaries in two proceedings before the state insurance commission regarding the amount of coverage provided by her policy.23 The court further stated that “[a]n insurer’s right to control the litigation against its insured is essential to protect the insurer’s financial interest in the outcome of the suit.”24

A disagreement concerning defense strategy may entitle a policyholder to separate counsel, however, where the insurer’s proposed course of action could result in severe adverse consequences to the policyholder. For example, in *69th Street and 2nd Ave. Garage Associates, L.P. v. Ticor Title Guarantee Co.*, 622 N.Y.S.2d 13, 14 (App. Div., 1st Dept.), appeal denied,
661 N.E.2d 999 (N.Y. 1995), a New York appellate court held that a policyholder was entitled to counsel of its own choosing where the policyholder and the insurer disagreed on defense strategy, and where the continued viability of the policyholder’s business arguably depended on a quick resolution of the underlying suit, whereas the insurer could afford to proceed at a “leisurely” pace. The court stated as follows:

The interests of Garage Associates and Ticor diverged seriously here, though each wished to defeat the claim of the cond-op. Ticor, having insured the title of a heavily mortgaged property, could proceed leisurely. Garage Associates needed a quicker resolution to keep open the possibility of refinancing, to retain customers and employees, and to stay in business. There was a crucial conflict of interests between them, and Garage Associates had the right to its own attorneys.25

The court acknowledged that the insurance contract entitled the insurer to control the policyholder’s defense, but concluded that the insurer’s right was “overridden” by the policyholder’s right to independent counsel in a conflict of interest situation.26 Although most courts enforce the insurer’s contractual right to control its policyholder’s defense, a few courts will “override” if the stakes which rest on the contested defense strategy are high enough for the policyholder.

Coverage Not Disputed, But Policyholder Opposes Settlement (e.g., Due to Reputational Damage)

Some cases raise the potential for conflicts in the resolution of the claim because the policyholder, fearing damage to its reputation or some similar harm, opposes any settlement, even a settlement completely within policy limits.27

Courts typically have not treated this situation as creating a conflict of interest that entitles a policyholder to separate counsel. Indeed, at least where the insurance policy gives the insurer the right to make any settlement that it deems expedient and does not expressly require the insurer to obtain policyholder’s consent to settlement, courts generally uphold an insurer’s decision to settle even over its policyholder’s objections.28

Where the insurance contract at issue is silent as to whether the insurer has the exclusive right to settle, however, an insurer may be required to obtain the policyholder’s consent before settling, even if the proposed settlement amount would fall entirely within the policy limits.29

Underlying Complaint Seeks Punitive Damages

A conflict of interest between an insurer and its policyholder may also be found to exist when the underlying complaint against the policyholder seeks punitive damages and the insurance policy expressly excludes coverage for punitive damages, or the relevant jurisdiction prohibits insurance coverage for punitive damages on public policy grounds. In this situation, some courts believe that independent counsel is required because the insurer may not have a sufficient incentive to defend vigorously against the punitive damage claim.

Treatment of this situation varies among jurisdictions. As noted earlier, California Civil Code § 2860 explicitly provides that a claim against the insured for punitive damages, standing alone,
does not entitle the insured to independent counsel at the insurer’s expense. The same is true of the applicable Alaska statute. Alaska Stat. § 21.89.100(b)(1).

On the other hand, in *Nandorf, Inc. v. CNA Insurance Cos.*, 479 N.E.2d 988, 992 (Ill. App. 1st Dist. 1985), an Illinois appellate court held that independent counsel was required where the insured was sued for a relatively small amount of compensatory damages and a much larger amount of punitive damages. The *Nandorf* court stated, however, that it did not intend “to imply that an insured is entitled to independent counsel whenever punitive damages are sought in the underlying action.”

The court reasoned that independent counsel was necessary in the case because punitive damages formed a substantial portion of the policyholder’s potential liability, such that the insurer’s disclaimer of coverage for punitive damages “left Nandorf with the greater interest and risk in the litigation.”

It is possible that a private action seeking recovery for environmental harm might seek modest compensatory damages but substantial punitive damages. As it is in other claim contexts, this scenario is likely to be fairly rare in hazardous waste settings. However, there may be other scenarios in environmental cases where the bulk of the policyholder’s potential liability is uninsured. In a Superfund cleanup action, for example, an insured may face uninsured injunctive or equitable relief, perhaps combined with more modest exposure for the insured damages. In such a setting, the policyholder may contend that it should have the ability to influence defense strategy.

**Insurer Disputes Coverage and Reserves Rights**

Conflict of interest questions most frequently arise in situations where the insurer has a duty to defend the policyholder, but disclaims (in whole or in part) a duty to indemnify based on one or more coverage defenses. The issuance of a reservation of rights as to indemnity coverage is characteristic of most environmental coverage cases today. This is true because of the widespread use of pollution exclusions, the coverage issues relating to the nature of relief sought in cleanup cases (for example, whether cost-recovery claims seek insured “damages”), the potential for environmental harm that is expected or intended because it results from routine business practices, and a host of other coverage issues that are not unique to the environmental setting (for example, late notice, voluntary payments, and so forth). Courts and legislatures in some jurisdictions have determined that a policyholder is entitled to representation by independent counsel whenever the insurer issues a reservation of rights. Courts and legislatures in other jurisdictions, however, have declined to adopt such a *per se* rule and instead determine whether independent counsel is necessary based on (1) whether the insurer would be able to direct the insured’s defense in a manner adverse to the insured on the disputed coverage issue; and/or (2) which party, insurer or insured, bears the greater financial stake in the underlying litigation.

The following jurisdictions appear to have adopted a *per se* rule that the policyholder is entitled to independent counsel whenever an insurer issues a reservation of rights:

**Alabama:** *L & S Roofing Supply Co., Inc. v. St. Paul Fire & Marine Ins. Co.*, 521 So. 2d 1298, 1303 (Ala. 1987) (adopting holding of Washington Supreme Court that insurer defending under
reservation of rights is subject to an “enhanced obligation of good faith,” which includes an understanding that defense counsel’s only client is the insured.

**Arizona:** *United Services Auto. Assoc. v. Morris*, 741 P.2d 246, 251-52 (Ariz. 1987) (en banc) (”[t]he insurer’s reservation of the privilege to deny the duty to pay relinquishes to the insured control of the litigation”)

**Florida:** F.S.A. § 627.426(1)(b)3 (West 1996) (absent non-waiver agreement, when insurer reserves rights, insured is entitled to “mutually acceptable” independent counsel)

**Kentucky:** *Medical Protective Co. v. Davis*, 581 S.W.2d 25, 26 (Ky. App.), review denied (Ky. Ct. 1979) (when insurer offers defense under reservation of rights, “the insured has the right to refuse the proffered defense and conduct his own defense”)

**Louisiana:** *National Union Fire Ins. Co. v. Circle, Inc.*, 915 F.2d 986, 991 (5th Cir. 1990) (Louisiana law) (insurer that reserves rights discharges contractual obligation to defend by engaging separate counsel to represent insured); *Dugas Pest Control of Baton Rouge, Inc. v. Mutual Fire, Marine and Inland Ins. Co.*, 504 So. 2d 1051, 1054 (La. Ct. App. 1st Cir. 1987) (“[i]f insurer chooses to represent the insureds but deny coverage, it must employ separate counsel”)

**Massachusetts:** *Three Sons, Inc. v. Phoenix Ins. Co.*, 257 N.E.2d 774, 776-77 (Mass. 1970) (insured did not breach duty to cooperate by refusing to accept insurer’s defense under reservation of rights)

**Missouri:** *State Farm Mut. Auto Ins. Co. v. Ballmer*, 899 S.W.2d 523, 526 (Mo. 1995) (en banc) (insured has the right to reject defense under reservation of rights); *Butters v. City of Independence*, 513 S.W.2d 418, 424-25 (Mo. 1974) (same)

**Texas:** *Rhodes v. Chicago Ins. Co.*, 719 F.2d 116, 120 (5th Cir. 1983) (Texas law) (when insurer proposes to defend under reservation rights, insured may refuse insurer’s offer and pursue his own defense, and insurer remains liable for insured’s attorneys’ fees); *Britt v. Cambridge Mutual Fire Ins. Co.*, 717 S.W.2d 476, 481 (Tex. App., San Antonio 1986) (same); *Western Casualty & Sur. Co. v. Newell Manufacturing Co.*, 566 S.W.2d 74, 76 (Tex. Civ. App., San Antonio) (if insured refuses insurer’s offer to defend under reservation of rights, “insurer cannot stubbornly continue with the defense and still preserve its right to assert policy defenses”) (citations omitted), writ ref’d n.r.e., (Sept. 20, 1978).

**Washington:** *Tank v. State Farm Fire & Casualty Co.*, 715 P.2d 1133, 1137 (Wash. 1986) (en banc) (when defense is provided under reservation of rights, insurer’s enhanced obligation of good faith requires recognition that “only the insured is the client” of retained defense counsel)

Jurisdictions that have appear to have adopted a fact-dependent test for determining the necessity of independent counsel include California, Illinois, New York, Ohio, Oklahoma and Pennsylvania.
The applicable California statute provides that the policyholder may have a right to independent
counsel when “insurer reserves its rights on a given issue and the outcome of that coverage issue
can be controlled by counsel first retained by the insurer for the defense of the claim.” Cal. Civ.
Code § 2860(b) (emphasis added). Thus, by implication, an insurer’s reservation of rights might
not entitle the policyholder to independent counsel if defense counsel would not be able to
manipulate the outcome of the coverage issue.

The New York Court of Appeals took a similar approach in *Public Service Mut. Ins. Co. v.
Goldfarb*, 425 N.E.2d 810 (N.Y. 1981). The *Goldfarb* court concluded that independent counsel
would be required only when the defense attorney’s duty to the insured would require a defense
on any grounds, but his duty to the insurer would require a defense only on those grounds that
would defeat insurer liability. As an example of a case of covered and non-covered claims that
would not create the necessity for independent counsel, the *Goldfarb* court offered a hypothetical
case in which the policy covered only personal injury, but the policyholder was sued for personal
injury and property damage. The *Goldfarb* court reasoned that separate counsel would not be
necessary because the question of coverage would not be connected with the question of the
insured’s liability.34

Illinois courts have taken a similar view. In determining whether a conflict of interest creating a
right to independent counsel exists, Illinois courts consider “whether, in comparing the
allegations of the complaint to the policy terms, the interest of the insurer would be furthered by
providing a less than vigorous defense to those allegations.”35 According to these courts, an
insurer’s interest in negating coverage does not, standing alone, create a sufficient conflict of
interest to prevent the insurer from assuming control of its policyholder’s defense; such a conflict
may exist, however, when an underlying action asserts claims that are covered as well as claims
against which the insurer has a duty to defend but asserts are not covered by its policy. *Illinois
Masonic*, 522 N.E.2d at 614; *Nandorf*, 479 N.E.2d at 992.

Federal courts applying Pennsylvania law have also concluded that an insurer’s reservation of
rights does not always entitle the policyholder to representation by separate counsel. *Pennbank v.
both covered and non-covered claims raises potential for conflict, “but actual conflict is not
inevitable”). The court acknowledged that independent counsel would be required in a situation
where an insurer could be “tempted to construct a defense which would place any damage award
outside policy coverage,” but it concluded that separate counsel was not necessary merely
because punitive damages, for which the insurer denied coverage, were sought against the
policyholder. The court reasoned that such a danger did not exist in this case because findings
against the insured that would support an award of punitive damages also would “guarantee a
large award of compensatory damages.”

New Jersey takes a unique approach to the independent counsel issue. Under New Jersey law, an
insurer cannot defend its policyholder if (1) the trial will leave the question of coverage
unresolved so that the policyholder may later be called upon to pay; or (2) the case may be so
defended by a carrier as to prejudice the policyholder thereafter on the issue of coverage. Where
a conflict prevents an insurer from assuming the defense of its policyholder, the insurer is not
Assessing Conflicts of Interest in the Tripartite Relationship

obligated to provide ongoing funding for the policyholder’s defense. Instead, under Burd, [Burd v. Sussex Mut. Ins. Co., 267 A.2d 7, 10 (N.J. 1970)] the insurer’s duty to defend is translated into an obligation “to reimburse the insured if it is later adjudged that the claim was one within the covenant to pay.” Burd, 267 A.2d at 10 (emphasis added).


There is one very common set of facts that is almost certain to give rise to an independent counsel requirement, even in jurisdictions that do not apply a per se rule -- if an underlying complaint alleges mutually exclusive theories of recovery (such as negligence and intentional tort), some of which would be covered under the policy and some of which would not. Courts addressing the situation have generally concluded that separate representation for the policyholder is necessary.36

Courts have found a conflict of interest where the underlying complaint alleges both negligence and intentional torts (or some other set of mutually exclusive covered and non-covered theories of recovery) because of the danger that an insurer might deliberately defend the policyholder in a manner that would result in a finding of liability only on non-covered claims. Under the fact-dependent approach to determining conflicts adopted in states such as California and New York, only this type of situation is deemed to raise a conflict of interest sufficient to require independent counsel for the policyholder. In contrast, courts adopting a per se rule that a policyholder is entitled to independent counsel any time an insurer reserves its rights have reasoned that the insurer’s contractual right to control the defense of suits against its policyholder presupposes that the insurer will pay any judgment resulting from such suits, and that where the duty to pay the judgment may fall on the policyholder instead of the insurer, the right to defend should also belong to the policyholder.

Conclusion

It is often difficult to determine whether there exists a true conflict between an insurer’s interests and those of its policyholder such that independent counsel will be required. These questions arise in virtually all environmental cases where an attorney is retained by an insurer to defend a suit against its policyholder. The law in this area remains undeveloped on key points in many jurisdictions. Even in states where a per se rule has been articulated, there may be room for debate. Many of the cases engendering a broad statement that independent defense counsel must be afforded if a reservation of rights is issued by the insurer involved coverage defenses that were intertwined with issues in the underlying claim. It is unclear whether these states would apply a per se rule if a coverage issue wholly unrelated to the underlying claim were at stake. Further, the law governing the independent counsel question is in flux. The Restatement of the Law Governing Lawyers will soon be finalized and will contain new language bearing on this issue. The firestorm of commentary and concern about the proposed Restatement provisions may prompt other efforts to influence this area of the law, particularly in the legislative arena. Given
the uncertain and potentially shifting standards, it is important to consider all relevant sources of law in resolving whether an actual conflict requiring independent counsel exists.

About the Author
Laura A. Foggan is co-chair of Wiley Rein’s Appellate Practice and a member of its Insurance Practice. She has more than 20 years of trial and appellate experience in insurance-related litigation. Consistently named as a leading lawyer for insurers in commercial insurance work, Ms. Foggan is recognized for her contributions to the development of key insurance law precedents and the effective presentation of insurer views through industry amicus submissions in the courts. She serves as co-chair of the Insurance Coverage Litigation Committee of the ABA Litigation Section, as well as the Insurance Law Forum of the DC Women’s Bar Association. For more information, please contact her at 202.719.3382 or lfoggan@wileyrein.com.

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2 Id. at §2860(a).
4 See, e.g., AIU Ins. Co. v. Block Marina Inv., Inc., 544 So.2d 998 (Fla 1989).
5 Alaska Stat. §21.89.100(c) (1996).
7 See, e.g., Brohawn v. Transamerica Ins. Co., 347 A.2d 842 (Md. 1975) (insurer should have provided for contingency that its interests would conflict with those of its policyholder); Employers Fire Insurance co. v. Beals, 240 A.2d 397, 404 (R.I. 1968) (insurer failed to provide any degree of clarity for this contingency when it drafted the insurance contract), abrogated on other grounds sub nom. Peerless Ins. Co. v. Viegas, 667 A.2d 785 (R.I. 1995).
8 Annotated Model Rules of Professional Conduct, Rule 1.7 (ABA 1992) (citations omitted).
10 See, e.g., First Insurance Co. of Hawaii v. State, 665 P.2d 648, 655-56 (Hawaii 1983) (where conflict of interest existed between the policyholder, a public contractor, and an additional insured, the State of Hawaii, insurer could not discharge its duty to the latter by providing counsel to defend the former; separate counsel was required); Wolpaw v. General Accident Ins. Co., 639 A.2d 338, 340 (N.J. Super. Ct., App. Div. 1994) (homeowners’ insurer breached policy by assigning single law firm to represent three insureds with conflicting interests); Bituminous Ins. Co. v. Pennsylvania Manufacturers’ Assoc. Ins. Co., 427 F. Supp. 539, 555 (E.D. Pa. 1976) (where contractor’s interests conflicted with those of subcontractor, and insurer had duty to defend both, insurer was required to provide separate counsel).
12 See id; Alaska Stat. § 21.89.100(b); Cal. Civ. Code § 2860(b).
13 See, e.g., Campbell, 639 A.2d at 659; State Farm Mut. Auto Ins. Co. v. Hollis, 554 So. 2d 387 (Ala. 1989) (finding jury issue as to whether insurer was negligent in refusing to settle within limits); Hartford Accident & Indem. Co. v. Foster, 528 So. 2d 255, 265 (Miss. 1988) (“the insurer has a fiduciary duty to look after the insured’s interest at least to the same extent as its own, and to make a knowledgeable, honest and intelligent evaluation of the claim commensurate with its ability to do so. If the carrier fails to do this, then it is liable to the insured for all damages occasioned thereby”); Commercial Union Ins. Co. v. Liberty Mutual Ins. Co., 393 N.W.2d 161, 164 (Mich. 1986)
Assessing Conflicts of Interest in the Tripartite Relationship

(“[i]f the insurer is motivated by a selfish purpose or by a desire to protect its own interest at the expense of its insured’s interest, bad faith exists, even though the insurer’s actions were not actually dishonest or fraudulent”); Rova Farms Resort, Inc. v. Investors Insurance Co., 323 A.2d 495 (N.J. 1974) (where underlying claimant’s injury was substantial, and potential liability of insured “should have been reasonably obvious” despite advice of counsel, insurer’s failure to offer $50,000 policy limit was in bad faith and rendered it liable for entire $225,000 judgment against insured); Crisci v. Security Ins. Co., 426 P.2d 173 (Cal. 1967) (insurer liable for unwarranted rejection of a reasonable settlement offer where it refused a settlement demand within its $10,000 limit and $101,000 judgment entered against insured; showing of dishonesty, fraud or concealment on the part of the insurer not required).

14 See, e.g., American Home Assurance Co., Inc. v. Hermann’s Warehouse Corp., 563 A.2d 444 (N.J. 1989) (insurer entitled to reimbursement for deductible amount where insurer settled, over policyholder’s objection, for amount substantially in excess of deductible but well within policy limits); Casualty Ins. Co. v. Town & Country Pre-School Nursery, Inc., 498 N.E.2d 1177 (Ill. App., 1st Dist. 1986) (requiring policyholder, which did not approve settlement, to reimburse insurer for $1800 settlement amount which fell within its $2000 deductible, despite claims adjuster’s belief that policyholder was not liable). Of course, Fortune 500 companies and other policyholders that choose to bear large deductibles will often negotiate with their insurers for specific contractual provisions that give the policyholder control over settlement of claims likely to fall within the deductible amount.

16 See, e.g., Employers’ Surplus Line Ins. Co. v. City of Baton Rouge, 362 So. 2d 561 (La. 1978) (where insurer settled claim for $75,000 and policy had a $10,000 deductible, insurer could not recover $10,000 deductible from policyholder unless policyholder consented to the settlement); see also, National Service Indus., Inc. v. Hartford Accident & Indem. Co., 661 F.2d 458 (5th Cir. 1981) (applying Georgia law) (where insurer proposed to settle claim in a manner that would require policyholder to pay deductible under two policies instead of one, insurer was required to obtain policyholder’s consent).


18 Id. at 260-61; see Kooyman v. Farm Bureau Mut. Ins. Co., 315 N.W.2d 30, 35-37 (Iowa 1982) (triable issue as to whether defense counsel’s inadequate investigation and trial preparation evidenced insurer’s indifference to insured’s interests which would establish insurer’s bad faith.); cf. Bevevino v. Saydari, 76 F.R.D. 88, 94 (S.D.N.Y. 1977) (refusing insurer’s request to set aside unwarranted malpractice verdict against its policyholder where verdict was result of insurer’s having “deliberately decided not to provide the [policyholder] with the semblance of a defense”), aff’d 574 F.2d 676 (2d Cir. 1978).) 19 73 Neb. L. Rev. at 279.

20 Id.

21 Id.

22 655 A.2d at 43-44.

23 Id. (citing 7C Appleman, § 4681 (1979)).

24 Id. at 14.

25 Id. at 15.

26 The potential for conflict when a policyholder opposes settlement because of possible reputational harm can be, and frequently is, addressed by an express contractual provision requiring the policyholder’s consent to settlement. Such contract provisions often appear in medical malpractice insurance policies, for example.

authority to settle within policy limits because a policyholder “cannot be injured by a settlement to be wholly paid by the insurer”).


30 479 N.E.2d at 993.

31 Id. at 993-94 (emphasis added).

32 Cases holding that a policyholder is entitled to separate counsel whenever an insurer issues a reservation of rights generally do not, but probably should, distinguish between (1) an insurer’s reservation of rights based on a coverage defense that is apparent on the face of the underlying complaint; and (2) an insurer’s reservation of the right to assert any coverage defenses that might later reveal themselves as additional facts are developed. The second situation arguably raises only a speculative potential for a conflict of interest, such that independent counsel should not be required until and unless the insurer actually asserts that a defense to coverage applies.


Illinois Masonic Medical Center v. Turegum Insurance Co., 522 N.E.2d 611, 613 (Ill. App. 1st Dist. 1988) (citations omitted) (policyholder entitled to independent counsel where underlying complaint alleged negligent treatment during one or more of three hospitalizations, one during policy period and two after policy’s expiration); *Nandorf, Inc. v. CNA Insurance Cos.*, 479 N.E.2d 988, 992 (Ill. App. 1st Dist. 1985) (policyholder entitled to independent counsel where complaint sought minimal compensatory damages for which coverage was acknowledged, but substantial punitive damages for which coverage was disputed).

34 Id. at 127. See also *Lusk v. Imperial Casualty and Indem. Co.*, 603 N.E.2d 420, 423 (OH. App. 1992) (fact that two insurers reserved rights did not entitle policyholder to independent counsel where policyholder definitely had coverage and dispute was only as to which insurer provided it; conflict entitling policyholder to separate counsel only where insurer’s disclaimer would “render it impossible for such company, in making defense, to protect both its own interests and those of the insured”) (citing *Socony-Vacuum Oil Co. v. Continental Casualty Co.*, 59 N.E.2d 199, 204-205 (Oh. 1945)).