13 Chromium(VI) as the Basis for a Toxic Tort—a Legal Perspective

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CONTENTS
13.1 Introduction...............................................................................................524
13.2 The Legal Standards for Chromium(VI): Regulatory Background .................................................................525
13.2.1 Exposure to Cr(VI) .....................................................................525
13.2.2 Regulation of Cr(VI) in Drinking Water.................................526
13.3 Plaintiffs’s Various Theories of Liability in Toxic Tort Cases ...........527
13.3.1 Strict Liability..............................................................................528
13.3.2 Trespass ........................................................................................529
13.3.3 Waste ............................................................................................530
13.3.4 Nuisance ......................................................................................530
13.3.5 Damages for Nuisance and Trespass ......................................532
13.3.6 Negligence...................................................................................533
13.3.7 Special Detail that Toxic Tort Plaintiffs must Allege............534
13.4 Expert Witness Testimony Re: Causation ............................................534
13.4.1 Background on Expert Witness Evidence ..............................534
13.4.2 Special Rules Regarding Scientific Evidence .........................535
13.4.3 Other Examples of How Trial Courts Apply Daubert.........537
13.4.4 The Hanford Litigation: Expert Testimony in a Cr(VI) Case .................................................................538
13.4.4.1 Background ................................................................................538
13.4.4.2.1 The Testimony.........................................539
13.4.4.2.2 The Trial Court’s Rejection of the Testimony ...............540
13.5 Damages Available for Toxic Torts ........................................................541
13.5.1 What are Damages? ...................................................................541
13.5.2 Theories of Damages in Toxic Tort Personal Injuries Cases ................................................................. 542
13.5.2.1 The Three Basic Types of Toxic Physical Injuries: Acute, Latent, and Subclinical .................. 542
13.5.2.2 Medical Monitoring ................................................... 543
13.5.2.2.1 Background ............................................. 543
13.5.2.2.2 Under Federal Law ................................ 543
13.5.2.2.3 Under Common Law................................ 544
13.5.2.2.4 Defenses to Medical Monitoring Claims............................................................. 546
13.5.2.2.5 If Courts Opt for Medical Monitoring, they Usually Opt for Supervised Funds—Not Lump Sums ............... 547
13.5.2.2.6 Emotional Distress and Cancerphobia .......................................... 547
13.5.2.2.7 Increased Risk of Cancer........................................ 549
13.5.3 Theories of Damages in Toxic Tort Property Damage Cases .......................................................... 550
13.6 Survey of Cr(VI) Published (and Otherwise Notable) Cases ............................................................... 551
13.6.1 Case No. 1 ............................................................................. 551
13.6.2 Case No. 2 ............................................................................. 551
13.6.3 Case No. 3 ............................................................................. 552
13.6.4 Case No. 4 ............................................................................. 552
13.6.5 Case No. 5 ............................................................................. 552
13.6.6 Case No. 6 ............................................................................. 553
13.6.7 Case No. 7 ............................................................................. 553
13.6.8 Case No. 8 ............................................................................. 554
13.6.9 Case No. 9 ............................................................................. 554

Bibliography ................................................................................................................. 554

13.1 Introduction

This chapter concerns how the courts have treated chromium(VI), Cr(VI), as the basis of toxic tort. However, to gain such an understanding, one must first understand the basics of how our legal system handles toxic torts, since Cr(VI) is just one entry in a very long list of contaminants that have contributed to the development of toxic tort law[1]. Thus, this chapter will primarily serve as a primer for nonattorneys and nascent attorneys on toxic tort litigation, with special emphasis on Cr(VI). We will also discuss how the nation’s public health officials view Cr(VI), as the regulatory community’s treatment of Cr(VI) serves as a backdrop for toxic tort litigation based on Cr(VI).
Chromium(VI) as the Basis for a Toxic Tort—a Legal Perspective

13.2 The Legal Standards for Chromium(VI): Regulatory Background

13.2.1 Exposure to Cr(VI)

Exposure to chromium(VI) and its compounds can occur in the following workplace processes:

- Photography and photoengraving
- Laboratories
- Textile dying
- Drilling mud
- Water treatment
- Chemical manufacturing
- Timber treatment of wood, wood preservatives containing Cr
- Glass, clay, and stoneware production (pigments containing Cr)
- Mining of chromite (FeCr$_2$O$_4$)
- Production of stainless steels
- Electroplating (decroplating, i.e., hard plating against corrosion)
- Welding, thermocutting, grounding of stainless steels
- Aluminum anodizing
- Manufacturing of cars, locomotives, ships, machines
- Manufacturing of electrotechnical equipment
- Manufacturing of instruments in fine mechanical equipment[2]

Thus, many are exposed to Cr(VI) in many different occupations. Federal and state agency studies (among many others) have stated that the risk for workers exposed to Cr(VI) is quite high for lung cancer[3], and other less deadly diseases. For this reason, in addition to the danger to the general public if it enters the public water supply, Cr(VI) has received the attention of the nation’s public health officials (see discussion below). Also, public health/environmental advocates and labor unions have, for the last several years, been campaigning litigation to force the U.S. Occupational Safety and Health Administration (OSHA) to better protect workers against Cr(VI). In 2002, they succeeded in challenging OSHA’s refusal to revise its standards for protecting workers from Cr(VI). In Public Citizen Health Research Group v. Chao, the United States Court of Appeals (Third Circuit) ruled as follows:

- OSHA’s delay in adopting a new standard for workplace exposure to Cr(VI) was excessive, warranting an order compelling OSHA to act
• OSHA had no valid scientific or policy based justification for the delay
• OSHA had not adopted a new standard nine years after admitting that its existing standard of 100 $\mu g/m^3$ was inadequate
• OSHA had missed 10 self-imposed deadlines for adopting such a standard and had demoted the rulemaking from a “high priority” to a “long term action” with a timetable “to be determined”

The Third Circuit ordered that OSHA issue a proposed standard for Cr(VI) no later than October 4, 2004 and a final rule no later than January 18, 2006.

California has a stricter standard than that of the federal government. For example, CAL/OSHA's present Permissible Exposure Limit (PEL) for water-soluble and certain water-insoluble Cr(VI) compounds is 0.05 milligram of chromium/meter$^3$ of air (0.05 mg/m$^3$). California allows exposure to be greater than the PEL at times, but only if it is less than the PEL at other times, so the average exposure for any 8-h work shift is no greater than the PEL. Many scientists, however, believe that even California’s PEL does not adequately protect workers against the danger of lung cancer and thus, they recommend even a more stringent tolerance for Cr(VI)[4].

13.2.2 Regulation of Cr(VI) in Drinking Water

As respects drinking water, in the U.S., Cr(VI) is regulated under the federal MCL for total Cr in drinking water, 100 parts per billion (ppb) or micrograms per liter ($\mu g/l$), unless the particular state’s standard is stricter. For example, in California, the state MCL for total chromium is 50 ppb. Perhaps no other state had devoted as much study to Cr(VI) as California. Not surprisingly, no state has had a more lively debate on the proper regulation of Cr(VI) than California.

In fact, under California Health and Safety Code Section 116365.5, the State of California Department of Health Services (DHS) must adopt an MCL for Cr(VI) by January 1, 2004. Health and Safety Code Section 116365(a) requires the DHS, while placing primary emphasis on the protection of public health, to establish a contaminant’s MCL on a level as close as technically and economically feasible to its public health goal (PHG). A PHG is the contaminant’s concentration in drinking water that does not pose any significant risk to health, derived from a human health risk assessment. (PHGs are also commonly defined as concentrations of drinking water contaminants at which adverse health effects are not expected to occur from lifetime of exposure).

In 2001, the DHS added Cr(VI) to its list of unregulated chemicals requiring monitoring. The monitoring data have enabled the DHS to determine the extent to which Cr(VI) exists within drinking water supplies, and at what concentrations. This information is necessary for the DHS to evaluate the costs of treating drinking water containing Cr(VI). As part of its MCL
process, the DHS has evaluated the technical and economic feasibility of regulating Cr(VI). Technical feasibility includes an evaluation of commercial laboratories’ abilities to analyze and detect Cr(VI) in drinking water, the cost of monitoring, and the cost of treatment required to remove Cr(VI). (Cost must be considered whenever MCLs are adopted.) A Cr(VI) PHG is not yet available, again, in large part owing to the ongoing debate over determining an optimum drinking water standard and as to whether Cr(VI) is a carcinogen by ingestion.

As stated, a scientific panel of experts, the Chromate Toxicity Review Committee (the Committee), convened by the University of California has recently (2001) reviewed the health effects of Cr(VI) in drinking water and has forwarded its report to the California Environmental Protection Agency’s Office of Environmental Health Hazard Assessment (OEHHA). The Committee was formed at OEHHA’s request to provide help identifying an optimum drinking-water level, or PHG, for Cr(VI) in drinking water. The Committee concluded there was “no basis in either the epidemiological or animal data published in the literature for concluding that ingested Cr(VI) is a carcinogen.”

The Committee emphasized that there was no compelling scientific evidence to make a case for or against more restrictive regulation of Cr(VI). For this reason, the Committee recommended that the State of California perform a major study on Cr(VI). The OEHHA accepted this recommendation, and has already begun a 5 year study to develop the nation’s first PHG for Cr(VI).

The Committee agrees that until the study is complete, California should continue to consider its current drinking water standard (MCL) of 50 \( \mu g/l \) (50 ppb) for “total” chromium (consisting of Cr(VI) and the much-less toxic form of the metal, Cr(III)) to be protective of public health. Lastly, not surprisingly, the Committee has received both praise and criticism (even condemnation) for its work. Usually, this praise or criticism comes from expected sources. For example, defense counsel has commended the Committee, while environmental activists have lambasted it[5].

13.3 Plaintiffs’s Various Theories of Liability in Toxic Tort Cases

The most prevalent (injury to persons or property) causes of action for pollution are negligence, nuisance, trespass, and strict liability. These common law theories provide a number of remedies without the procedural and burden of proof hurdles that environmental statutes frequently pose[6]. For example, the common law plaintiff[7] can recover compensatory and punitive damages, not just pollution cleanup costs, which is the only available remedy under certain environmental statutes.
13.3.1 Strict Liability

Strict liability is liability without fault. The beginning of the strict liability theory is rooted in the nonnatural uses of land principle promulgated in the seminal English case, *Rylands v. Fletcher* [8]. The Rylands rule “allows for the imposition of liability for damages proximately caused by the defendant’s dangerous, nonnatural use of land regardless of the standard of care defendants utilized in conducting that activity [9].”

Courts have applied the strict liability standard when the defendant’s activities have been abnormally dangerous or extremely hazardous. According to noted torts commentators, “the judicial rationalization seems to be that one who conducts highly dangerous activities should prepare in advance to bare the financial burden of harm proximately caused to others by such an activity [10].”

Two sections of the Restatement (Second) of Torts [11] explain how the strict liability rule applies to damages resulting from certain activities. Section 519 states:

1. Someone who carries on an abnormally dangerous activity is subject to liability for harm to person, land, or chattels of another resulting from any activity, although that person has exercised the utmost care to prevent the harm.
2. This strict liability is limited to the kind of harm, the possibility of which makes the activity abnormally dangerous [12].

Also, under Restatement (Second) of Torts, Section 520, the following factors help to determine what constitutes an abnormally dangerous activity:

- The existence of a high degree of risk of some harm to the person, land or chattels of others
- Likelihood that the harm that results from it will be great
- Inability to eliminate the risk by the exercise of reasonable care
- Extent to which the activity is not a matter of common usage
- Inappropriateness of the activity to a place where it is carried on
- The extent to which its value to the community is outweighed by its dangerous attributes [13]

Plaintiffs prefer strict liability causes of action because they do not need to prove negligence, frequently a hurdle that is too difficult for plaintiffs to negotiate. However, plaintiffs still must prove foreseeability (strict liability does not apply to activities, which, when conducted, were commonplace) [14] and causation—they must prove that the conduct subject to strict liability caused the alleged injury.

In the late 1970s and 1980s, a trend developed toward adopting strict liability principles in environmental cases. “The decision to impose strict
liability for environmental torts typically is motivated by recognition of the risk associated with toxic substances, and by a policy judgement that the burden of those risks should be expressly shifted from environmental tort plaintiffs and internalized as a cost of the defendant’s operations[15].”

Many states have upheld strict liability claims in environmental cases involving toxic waste storage, disposal, and handling. For example, in Colorado a federal district judge held: “The widespread use of gasoline in no way diminishes its inherently dangerous character. Those who store and dispense gasoline for profit, and who attempt to increase that profit by locating their filling stations at incidental storage facilities in or near residential areas, should be held liable for harm resulting to persons or property from gasoline stored at or leaking from those stations[16].” A Massachusetts federal district court made the same basic ruling[17]. Also, in Maryland, a party who placed a large underground gasoline tank in close proximity to a residence and water well was strictly liable[18]. The court reasoned that such action involved a high degree of risk of some harm, was not a matter of common usage, and was an activity inappropriate to the residential neighborhood where it occurred[19].

Also, Missouri implies strict liability to claims based on radiation damage[20], while New Jersey applies strict liability to claims based on a defendant’s processing, handling, and disposal of radiation[21]. In North Dakota, the absence of negligence is not a defense to a claim for crop losses based on a defendant’s placement of wastewater lagoons on property adjacent to a plaintiff’s property[22]. Rhode Island follows this rule as well[23]. In Mississippi “plaintiff may recover damages by physical invasion of his property on a simple showing that the defendant was responsible for the physical invasion[24].” Moreover, a plaintiff can “recover damages to land caused by physical invasion of the plaintiff’s land by an agency put in motion by the defendant, even if the defendant, has not been negligent[25].”

On the other hand, some states invalidate strict liability for many environmental torts. A Louisiana court has held that the dumping of toxic waste in industrial disposal wells is not abnormally dangerous[26]. A Virginia court held likewise[27] that gas station operations do not qualify as an abnormally dangerous activity that gives rise to strict liability.

13.3.2 Trespass

Restatement (Second) of Torts establishes that:

One is subject to liability to another for trespass irrespective of whether the person thereby causes harm to any legally protected interest of the other, if the person intentionally (a) enters land in the possession of the other or causes a thing or a third person to do so; or (b) remains on the land; or (c) fails to remove from the land a thing which the person is under a duty to remove[28].

Further, the Restatement provides: (1) a trespass may be committed by the continued presence on the land or structure, chattel or other things which the
actor has tortiously placed there, whether or not the defendant has the ability to remove it; (2) a trespass may be committed by the continued presence of the land of a structured, chattel or other thing which the defendant’s predecessor in legal interest therein has tortiously placed there, if the defendant, having acquired his legal interest in the thing with knowledge of such tortious conduct or having thereafter learned of it, fails to remove the thing[29].

Trespass is slightly different from nuisance (discussed below) in certain ways. First, nuisance concerns the use and enjoyment of land, whereas trespass focuses on the possessory interest of land, hence the use of the word “entry” and “invasion.” An action in trespass for failure to remove polluting materials is based on a defendant’s intentional conduct.

The interference of toxins on the plaintiff’s possessory interest in land can (and frequently does) constitute a trespass. Martin v. Reynolds Metals Co.[30] a 1964 Oregon Supreme Court case was one of the earliest decisions that recognized such a toxic trespass. In Martin, the court ruled that fluoride compounds migrating from defendant’s facility onto plaintiff’s land constituted a trespass, and awarded damages to plaintiff for the reduction in his land’s grazing value. In so ruling, the court held it was immaterial that the fluoride was invisible to the human eye, and that, generally, there is no size requirement (i.e., the trespassing object can be invisible) for the tort of trespass. Instead, the court focused on the potential damage caused by the fluoride. Lastly, in recent years “toxic trespass” has often been referred to as “chemical trespass”—the terms are synonymous[31].

13.3.3 Waste

Blacks Law Dictionary defines waste as follows:

Action or inaction by a possessor of land causing unreasonable injury to the holders of other estates in the same land. An abuse or destructive use of property by one in rightful possession. Spoil or destruction, done or permitted to lands, houses, gardens, trees, or other corporeal hereditaments, by the tenant thereof, to the prejudice of the heir or of him in reversion or remainder. A destruction or material alteration or deterioration of the freehold, or the improvements forming a material part thereof, by any person rightfully in possession, but who has not the fee title or full estate.…[32]

As Blacks Law Dictionary establishes, “the primary distinction between ‘waste’ and ‘trespass’ is that in waste the entry is done by one rightfully in possession”. Thus, this cause of action can be used only against former owners and tenants[33].

13.3.4 Nuisance

The common law recognizes two different causes action under rubric of nuisance: public nuisance and private nuisance. Public nuisance is common
defined as an unreasonable interference with a right common to the general public.

Circumstances that may sustain a holding that interference with a public right is unreasonable include the following:

1. Whether the conduct involves a significant interference with the public health, the public safety, the public peace, the public comfort, or the public convenience
2. Whether the conduct is proscribed by a statute, ordinance, or administrative regulation
3. Whether the conduct is of continuing nature or has produced a permanent or long-lasting effect that the (defendant) knows (or has reason to know) has significant effect upon the public right.[34]

For examples of public nuisance cases based on toxic tort claims, see Village of Wilsonville v. SCA Services, Inc.[35] and United States v. Hooker Chemicals and Plastics Corp[36]. In Village of Wilsonville, local government officials sued for a court order to shut down and clean up a hazardous waste landfill which, in their view, endangered their community’s health and welfare[37]. In Hooker Chemicals, the State of New York and the federal government sued a chemical company which disposed off wastes in New York’s Love Canal to recover costs incurred in preventing further migration of waste, to relocate families, and for other actions taken in response to the waste. The State of New York successfully moved for summary judgement, obtaining a determination that defendant was liable as a matter of law for the creation of a public nuisance at the Love Canal, as well as for the cleanup costs it incurred at the site[38].

A private nuisance is defined as a “nontrespassory invasion of another’s interest in the private use and enjoyment of land[39].” This invasion must result in an injury that is both “substantial and unreasonable” to plaintiff’s use and enjoyment of land[40]. “Substantial” obviously means significant: a slight inconvenience or annoyance is not actionable. An unreasonableness claim “requires the finders of fact to evaluate...the severity of the harm relative to its social value or utility[41].” Moreover, evidence concerning the degree of a defendant’s interference in the use and enjoyment of the plaintiff’s land and the reasonableness of the interference in the context of wider community interests controls the amount of damages recoverable, once liability is established[42].

Private nuisance necessarily involves interference with use and enjoyment of land; a public nuisance does not[43]. For example, groundwater pollution is a public nuisance as well as a private nuisance “if the polluted water under property comes into direct contact with and harms the owner or his property[44].” A toxic tort plaintiff may sue simultaneously for both public nuisance and private nuisance if (1) there is an interference with the public’s right, and (2) plaintiff has sustained special injuries as a result of defendant’s conduct.
As for ex-owners and ex-occupiers, courts are split on the issue of whether a subsequent owner/occupier may sue a former owner/occupier for polluting his own property. As of June 2003, California is the only state that permits such claims. For example, see *Newhall Land Farming Co. v. Superior Court* [45], where the court held that the landowner could sue the prior owners of the land for nuisance, resulting from the contamination of soil and groundwater that occurred while defendants were operating a SAS processing plant on the property. But, see the following toxic tort cases, where courts refused to permit nuisance actions by property owners against previous owners: *Rosenblatt v. Exxon Co. U.S.* [46], and *Drovin v. Ridge Lumber, Inc* [47].

### 13.3.5 Damages for Nuisance and Trespass

There are many similarities between nuisance and trespass in environmental cases. For example, in a hazardous waste cases the typical “measure of damages for trespass and nuisance (public and private) cases involving ‘permanent’ (or indefinite) (injury) is the diminished market value of the property, plus consequential losses for the loss of use of the land, or for from discomfort or annoyance to the possessor[48].” In contrast, “damages from ‘temporary’ entry, that is, injury that is remediable, typically include compensation for the cost of remediation or repair to the property or the property’s diminished rental or use value during the period in which the injury persists, plus consequential damages[49].”

Sometimes torts recur and, thus, give rise to several claims. These types of claims are “continuing torts.” Groundwater pollution is a good example. Without steps to halt or spread, pollutants in groundwater will migrate vertically and laterally because of events that occurred many years ago. Because states have statutes of limitation for nuisance and trespass that range from 1 to 10 years, labeling a nuisance or trespass as either permanent or continual can make or break a plaintiff’s case.

If a nuisance or trespass is considered permanent, the plaintiff has only one cause of action, and only one opportunity to recover. Thus, if the statutes of limitations runs, the plaintiff can take no action, since successive actions are not permitted for permanent torts. However, if the trespass or nuisance is deemed continuing, “successive actions (are) maintained for the damages occurring from time to time[50].” When a continuing or recurring injury result from a continuing trespass or nuisance, a cause of action for the original wrong arises when the wrong is committed, and separate and successive causes of action for consequential damages arises when they are sustained. Accordingly, as long as the cause of injury exists, and the damages continue to occur, a plaintiff may recover for damages that accrue after the statutory period for the original wrong, while a cause of action based solely on the original wrong may be barred[51].

In theory the difference between a continuing nuisance or trespass and or a permanent nuisance or trespass lies in the “ability of man to abate the
nuisance[52].” If the nuisance recurs frequently or is constant, then the nuisance or trespass is continuing[53]. If the nuisance or trespass cannot be abated, then it is permanent[54]. In this regard, the Arizona Supreme Court held that:

If a nuisance is of such nature that although the thing itself may continue, yet its injury to another may be abated by human agency, and the owner or perpetrator of the nuisance fails to abate it, the nuisance is a continuing one, and one action does not exhaust the remedies of the party injured. If, however, the thing is of such character that it cannot be maintained without continuing to be, in the legal sense, a nuisance, it is permanent in its nature, and the rights of the injured party are exhausted by one action[55].

13.3.6 Negligence

The elements of a cause of action for negligence are:

1. A duty recognized by law, requiring a person to conform to a certain standard of conduct, for the protection of others against unreasonable risk.
2. A breach of the duty to conform to the required standard.
3. A reasonably close causal connection between the conduct and the resulting injury (proximate cause or legal cause).
4. Actual loss or damage resulting to the interest of another[56].

Many courts have upheld environmental liability claims based upon negligence. For example, see *Sterling v. Velsico Chemical Corp.*[57], a class action against a chemical corporation for property damage and personal injuries brought by residents who lived near the chemical corporation’s waste burial site. The court ruled for plaintiffs and awarded compensatory damages of over $5 million and punitive damages of $7.5 million[58]. In its specific finding of negligence, the court listed 21 specific instances of actionable negligence[59].

Also, there is a type of negligence known as “negligence per se”. Under a limited number of circumstances, statutes or ordinances describe the level of conduct of a person held to a negligence pro se, or negligence as a matter of law, standard[60]. To hold a defendant negligent for violating a statute or ordinance, a plaintiff must prove that his injuries “were of a kind that the statute or ordinance was enacted to prevent harm. Further, (the plaintiff) must show that the statute or ordinance prescribes or proscribes specific conduct and that the conduct at issue proximately caused the alleged harm[61].” Under the majority rule, this requirement encompasses all risk or harms that are a reasonably foreseeable result of a statutory violation[62]. Since environmental statues and regulations are prophylactic and are designed to protect the health, safety, and welfare of the general public were specific groups likely to come into direct or indirect contact with hazardous substances, negligence pro se is a frequent cause of action in environmental liability cases.
13.3.7 Special Detail that Toxic Tort Plaintiffs must Allege

In a toxic tort personal injury suit, lawsuit, the plaintiffs must allege specific facts detailing how the conduct caused the injury. In California, for example, a toxic tort plaintiff must set forth in the complaint the following allegations (this is representative of the rest of the country):

1. That a person was exposed to each of the toxic materials claimed to have caused a specific illness; (an allegation that the person was exposed to “most or perhaps all” of the substances listed is inadequate).
2. Each product or toxic waste that allegedly caused the injury must be identified (it is not enough to allege that the toxins in defendants’ products or waste caused it).
3. As a result of the exposure, the toxins entered the person’s body.
4. The person suffers from a specific illness, and each toxin that entered the person’s body was substantial factor in bringing about, prolonging, or aggravating that illness (except in a case governed by the principal of liability based on market share for uniform product)[63].

13.4 Expert Witness Testimony Re: Causation

13.4.1 Background on Expert Witness Evidence

A toxic tort plaintiff always must retain expert witnesses to establish causation. Failure to produce such expert evidence means certain failure, almost always in the form of a summary judgement for the defendant(s)[64]. Expert testimony is the opinion of a witness who has special skill, information, or knowledge concerning an issue that is under consideration by the judge or jury (the trier of fact). His expertise may have been gained through academic study, observation, investigation, or experience[65]. The trial judge should not allow an expert witness to testify (to give his opinion) unless the jurors, owing to their lack of knowledge or experience, are incapable of making their own conclusions from the facts presented at trial: experts are not permitted to testify on matters of common knowledge[66].

An expert must be properly qualified to testify and will be examined and cross-examined to establish evidence (or lack of evidence) about qualifications[67].

An expert witness’ opinion should be based on the facts in evidence—not on other’s opinions—but it may (and often is) based on facts related to the expert witness by other witnesses. Also, expert witness evidence—just as all evidence—should not be admitted (heard by the jury) unless it is
both relevant and material. Evidence is relevant if it helps to prove or disprove a disputed fact and thus, aid the resolution of the inquiry. The relationship between the fact offered and the fact in dispute is called “relevancy”—when an expert witness offers to prove a fact/render an opinion, the expert is saying there is a logical relationship between the fact offered/opinion rendered and the fact in dispute. Evidence is material if it is sufficiently important to influence the trial’s result. The trial judge determines materiality and relevance. If the judge believes the fact (or opinion) has little materiality, though relevant, the judge can exclude it as immaterial[68]. (In federal courts, and some state courts, the definition of “relevance” includes materiality—see, for example, Federal Rules of Evidence, Rule 401, which states: “‘Relevant evidence’ means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence”.)

13.4.2 Special Rules Regarding Scientific Evidence[69]

For expert witness testimony on causation, the proponent (either plaintiff or defendant) of the proposed testimony must show not only that it is relevant and material, but also reliable. Before 1993, almost all federal courts, and many state courts, applied the “general acceptance” rule of a 1923 case, Frye v. United States[70]. Under this standard, the proponent of expert scientific evidence must satisfy the following three-pronged test:

- The technique used was sufficiently reliable that it has earned general acceptance in its scientific community or field.
- The witness testifying to the substantial reliability of the scientific method is qualified as an expert to give an opinion on the subject.
- The correct scientific procedures were used[71].

In 1993, in Daubert v. Merrell Dow Pharmaceuticals, Inc.[72], the United States Supreme Court ruled that the Frey rule set forth above was at odds with the Federal Rules of Evidence, Rule 702, which reads:

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 an 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.

The trial court has a legal duty to scrutinize an expert’s causation theory. Since 1993, the United State Supreme has ruled three times that trial courts
must exercise a gatekeeper role to exclude weak (unreliable) science. Daubert[73], Supra; General Electric Co. v. Joiner[74], and Kumho Tire Company, LTD v. Carmichael[75]. Each time the Supreme Court has amplified the federal trial court’s duty under Fed. R. Evid. 702 to exclude unreliable expert testimony. Also, many state’s supreme courts have endorsed the same (or very similar) roles for their trial courts under their respective state evidence codes.

The 1993 Daubert decision sets forth the trial court’s task in reviewing scientific causation testimony. In Daubert, the plaintiff had eight experts who were prepared to testify, based on their scientific knowledge, that use of the drug Bendectin during pregnancy caused birth defects. The district court (again, the name for trial courts in the federal court system), ruled that the experts’s testimony linking the drug to birth defects was inadmissible because the opinions were not based on epidemiological studies, and, therefore, the science did not meet the “general acceptance” test of Frye v. United States. The Supreme Court remanded the case, and instructed the lower court to consider the experts’s testimony under new “Daubert” factors.

To assist the trial judge in making a proper assessment, Daubert established a four prong test for reliability. Although not exclusive, these “Daubert factors” are the primary tests for the admission of scientific evidence:

1. Whether the theory underlying the opinion is generally accepted within the relevant scientific community.
2. Whether the theory has been published and positively peer-reviewed.
3. Whether the expert’s technique or theory can be or has been tested—whether the expert’s theory can be challenged in some way, or whether it is instead simply a subjective, conclusory approach that cannot reasonably be assessed for reliability.
4. The known or potential rate of error in the expert’s analysis[76].

Thus, though “general acceptance” still is a factor for the federal trial court to consider, it is not a threshold requirement, as the test under Rule 702 is more flexible.

To make certain that the trial courts fulfill this “gatekeeper” function, the Supreme Court imposed the burden of proving admissibility squarely on the proponent of the scientific evidence[77]. The Daubert criteria must be proven by “objective, independent validation of the expert’s methodology[78].” Thereafter, the U.S. Supreme Court, in its 1997 Joiner decision, expanded the trial court’s gatekeeper function. In Joiner, the Court stated the trial court must also determine that the expert’s conclusions rationally flow from the expert’s methodology.

In Joiner, the district court, applying Daubert, excluded plaintiff’s expert, who had sought to testify that plaintiff’s exposure to PCBs caused his lung cancer. The expert had declared that his testimony was supported by an animal study and human epidemiology studies. On appeal to the Eleventh
Circuit, the court reversed—it held that the federal rules of evidence preferred admissibility. However, the U.S. Supreme Court reversed, and held that the district court’s ruling should have been entitled to “deference” under the abuse of discretion standard.

Concerning the animal studies, the court stated that the “infant mice” in the studies had massive doses of PCBs, but the plaintiff was an adult human with a much smaller exposure. Also, the court emphasized that the type of cancer that the mice developed was not the small cell carcinomas of plaintiff’s lung cancer. And, as respects the plaintiff’s complaint that the trial judge excluded the expert testimony based on the expert’s conclusions, not his methodology, the court ruled “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 which 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 preferred[79].”

Daubert provides a framework for excluding bad science to prevent the jury from being misled into believing that there is liability when none exists. Sutera v. Perrier Group of America AM[80]. “Daubert established the duty of the trial judge to play the role of gatekeeper, ensuring that the fact-finding process does not become distorted by … ‘junk’ science”, Whiting v. Boston Edison Company[81]: The trial court’s duty to exclude unproven and misleading scientific evidence is “especially sensitive in cases ‘where the plaintiffs claim that exposure to toxic substances caused their injuries, (because a) jury blindly accepts an expert’s opinion that conforms with their underlying fears of toxic substances without carefully considering or examining the basis for that opinion’” (quoting O’Conner v. Commonwealth Edison Company[82].)

13.4.3 Other Examples of How Trial Courts Apply Daubert

There are many cases, which have excluded scientific evidence proffered in support of toxic tort claims because it fails one or more prongs of the Daubert test. A good example is the Eighth Circuit’s decision in Wright v. Willamette Industries Inc[83]. In Wright, the defendant owned a fiberboard manufacturing plant that was one mile from the plaintiff’s home, and did not dispute that its plant emitted wood fiber particles containing formaldehyde. The defendant also conceded the formaldehyde emissions exceeded industry and state standards, and did not contradict plaintiff’s evidence that emission from the plant fell like “snow” on the plaintiff’s property (fibers from the plant were found in the plaintiff’s air conditioner). Finally, emissions from the plant were found in the plaintiff’s urine and sputum. The family’s treating physician testified the family’s symptoms—sore throats, headaches, water eyes, runny noses, dizziness, and shortness of breath—were probably related to their exposure to plant emission[84].
Nevertheless, the Eighth Circuit ruled that the plaintiffs had not produced enough evidence to submit their claim to the jury. The court explained that the plaintiffs’ failed to prove what amount of such fibers would pose a risk of harm to human beings[85]. The Willamette Court held that the treating physician’s opinion “was simply speculation” and should have been excluded under Daubert, since it was not based on knowledge of the level of plaintiffs’ exposure to formaldehyde containing the wood fibers[86].

The same result should occur when the expert’s conclusions about causation are based on studies involving chemicals not at issue in the litigation. For example, in Lopez v. Wyeth-Ayerst Laboratories, Inc.[87], the court determined that plaintiff’s expert relied on swine flu studies regarding flu vaccine at issue—this, ruled the court, was inherently unreliable. Thus, the court granted defendant’s motion in limine[88] barring the expert’s testimony, and, at the same time, granted defendant summary judgement. Likewise, see Lust v. Merrill Dow Pharmaceuticals, Inc.[89], where the district court granted the defendant’s motion in limine to bar the plaintiff’s expert testimony because no human epidemiological or animal studies had linked the particular drug with the particular condition at issue and because the expert’s own article had not been peer-reviewed. The Ninth Circuit affirmed, and held: “When a scientist claims to rely on a method practiced by most scientists, yet presents conclusions that are shared by no other scientist, the District Court should be wary that the method has not been faithfully applied. . . .[T]he District Court can exclude the opinion if the expert fails to identify and defend the reasons that his conclusions are anomalous”. See also, Police Assn. of New Orleans v. City of New Orleans[90], where the court affirmed the district court’s decision to bar plaintiff’s expert testimony that vapors caused plaintiff’s illnesses since the expert did not follow correct toxicology methodology.

Probably, the most illuminating case concerning how a court is apt to treat expert testimony regarding Cr(VI) exposure is the Hanford Litigation, which we discuss immediately below.

13.4.4 The Hanford Litigation[91]: Expert Testimony in a Cr(VI) Case

13.4.4.1 Background

The Hanford litigation was a consolidation of separate lawsuits filed by various groups of plaintiffs starting in 1990. The approximately 3000 plaintiffs in this consolidated litigation alleged that they had suffered personal injury, or would suffer future injury as result of exposure to radioactive and nonradioactive emissions (principally, Cr(VI) emissions) from the Hanford Nuclear Reservation located in southeastern, Washington. They sought damages for present injuries including thyroid cancer, nonneoplastic thyroid diseases, and various nontyroid cancers. They also sought damages based on future injuries.

Under contract with the United States Department of Energy (DOE) and its predecessors, the defendants (E.I. Dupont De Munors Co., General
Electric Company, UNC Nuclear Industries, Atlantic Ritchfield Company, and Rockwell International Corporation) operated the Hanford Nuclear Reservation at various times from 1943 to 1987. For most of that period, the Hanford facility’s function was to produce plutonium for use in nuclear weapons. In addition to plutonium-239 (Pu-239 or $^{239}\text{Pu}$), other radionuclides were created during plutonium production.

The consolidated litigation was divided in phases. Phase I dealt with both plaintiffs’ and defendants’ written discovery. In Phase II the parties focused on causation, through preparation of expert witness reports and the conducting of expert witness discovery. Phase II became known as the “Generic” causation phase. Defendants’ summary judgment motions followed the completion of Phase II. After resolution of these motions, the remaining claims were to proceed into Phase III, which would have covered individual causation discovery, liability, and other remaining issues. Since the court considered causation to be the key issue, it opted to decide causation issues before addressing liability issues (i.e., breach of duty). The defendants’ summary judgment motion sought dismissal of a majority of the plaintiffs’ claims on the grounds that their alleged health conditions could not be linked to the Hanford emissions.

In pertinent part, plaintiffs made claims for gastrointestinal (GI) cancer based on exposure to Cr(VI). Hanford’s original eight nuclear reactors were cooled by filtered, chemically treated water from the Columbia River which then was held for a period in retention basins, and then returned to the Columbia River. To prevent or reduce corrosion of reactor piping during the cooling process, Hanford’s operators sometimes added sodium dichromate ($\text{Na}_2\text{Cr}_2\text{O}_7$) to the river water before it entered the reactor. $\text{Na}_2\text{Cr}_2\text{O}_7$ contains Cr(VI). Thus, when the cooling water was returned to the river, it contained Cr(VI).

13.4.4.2 How the Court Treated the Experts’ Testimony

13.4.4.2.1 The Testimony

Plaintiffs’ case for damages caused by Cr(VI) was based on two expert reports, one by Dale Hattis, Ph.D (a geneticist), and one by Sydney A. Katz, Ph.D (a chemist). Katz concluded that the amount of Cr(VI) discharged into the river, “represents a long-term hazard to public health and environmental quality.” Plaintiffs’ counsel asked Katz to comment about possible “synergistic” effects caused by the Cr(VI) with other substances discharged into the river, including radioactive plutonium. In a letter addressed to plaintiffs’ counsel, Katz reported that he found no information on multifactorial cancer risk for exposure to Cr and Pu, or to exposure to Cr and arsenic (As), and similarly, was unable to find any information on studies connecting chromium exposure and radiogenic carcinoma. However, Katz stated that plaintiffs’ counsel were “probably correct” that “radiation insult coupled with chemical insult could well increase the cancer risk.”
As for Dr. Hattis, he analyzed the population risk associated with ingestion of Cr(VI) by first defining his assumed exposed population, then by estimating population dose, and then by selecting risk coefficient (risk of GI cancer per unit dose), and finally multiplying his risk coefficient by the population dose that generates an estimated number of cancers. The combination of his report was a table which provided a "plausible range of cancer cases from drinking water ingestion of Cr(VI) ranging from less than 1 to over 10 cases in a million."

13.4.4.2.2 The Trial Court's Rejection of the Testimony

The trial court found that both Hattis' and Katz' proposed testimony were irrelevant to plaintiffs' causation burden of proof. First, as respects Hattis, the court stated that because Hattis did not "opine the Cr(VI) doses from Columbia River 'more than doubled' the risk of gastrointestinal (GI) cancer," his analysis had to be disregarded. The court explained: "Plaintiffs's burden of proof at this stage of the proceedings is to show the dosage of which it is more likely than not Cr(VI) exposure causes GI cancer (or any other health effects)." Consequently, as Dr. Hattis proposed testimony did not so show, the court excluded it.

Second, turning to Dr. Katz, the court held that his "proposed testimony (did) not address chromium concentration at the concentrations alleged to exist in the Columbia River and (did) not attempt to tie those concentrations to any health effects. Furthermore, in his risk analysis, Hattis places no reliance on Katz. Indeed Hattis does not even mention Katz's report." The court continued:

Katz's report is wholly irrelevant, not only for the proposition that, ingested Cr(VI) is "more likely" to be the cause of any health effect, but also for the proposition that it is "capable of causing" any particular health effect in humans. Having Dr. Katz testify in general about the biological and the environmental chemistry of chromium is no assistance whatsoever to a jury in determining whether Cr(VI) is "capable of causing" certain health effects, or more improbably, whether it is "more likely than not" a cause of certain health effects.

The court also rejected the Katz and Hattis proposed testimony on reliability grounds. First, as respects Hattis, the court noted that Hattis's risk coefficients were generated only for purposes of the litigation, and there was no showing whatsoever that before the litigation, or outside the litigation, Hattis conducted any independent research on Cr(VI) and its effects on humans, especially via ingestion. Also the court emphasized that Hattis's risk coefficients and the methodology he used to produce them, had not been peer reviewed or published, the two principal ways for evidence to satisfy Daubert's reliability prong.

Moreover, the court held that there was no showing of the scientific community's "general acceptance" that the ingestion of Cr(VI) is "capable of
causing” cancer in humans. The court noted that a California EPA committee’s recommendation that Cr(VI) be considered carcinogenic “hardly amounts to a general acceptance. This recommendation has not even been adopted by the California EPA. “The court also emphasized that the Agency for Toxic Substances and Disease Registry (ATSDR) has not classified ingested Cr(VI) as carcinogenic, nor has the U.S. EPA or the International Agency for Research on Cancer (IARC).” Thus, the court held that when these factors are considered, along with Hattis’s “methodological shortcomings,” it left the court no choice but to find Hattis’s analysis, including his risk coefficients, unreliable for the proposition that ingested Cr(VI) is capable of causing GI cancer in humans, or that ingested Cr(VI) is a “more likely than not” cause of any of the plaintiffs’s GI cancers.

As respects Katz, the court, held that to the extent his report purported to opine ingested Cr(VI) was capable of causing certain health effects in humans, it was “scientifically unreliable.” The court noted that the plaintiffs had not produced any risk assessment concerning noncarcinogenic toxicity, and that Katz did not discuss risk. The court concluded that the plaintiffs’ produced no evidence from which a jury could reasonably infer that it was more likely than not that any of the plaintiffs’ noncarcinogenic toxicity was owing to Cr(VI) exposure from the Columbia River. Thus, the court struck the Katz and Hattis report on Daubert grounds and granted summary judgment for the defendants in all plaintiffs’ health effect claims which were based on alleged exposure to Cr(VI) emissions to the Columbia River.

13.5 Damages Available for Toxic Torts

13.5.1 What are Damages?

“Damages” is the money that a court will award a plaintiff in a lawsuit to compensate for a loss or injury that the plaintiff sustained because of the defendant’s wrongful conduct. Damages should not be confused with costs, which are the expenses of the lawsuit that a judge (sometimes) orders a losing party to pay, or with the verdict which is the jury’s final decision, after all of the evidence (from both sides) has been presented. Damages are based on the principles of just compensation, indemnity, or reparation for loss or injury. The purpose of awarding damages is to assist the injured party regain, as much as possible, her position/condition before the injury.

There are several types of damages. Special damages are those damages which were caused by the injury and include medical and hospital bills, ambulance charges, loss of wages, property repair or replacement costs or loss of money due on a contract. General damages are damages for which no exact monetary sum can be calculated. They include pain and suffering, future medical problems and the crippling effect of an injury, loss of ability to perform
various actions, shortening of life span, mental anguish, loss of companionship, loss of reputation (in a libel suit, for example), humiliation from scars, loss of anticipated business, and other harm. They are distinguished from special damages (discussed above), which, again, are for specific costs, and from punitive damages (discussed below). Future Damages are those damages the plaintiff is entitled to recover “for all the detriment certain to result in the future.” Also, because of the fundamental principle that damages should be compensatory only, future damages are reduced to present value[94].

Punitive (aka “exemplary”) damages is money that the judge or jury awards to the plaintiff over and above what will compensate the plaintiff for injuries and/or property loss. Those damages are awarded only when the defendant acted in a malicious or violent, or oppressive, or fraudulent, or wanton, or grossly, reckless way in causing the special and general damages to the plaintiff. Occasionally, punitive damages can be greater than the actual (special and general) damages. “The primary purposes of punitive damages are to punish wrongdoers and to deter the commission of wrongful acts[95].”

Lastly, speculative damages are not permitted. For example, a standard California personal injury jury instruction reads as follows:

Do not (award a party) (include) speculative damages, which means compensation for future loss or harm which, although possible, is conjectural or not reasonably certain. However, (if you determine that a party is entitled to recover,) you should compensate a party for loss or harm caused by the injury in question which is reasonably certain to be suffered in the future[96].

13.5.2 Theories of Damages in Toxic Tort Personal Injuries Cases

13.5.2.1 The Three Basic Types of Toxic Physical Injuries: Acute, Latent, and Subclinical

Acute injuries in toxic tort case are physical injuries that occur immediately from exposure to toxics. Latent toxic tort injuries are physical injuries that do not follow immediately, but, instead, possibly may not manifest themselves until many years (even decades) after the event that caused the exposure to the toxic matter. For example, cancer may not develop until 40 years after exposure to a carcinogen. A trial expert once testified as follows regarding latent injuries: “If you picture one cell of thousands, of millions, in the body that is being exposed, you may get a switch turned on. That’s the biological damage, injury, insult, whatever term you wish to use, that occurs on exposure. It may be actually seen in terms of 20 years from now when a cancer becomes evident, or it may never be seen[97].” Subclinical toxic tort injuries concern chromosomal or other cellular injuries resulting from toxic exposure. The same trial expert testified on these types of injuries: “Something occurs, we (scientists) believe, with the genetic material in the cell to start the process, and along the way other things affect that cell, flip more switches, make it ultimately become a cancer cell and ultimately manifest as a physical cancer[98].”
13.5.2.2 Medical Monitoring

13.5.2.2.1 Background

Toxic tort plaintiffs often claim that the defendants should pay for medical monitoring (aka medical surveillance) for the remainder of plaintiffs’ lives to check: (1) if any diseases have manifested; and (2) that certain early preventative measures are taken. Medical monitoring damages are sought in the form of either a lump sum payment equal to the present value of the anticipated expense, or a court-monitored health program that the defendants finance. Medical monitoring, of course, is not limited to toxic tort cases; it has been available for years in accident cases (cars, airplanes, etc.), but the term medical monitoring usually was not used. Instead, the traditional term “future medical expenses” (aka “future meds”) was understood to cover the monitoring expenses that necessarily resulted from increased susceptibility to future injury because of the accident[99]. In the 1980s, the term “medical monitoring” became associated with toxic tort suits, where workers, neighbors of polluted plants or landfills were exposed to carcinogens with lengthy latency periods.

13.5.2.2.2 Under Federal Law

If plaintiffs make the medical monitoring claim under federal law, they usually cite to a federal statute, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also, commonly known as “Superfund,” which Congress enacted in 1980. CERCLA authorizes two types of responses to releases or threatened releases of hazardous substances that may endanger public health or the environment: (1) Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response; and (2) Long-term remedial actions that permanently reduce the dangers of releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. CERCLA defines “response” to include “removal,” and defines removal as “any action necessary . . . to monitor, assess, and evaluate a release.” Plaintiffs argue that these provisions give them the right to seek recovery for medical monitoring costs.

However, the overwhelming majority of federal courts have held that CERCLA does not create a right to medical monitoring costs. See, for example the following cases: Durfey v. E.I. DuPont De Nemours Co.[100]; (medical monitoring costs are not response costs under CERCLA); Price v. U.S. Navy[101]; (“the context in which the ‘monitoring’ and ‘health and welfare’ language appears is directed at containing and cleaning up hazardous substance releases . . . . The specific examples in §9601(23) are all designed to prevent and mitigate damage to public health by preventing contact between the spreading contaminants and the public. Monitoring long-term health has nothing to do with preventing such contact); Daigle v. Shell Oil Company[102]; (A review of CERCLA’s legislative history “confirm[s] the obvious implication that Congress, intentionally deleted all personal rights to recovery of medical expenses from CERCLA.”); Redland Soccer Club, Inc. v. Department
of Army[103]; (“The statutory definition of response is ‘remove, removal, remedy, and remedial action’ . . . 42 U.S.C. §9601(25). The definitions of remove, removal, remedy, and remedial action uniformly refer to acts involving cleanup of hazardous sites or assessment of environmental damage at those sites. There is no indication that Congress meant to include health risk assessment in the category of response costs). Woodman v. U.S.[104]; (“The Court finds that future medical monitoring expenses are not CERCLA response costs”).; Ambrogi v. Gould, Inc.[105]; ([T]raditional remedies of state tort actions are available to an aggrieved individual. Since a statute should be construed in harmony with the sphere of legal remedies available, Congress surely did not intend to create an overlap between traditional state tort claims and a “new” CERCLA federal toxic tort action. Thus, the purpose of the Act, that is, the removal of hazardous waste from the environment, would seemingly preclude recovery of response costs).

As for the courts which have concluded that medical monitoring costs are recoverable under CERCLA, see the following cases: Williams v. Allied Automotive[106]; (Costs of future medical monitoring may be recovered and consistent with response costs, if plaintiffs prove that such costs are necessary and consistent with the National Contingency Plan); Brewer v. Raven[107]; (“CERCLA’s legislative history clearly indicates that medical expenses incurred in the treatment of personal injuries or disease caused by an unlawful release or discharge of hazardous substances are not recoverable. . . . To the extent that plaintiffs seek to recover the cost of medical testing and screening conducted to assess the effect of the release or discharge on public health to identify potential public health problems presented by the release, however, they present a considerable claim under CERCLA; Adams v. Republic Steel Corporation[108]; (“Under [CERCLA], a party may recover ‘response costs,’ which have been stated to include such costs as medical testing” . . . These costs must be part of a “cleanup” or response to a hazardous waste problem, however, and a private right of action for damages only is not available under the Act); Pinole Point Properties, Inc. v. Bethlehem Steel Corp.[109]; Jones v. Inmont Corp.[110]; (Damages for medical testing appear to meet the definition of “removal” expressed in CERCLA).

Besides CERCLA, another federal law, the Price-Anderson Act[111], is sometimes used as a basis for medical monitoring claims. The Price-Anderson Act, which became law in 1957, was designed to ensure that sufficient monies would be available to pay the public’s liability claims for personal injury and property damage in the event of a catastrophic nuclear accident. Although medical monitoring costs are recoverable for bodily injury, sickness, or disease resulting from nuclear incidents, they are not recoverable for purely emotional distress.

13.5.2.2.3 Under Common Law

As respects common law claims, both federal and state courts have traditionally ruled that medical surveillance costs are not allowed unless there is
accompanying physical harm. See Schweitzer v. Consolidated Rail Corp.[112]; (“If mere exposure to asbestos were sufficient to give rise to a Federal Employers Liability Act (FELA) cause of action, countless seemingly healthy railroad workers who might never manifest injury, would have tort claims cognizable in federal court. It is obvious that proof of damages in such cases would be highly speculative, likely resulting in windfalls for those who never take ill and insufficient compensation for those who do. Requiring manifest injury as a necessary element of an asbestos-related tort action avoids these problems and best serves the underlying purpose of tort law: the compensation of victims who have suffered. Therefore, we hold that, as a matter of law, F.E.L.A. actions for asbestos-related injury do not exist before manifestation of injury); Ball v. Joy Mfg. Co.[113]; (Under West Virginia’s worker’s compensation statute, a mere exposure to toxic chemicals is not a compensable injury. Instead, employees must also show that “exposure is causally linked to a disease they presently suffer.”)

Other courts however, have ruled medical surveillance costs are recoverable without current physical harm. See, for example, Simmons v. Pacor, Inc.[114]; Redland Soccer Club, Inc. v. Department of the Army[115]; Hansen v. Mountain Fuel Supply Co.[116]; Burns v. Jaquays Mining Corp.[117]; and Ayers v. Jackson Township[118]. These courts allow for medical surveillance claims, and rationalize that such claims are not speculative since the jury issue is simply whether the plaintiff needs medical surveillance. (In contrast, increased risk of cancer claims is unduly speculative since the courts are forced to anticipate the probability of future injury).

In jurisdictions which allow for recovery of medical monitoring costs without proof of physical harm, a toxic tort plaintiff still must prove the following elements:

1. Plaintiff was exposed, in greater than normal background levels, to a proven hazardous substance
2. The exposure was owing to defendant’s actions
3. As approximate result of this exposure, plaintiff suffers a “significantly” increased or “greater than average” risk of contracting a serious latent disease
4. That increased risk makes periodic diagnostic medical examination reasonably necessary under contemporary scientific principles
5. Monitoring and testing procedures exist for the early detection and treatment of the disease
6. The prescribed monitoring regime is different from that normally recommended in the absence of exposure[119]

Jurisdictions which permit medical monitoring costs recovery usually do so in the asbestos context (but, as discussed below, occasionally in other contexts, too). These courts emphasize there is ample scientific evidence that
asbestos fibers lodge in the lungs causing immediate injury to the lungs and later asbestosis and other dreaded diseases. See, for example, the Pennsylvania Supreme Court decision, Simmons v. Pacor, Inc.,[120] where the plaintiffs had developed asymptomatic pleural thickening as a result of their occupational exposure to asbestos and sought damages for increased risk and fear of cancer. The court held that damages for increased risk and fear of cancer were too speculative to be recoverable where cancer was not present. Because the plaintiffs had not developed cancer, the court did not permit them to recover for their increased risk and fear of cancer. However, the court adopted a rule of law allowing plaintiffs with asbestos-related asymptomatic pleural thickening to recover for medical monitoring.

Later, the Pennsylvania Supreme Court Redland Soccer Club, Inc. v. Department of the Army[121] expanded on its Simmons decision by explicitly ruling that it found “no reason to limit common law medical monitoring claims to asbestos-related injuries.” In Redland, a soccer club sued the U.S. Department of Army and Department of Defense under Pennsylvania’s Hazardous Sites Cleanup Act, alleging that defendants disposal of hazardous wastes at the site caused them harm. The club, inter alia, sought a medical monitoring trust fund. The court sided with the plaintiffs, and held that medical monitoring trust fund is a valid response cost under the statute, and that the elements of the claim for medical monitoring under the statute are the same as elements of a common-law claim for medical monitoring.

In contrast to asbestos, there is no scientifically accepted evidence connecting trace concentrations of Cr(VI) (or for that matter, volatile organic compounds) to related long-term diseases. One federal court explained the differences as follows:

It is a medically and scientifically accepted fact that the exposure to asbestos particles can cause asbestosis and other more serious human health effects, such as mesothelioma, that is, lung cancer. Here, however, plaintiffs admit that it is not a medically or scientifically accepted fact that the exposure to these chemicals (viz., PCBs) can cause any adverse human health affects other than chloracne, a benign reversible skin condition which none of the plaintiffs claim to suffer[122].

Although this case, concerned PCBs, the same rationale would apply to numerous other hazardous substances, such as Cr(VI).

13.5.2.2.4 Defenses to Medical Monitoring Claims
There are a number of possible defenses for medical monitoring claims. Two of the best articles[123] on medical monitoring have listed the defenses, almost identically as follows:

- Plaintiffs allege exposure to concentrations that are less than concentrations of safe exposure that have been established by the government ("maximum allowable concentrations")[124].
• The medical monitoring is not “reasonable or necessary.”
• The surveillance claim is another way of presenting the increased risk of disease claim, which, as discussed above, courts usually reject.
• The claimant seeks routine physicals that the general public should have anyway.
• Monitoring for diseases that are not treatable has no beneficial purpose.
• “Monitoring can increase health risks because of the possibility of false positives” that could result in “unnecessary invasive procedures with accompanying risk, or false negatives that could cause patients to ignore symptoms”, permitting disease processes to continue and worsen.
• Statutes of limitation.

13.5.2.2.5 If Courts Opt for Medical Monitoring, They Usually Opt for Supervised Funds—Not Lump Sums

Courts that permit medical monitoring costs usually favor Court supervised funds, and not lump sum payments. The New Jersey Supreme Court discussed the advantages of the trust fund approach as follows:

In our view, the use of a court-supervised fund to administer medical-surveillance payments in mass exposure cases … is a highly appropriate exercise of the Court’s equitable powers … Such a mechanism offers significant advantages over a lump-sum verdict … [A] fund would serve to limit the liability of defendants to the amount of expenses actually incurred. A lump-sum verdict attempts to estimate future expenses, but cannot predict the amounts that actually will be expended for medical purposes. Although conventional damages awards do not restrict plaintiffs in the use of money paid as compensatory damages, mass-exposure toxic-tort cases involve public interests not present in conventional tort litigation. The public health interest is served by a fund mechanism that encourages regular medical monitoring for victims of toxic exposure. …

Although there may be administrative and procedural questions in the establishment and operation of such a fund, we encourage its use by trial courts in managing mass-exposure cases. … [M]edical-surveillance damages will be paid only to compensate for medical examinations and tests actually administered, and will encourage plaintiffs to safeguard their health by not allowing them the option of spending the money for other purposes.

13.5.2.2.6 Emotional Distress and Cancerphobia

Many states allow a toxic tort plaintiff to seek damages for fear of contracting a disease (usually, cancer) by permitting such a plaintiff to sue for negligent
or intentional infliction of emotional distress. This is a cutting edge issue, and not all courts see eye to eye, as we discuss immediately below.

As respects the cause of action for negligent infliction of emotional distress, a majority of courts have held a physical injury of some sort is required, or else plaintiff is not entitled to recover for emotional injury. For example, in Metro-North Commuter R. Co. v. Buckley[133] the U.S. Supreme Court held that a toxic tort plaintiff who was disease-free and symptom-free could not recover for negligent infliction of emotional distress of fear of cancer under the Federal Employers Liability Act. Held the court: “[A] simple (though extensive) contact with a carcinogenic substance does not … offer much help in separating valid from invalid emotional distress claims[134].” The court drew a distinction between stand-alone emotional distress claims, and emotional distress claims prompted by physical injury. The court noted that for the latter claims common-law courts “do permit a plaintiff who suffers from a disease to recover for related negligently caused emotional distress …[135].” When a plaintiff suffers from a disease, the court added, common-law courts have made a “special effort” to recognize accompanying emotional distress claims, “perhaps from a desire to make a physically injured victim whole or because the parties are likely to be in court in any event[136].”

One of the reasons why some courts refuse to allow toxic tort plaintiffs without physical injuries to sue for negligent infliction of emotional distress (fear of cancer) concerns the “separate disease rule,” which is an exception to the general rule that causes of action must not be split. That, is under our system of civil procedure, an entire claim cannot be divided and made the basis of several lawsuits. There are two reasons for this general rule against splitting: (1) The defendant should be protected against vexatious litigation; and (2) it is against public policy to permit litigants to consume the courts’ time by relitigating matters already judicially determined, or by asserting claims which properly should have been settled in some prior action[137].

A majority of states have adopted the separate disease rule—the Pennsylvania Supreme Court justified this exception to the general rule against “splitting” as follows:

Damages for fear of cancer are speculative. The awarding of such damages would lead to inequitable results since those who never contract cancer would obtain damages even through the disease never came into fruition….In any case, Appellants are not left without a remedy for their mental anguish. (Pennsylvania case law) permits an action to be commenced if cancer develops. It is in this action that Appellants can assert their emotional distress or mental anguish claims. To allow the asbestos plaintiff in a noncancer claim to recover for any part of the damages relating to cancer, including the fear of contracting cancer, erodes the integrity of any purpose behind the (separate) disease rule[138].

As indicated above, if a toxic tort plaintiff can demonstrate some present physical effect, courts will allow such a plaintiff to prosecute an action for negligent (or intentional) infliction of emotional distress. For example, see
the 2003 U.S. Supreme Court (fear of cancer) decision in *Norfolk and Western Railway Co. v. Ayers* [139], where the court held that mental anguish damages resulting from the fear of developing cancer may be recovered under the FELA by a railroad worker suffering from asbestosis (but not cancer) caused by work-related exposure to asbestos. (FELA is the Federal Employees Liability Act, which Congress enacted in 1908 to provide benefits for railroad workers who sustain injuries in the course of their employment). The Court did, however, qualify this ruling with one important reservation: The plaintiffs must prove that their alleged fear is genuine and serious.

13.5.2.2.7 Increased Risk of Cancer

As stated, plaintiffs can only recover for injuries that have occurred or are certain to occur. This requirement is met by proving that the injury is “reasonably certain” to occur. Thus, if plaintiffs can show that they are reasonably certain to contract cancer in the future, they can be compensated for that cancer, albeit they have not yet contracted that disease. However, often the state of scientific knowledge is such that experts are usually unable to testify persuasively that plaintiff is “reasonably certain” to contract cancer. Thus, plaintiffs are precluded from recovering from cancer that they have not yet contracted. “To avoid this result, plaintiffs often use a fallback position. They seek recovery for the increased risk, which they claim is a present injury. Under this theory, plaintiffs allege they have a much greater risk of contracting cancer than they would otherwise and seek compensation for this condition[140].”

The majority of states that have addressed this type of claim have denied it. See, for example, *Sterling v. Velsicol Chemical Corp*[141]. (“[T]he mere increased risk of a future disease or condition resulting from an initial injury is not compensable”); *Ayers v. Jackson*[142], (Plaintiffs—county residents exposed to contaminated well water, not permitted to collect damages for prospective consequences, as plaintiffs’s experts unable to prove that it was reasonably certain they suffered excessive risk); *Haggerty v. Al-Marine Services, Inc*[143], (Plaintiff was accidentally drenched with chemicals containing known carcinogens, and sued for damages including compensation for the increased risk that they would develop cancer as a result of the exposure. The court ruled that since the plaintiff did not charge with sufficient medical certainty that the plaintiff would develop cancer, the plaintiff did not state a valid claim).

However, a minority of states have carved out an exception to the general rule against claims for increase risk of cancer. These states have allowed claims “for increased risk of future disease if the increased risk is caused by present physical injury. If such a showing is made, increased risk may be compensable regardless of the likelihood of the injury occurring[144].” *Brafford v. Susquehanna Corp*[145] (“Here, because of the high levels of radiation to which plaintiffs were exposed, the experts are able to conclude with a reasonable degree of medical probability both that there has been chromosomal damage and that
such damage was caused by the radiation.”); Cudone v. Gehret[146] (Patent sued physician, on “increased risk” theory, for his failure to diagnose her breast cancer at earlier date, before it had metastasized to the rest of her body—court held patient could recover under this theory).

13.5.3 Theories of Damages in Toxic Tort Property Damage Cases

The remedy for damages to real property is the amount which will compensate for all of the detriment that the defendant proximately caused. Under this rule, a plaintiff can seek recovery for 100% of the property loss that she suffered as a result of the defendant’s contamination of her property[147].

Property damage caused by chemical contamination can be divided into two categories: physical and economic. As respects physical damage, generally, recoverable damages are limited to the diminution in value or cost of repair, whichever is less[148]. However, in exceptional circumstances the cost of restoration maybe recoverable even if such costs are greater than the diminution in value. For example, see Davey Compressor Co. v. City of Delray Beach, a Florida case[149].

In Davey, the city sued the firm which had polluted (with tetrachloroethylene) the city’s groundwater supply, alleging liability. The jury awarded the city $5.6 million for estimated future response costs, and $3,097,488 for past damages. Although the court acknowledged that, generally, restoration costs should be restricted to the value of the property, it ruled that there are exceptions to the rule: In the case before it, the court ruled that the city “must be compensated for the restoration of the groundwater to a quality fit for human consumption, even if the cost of such restoration exceeds the value of the real estate on which the wells are located[150].” The court explained that the city’s ultimate goal to obtain an equivalent supply of water from another well field was speculative, and more costly, and thus the exception to the rule was justified.

As respects economic damages, in the last 20 years there have been many cases in which plaintiffs have asked for “stigma” damages—these costs are to compensate plaintiffs for the past, present, or future presence of environmental contamination on their property, or the close proximity of their property to a contaminated site. This stigma may remain even after the land is cleaned up and plaintiffs may be compensated for this[151]. Plaintiffs maintain this “stigma” reduces the marketability of their property. Such stigma claims are being made not only by individual plaintiffs, but also by class action plaintiffs, the latter seek to certify property damage classes based on stigma allegedly caused by widespread contamination.

If plaintiffs are permitted to pursue stigma claims, the trial court needs to determine the existence and extent of any diminution in value. Appraisers are frequently called to testify on their valuation of the alleged stigma. These appraisers generally use comparable recent sales of similar properties, and then testify on whether the properties at issue have diminished in value
because of the contamination. Also, sometimes appraisers employ a “multiple regression” analysis, under which they supposedly determine whether there was a systematic effect of the contamination in property values. This method focuses on isolating the contamination’s effect from the effect of other factors that may also have a negative influence on property value.

13.6 Survey of Cr(VI) Published (and Otherwise Notable) Cases

13.6.1 Case No. 1

The Hinkley, California/PG&E Litigation

The most famous case of Cr(VI) involved Erin Brockovich, the real life paralegal, who became the inspiration for the movie, named for her, starring Julia Roberts. The case pitted residents of Hinkley, California (in California’s Central Valley) against Pacific Gas and Electric Company (PG and E). The residents in 1996, won a $333 million settlement from PG&E because (1) the grant utility company’s underground tanks leaked Cr(VI) into the town’s drinking water supply, and (2) it had disposed of Cr(VI) laced water in unlined ponds, (i.e., mere holes in the ground) since 1950—this, too, got into the drinking water. PG&E decided to settle after the first 39 Hinkley residents won in arbitration.

Since the move, there has been much written about the merits of their litigation. Critics of “junk science” say plaintiffs never proved that drinking water with Cr(VI) in it (1) causes cancer, (2) that the residents exposure to Cr(VI) make them sick, or (3) that above average numbers of residents were sick from drinking Cr(VI). Of course, their charges engendered angry responses from Ms. Brockovich and the attorneys who represented the Hinkley plaintiffs. The most famous of such exchanges is the one initiated by popular science and technology reporter Michael Fumento. In the pages of the Wall Street Journal and elsewhere, the two sides have made their respective cases. (A Google search in September 2003 shows 465 entries for “Fumento” and “Erin”).

13.6.2 Case No. 2

U.S. v. Power Engineering Company 303F3d 1232 (10 Cir. 2002)

The U.S. EPA sued the owners and operators of the metal finishing facility, seeking financial assurances for past and ongoing improper disposal of hazardous waste. The District Court granted summary judgement in favor of the EPA, and, on appeal, the Tenth Circuit affirmed. They held that as the EPA had the authority to seek assurances in tandem with state enforcement officials, the suit was not barred by res judicata. This litigation stemmed
from a Colorado Department of Public Health and Environment finding of a discharge of Cr(VI) into the Platte River, and subsequent inspections of the Power Engineering Plant, which revealed the Cr(VI) discharge.

13.6.3 Case No. 3

*Power Engineering Company v. Royal Insurance Company of America 105 Supp 2d 1196 (D. Colo. 2000).*

In this insurance coverage action (which resulted from the case discussed above), the insured, sought a declaratory judgement that its commercial general liability (CGL) insurer had a duty to defend and indemnify it against state and federal actions to compel environmental cleanup. Again, this lawsuit stemmed from a Colorado Department of Public Health and Environment order to the insured to clean up pollution that its plant caused, including discharges of Cr(VI) into the Platte River.

13.6.4 Case No. 4


A nonprofit community organization and its members sued the successor-in-interest of a chemical manufacturer and current owners of a former manufacturing site, which was contaminated with Cr(VI), under the Resource Conversation and Recovery Act (RCRA), seeking declaratory and injunctive relief.

13.6.5 Case No. 5

*U.S. v. Northrop Grumman Corporation 2002 W.L. 1796979 (N.D. Tex.)*

This case was brought by the U.S. ex rel.[153] on behalf of Steven G. Coppock, the plaintiff, who had worked for Northrop for several years as an engineer in its Naval Weapons Industrial Reserve Plant, a multi-acre production and waste treatment complex in Dallas, Texas that was built for the production of military aircraft. Since September 1988, Northrop directly or indirectly leased that facility from its owner, the U.S. Department of the Navy, using the complex mainly for production of military aircraft for the U.S. Department of Defense (DOD). Northrop was also contractually permitted to operate the facility to complete commercial aircraft contracts, if such use did not exceed 25% of its time, and did not interfere with the DOD production contracts.

Coppock charged that Northrop knowingly mishandled the plant’s waste, allowing it to enter the environment untreated, and, thus, polluted the public drinking water by routinely discharging improperly treated waste into the public drinking water system, exceeding acceptable limits for Cr(VI) and other toxic chemicals. Additionally, by failure to maintain the facility,
Coppock alleged that Northrop polluted not only its facility but the surrounding environs with Cr(VI). Coppock filed a False Claims Act claim, and state-law claims for common law fraud and breach of contract.

13.6.6 Case No. 6

*Hildago v. Chrome Crankshaft Co.* 2002 W.L. 1797271

Residents living near a plant brought a toxic-tort action against the chromium-plating company and its Illinois parent corporation. The causes of action were for:

1. Negligence
2. Wrongful death
3. Negligence per se
4. Absolute liability for ultra hazardous activity
5. Misrepresentation and fraudulent concealment
6. Intentional affliction of emotional distress
7. Violation of California Business and Professions Code Section 170000 et seq.

The complaint charged that the parent and subsidiary companies were alter egos of each other, and that the two companies failed to store or clean up hazardous substances, violated regulations by accidentally releasing large quantities of Cr(VI) into the environment, and concealed the spills by failing to apprise the appropriate governmental agencies. The complaint also alleged that the two companies’s conduct and operation of the sites at issue resulted in contamination of the surrounding communities’ air, soil, groundwater, and environment with hazardous and/or toxic substances, which threatened human health through ingestion, inhalation, and dermal contact. The plaintiffs charged they, and their children, had suffered personal injuries, increased risk of future health problems, and death as a result of their exposure to the release of hazardous substances from the site through sources such as drinking water, groundwater, soil, and air contaminants.

13.6.7 Case No. 7

*Public Citizen Health Research Group v. Chao* 314 F.3d. 143 (3rd Circuit 2002)

A petition was filed to review the Occupational Safety and Health Administration’s (OSHA) failure to adopt new workplace exposure limit for Cr(VI). The court of appeals held that: (1) OSHA’s 9-year delay in adopting a new standard was excessive; (2) the delay was not justified by scientific uncertainty or OSHA’s competing policy priority; and (3) OSHA would be required to propose a new standard within a timetable determined by judicial mediation.
13.6.8 Case No. 8

In Re: Pacific Gas and Electric Company 279 B.R. 561(2) (N.D. Cal. 2002)

Personal injury claimants brought a motion to lift the automatic stay and to have the court abstain from hearing their claims. The bankruptcy court held that: (1) the bankruptcy judge, not the district judge, could and should make the decision regarding whether to abstain; (2) the bankruptcy court determined that the district court would abstain from deciding 1250 personal injury claims; and (3) a cause existed to lift the automatic stay. The claims belong to approximately 1250 individuals which alleged personal injury and wrongful death from exposure to Cr(VI) from facilities owned or operated by the debtor, Pacific Gas and Electric Company. The claimants were plaintiffs in various lawsuits in various California superior courts.

13.6.9 Case No. 9


A landowner sued a potentially responsible party (P.R.P.) seeking response costs and contribution under CERCLA. One of the contaminants at issue was Cr(VI).

Bibliography

1. A partial list of the contaminants that have prompted tort litigation include the following: 1,1,1-trichloroethane, 1,2-dichloroethane, 1,2-dichloropropane, acetaldehyde, acetone, acetonitrile, adhesives, asbestos, benzene, cellusolve, cyclohexane, “dioxin”, ethylene copolymer, formaldehyde, glycol ethers, herbicides, Cr(VI), hydrochloric acid, landfill/toxic tort exposure, lead paint, methyl alcohol, dichloromethane, n-butyl alcohol, nickel, organophosphates, PCB discharges, tetrachloroethene (“PERC”), pesticides, petroleum spills, photo resist chemicals, polystyrene, propylene, propylene oxide, sodium hypochlorite, solder flux, styrene, trichloroethene, toluene, urea-formaldehyde foam insulation, vinyl chloride, xylenes, and zinc.


3. See, for example, U.S. Dept. of Labor, Occupational Safety and Health Administration Fact Sheet, entitled “Occupational Exposure to Cr(VI) (CrVI)” (available on the Internet at http://www.osha.gov):

Health risks associated with occupational exposure to CrVI. Epidemiologic studies of workers exposed to Cr(VI) have consistently shown a positive correlation between exposure to Cr(VI) and excess lung cancer. See, e.g., Machle and Gregorius (1948, Ex. 7-2); U.S. Public Health Service/Gafafer (1953, Ex. 7-3); Baetjer (1950, Ex. 7-6); Hayes et al. (1979, Ex.
7-15); Braver (1985, Ex. 7-17); Mancuso (1975, Ex. 18-3; 1997 Exs. 23, 24); and Gibb et al. (2000, Ex. 25). The International Agency for Research on Cancer (IARC) (Ex. 18-1) and the U.S. Environmental Protection Agency (EPA) (Ex. 19-1) have classified Cr(VI) as a human carcinogen based on excess lung cancers found in workers involved in chromate production, chromate pigment production, and chromium plating. The American Conference for Governmental Hygienists (ACGIH) classifies water-insoluble and water-soluble Cr(VI) compounds, zinc chromate, and strontium chromate as class A1 (confirmed human) carcinogens. (2002, ACGIH, TLVs® and BEIs®, Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices).

Occupational exposure to Cr(VI) has also been associated with noncancer health effects of the skin, such as dermatoses and Cr holes; and problems of the respiratory system including nasal septum irritation and perforation.

4. In fact, the Paper, Allied-Industrial, Chemical and Energy Workers International Union (PACE), along with public watchdog groups, have filed a series of lawsuits to force government agencies to decrease the PEL for Cr(VI).

5. Compare “Chromium Cancer and Causation: Has a Death-Blow Been Dealt to Chromium Cases in California?”, Daniel L. Martens, 16-SPG Nat. Resources and Env’t 264 (2002) with the Feb. 28, 2003 “Comments Prepared for the California State Senate Health and Social Services Committee’s Investigative Hearing on Potential Misconduct of the Chromate Toxicity Review Committee,” by Alise Cappel, Research Director, Center for Environmental Health, Oakland, CA (available on the Internet, at http://www.cehea.org/AMCCComments.doc) Mr. Martens, a prominent Los Angeles defense counsel, wrote, in pertinent part: “The Review Committee’s recent report will present a significant obstacle for plaintiffs attempting to meet this burden (the burden of proving causation) in chromium cases where the plaintiff’s claimed ailment is cancer . . . Experts contending that ingestion of Cr(VI) can cause cancer will find it more difficult to criticize or discount the Review Committee’s findings. Furthermore, it likely will not suffice for an expert merely to ignore the committee’s report and, like the ‘scientist’ in Erin Brokovich, simply proclaim that Cr(VI) is ‘highly carcinogenic’ when ingested in water. Trial courts are obligated to require adequate foundation for an expert’s opinion, and to prohibit the admission of opinions based on unsupported theory or untenable conclusions. (c.t. omit.) As the California Supreme Court has explained: “Like a house built on sand, the expert’s opinion is no better than the facts on which it is based.” (c.t. omit.) It may be that the Review Committee’s analysis and report leave nothing but sand on which a plaintiff’s expert may attempt to ‘build his house’ in future chromium cases.”

In stark contrast to Mr. Martens’ positive response, here is what Ms. Cappel said about the Commission:

I would like to discuss two things: (1) what really happened with the Chromate Committee; and (2) how the Chromate Committee’s report will continue to pose a threat to Californians until it is officially withdrawn.
I have been investigating the operations of this panel for the past year and a half and this is what I have learned:

In 1999 OEHHA followed their mandate and determined that Crd(VI) in drinking water posed a legitimate threat in public health. Polluting industries, companies responsible for releasing Cr(VI) into the environment, and a few compromised public officials decided they wanted to overturn OEHHA's stance on chromate carcinogenicity. So they created the “Blue Ribbon” Chromate Committee. They used political influence and through the Chromate Committee they attempted to silence OEHHA.

Unfortunately, they were effective. The Chromate Committee’s report was used as the basis for withdrawing OEHHA's 1999 Public Health Goal on total chromium—a decision benefiting PG&E and other industries facing contamination cleanup costs, yet harmful to the health of Californians and the safety of our drinking water.

I am encouraged that Senator Ortiz has begun this investigation, yet after the opening testimony this morning, one thing is absolutely clear: The report that the Chromate Committee produced has been hopelessly tainted and cannot be relied upon as sound science.

The University of California must immediately withdraw the report.

The Secretary of California EPA and the Director of OEHHA must publicly reject it.

Unfortunately, the Chromate Committee’s conclusions have already tainted other California risk assessments. The Committee’s Report has served as the basis for the San Fernando Basin Risk Assessment and OEHHA's recently finished Public Health Goal for Cr(VI).

Both of these assessments have been compromised and must be immediately withdrawn. Once withdrawn, OEHHA should commence new risk assessments that are not influenced, in any way, by the conclusions of the Chromate Committee.

The public deserves to have risk assessments conducted by scientists we can trust.

As long as the Chromate Committee’s Report remains intact, the possibility exists that physicians and other public health officials will be influenced by its conclusions. Furthermore, if allowed to stand, this report will discourage future research into the human health effects of Cr(VI) exposure via the oral route.

Furthermore, to insure that something like this does not happen again, the California State Legislature should mandate that science conducted
Chromium(VI) as the Basis for a Toxic Tort—a Legal Perspective

on behalf of California citizens, with our tax dollars, is done with public participation, in a balanced and transparent manner.…


7. By this term, we refer to a plaintiff who bases his allegations on legal principles developed in the decisions of courts, which establish precedents. In the U.S., the law of torts is based on common law, though frequently, states have enacted statutes which have modified or replaced certain parts of the common law.


9. 647 F. Supp. At 312


11. The Restatements of Law is a series of books that set forth the law in a special subject area, i.e., the Restatement of the Law of Torts, that are written by legal scholars. These books state the authors’ opinions on (1) what the law is, and (2) how it is changing.


14. Perez v. Southern Pac. Transp. Co. 180 Ariz. 187, 883 P.2d 424, 426 (1993) (“It is clear first of all, that unless a statute requires it, strict liability will never be found unless the defendant is aware of the abnormally dangerous activity, and has voluntarily engaged in or permitted it.”)


19. Id.


25. Donald v. Amoco Prod. Co. 735 So.2d 161 (Miss. 1999), see also Madison v. Vintage Petr. Inc. 114 F.3d 514 (5th Cir. 1997) (holding that state courts can find that production and disposal of naturally occurring radioactive material (NORM) waste supports strict liability).


29. Id. § 161.

33. Id. at 1590. See also Smith v. Cap Concrete. 787 Cal. Rptr. 308 (Ct. App. 1982) (discussing waste as a cause of action).
34. Restatement (Second) of Torts § 821B (1964).
35. 426 N.E.2d 824 (Ill. 1981)
37. 426 N.E.2d at 826
38. 722 F. Supp. at 960
40. Id. at 1245.
41. Id.
42. Id.
43. See Restatement (Second) of Torts § 821B, cmt. H (1964).
46. 335 Md. 58, 642 A.2d. 180 (1994).
49. Walker Drug Co., 972 P.2d. at 1246.
51. For a discussion of this tonic, see Kafka v. Bozio, 218 P. 753 (Cal. 1923). Although Kafka was decided 80 years ago, its explanation of continuing trespass specifically, and continuing torts generally, is among the best that we have found.
52. City of Phoenix, 75 P.2d. at 35.
53. See id.
54. See id.
55. Id.
58. See id. At 307-308.
59. See id. At 316.
60. See Restatement (Second) of Torts Sections 285-286.
61. Discussion of negligence per se in the context of the Federal Motor Carrier Safety Regulations—available on the Internet at http://www.i-r.com/tortslaw/negligent.htm. See also James L. Pray, “Civil Environmental Liability In Iowa,” Iowa Environmental Law Series (1996), available on Internet at http://members.aol.com/IowaLegal/torhtm.htm ("The doctrine of negligence per se is limited to safety codes that have the force of law either by statute, regulation, or ordinance").
62. What constitutes due care under the circumstances is ordinarily a question of fact for the jury in each case. “But the proper conduct of a reasonable person under particular situations may become settled by judicial decision or by prescribed by statute or ordinance. Conduct less than this standard is negligence
per se, or negligence as a matter of law. And, if the evidence establishes that the plaintiff’s or defendant’s violation of the statute or ordinance proximately caused the injury and no excuse or justification for violation is shown by the evidence, responsibility may be fixed upon the violator without other proof of failure to exercise due care.” *Satterlee v. Orange Glenn Sch. Dist.*, 1777 P.2d. 279 (1997). See also *Davis v. Marathon Oil Co.*, 356 N.E., 2d. 93 (1976).


64. Summary judgement (in some states “summary disposition”) is a court order that says no factual issues remain to be tried, and therefore the plaintiff’s allegations can be decided without a trial. A summary judgement is based on a motion (a formal written request made to a judge for an order) by one of the parties that asserts that all necessary factual issues are either settled or so clearly one-sided that a trial is unnecessary.

65. See, for example, California Evidence Code § 720: “A person is qualified to testify as an expert if that person has special knowledge, skill, experience, training, or education sufficient to qualify that person as an expert on the subject to which that person’s testimony relates.” Also, see *Mann v. Cracchiolo* (1985) 38 C.3d 18, 37-38, 210 CR 762, 773 (where an expert witness has shown sufficient knowledge, the question of degree of knowledge goes more to the weight of the evidence than its admissibility.)

66. See, for example, the following California cases: *People v. McDonald* (1984) 3 C.3d 351, 367, 208 CR 236, 247; *People v. Roberts* (1997) 55 CA 4th 1073, 1078, 65 CR 2d 17, 19 (The jury need not be wholly ignorant of the subject matter of the opinion. Instead, expert testimony is admissible whenever it would “assist” the jury).

67. In federal courts, and many state courts, the trial judge has the duty to preliminarily determine whether proffered expert testimony satisfies basic admissibility standards. These admissibility standards are codified in Federal Rules of Evidence, Rule 702: “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 an 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.” In some state court systems (such as California), the trial judge does not have an obligation to make a preliminary finding concerning the proffered testimony. Instead, the opposing party must first raise an objection, then, and only then, will the trial court determine the basic foundational facts required for admissibility of expert opinion testimony. See, for example, Calif. Evidence Code § 405; *Miller v. Los Angeles County Flood Control Dist.* (1973) 8 Cal. 3d 689, 701, 106 Cal. Rptr. 1,8.

68. See, for example, Indiana Code § 34-1-14-12: “A witness who is an expert in any art, science, trade, profession, or mystery may be compelled to appear and testify in any court… to an opinion, as such expert, in relation to any matter, whenever such opinion is material evidence relevant to an issue before a court or jury….

69. For a good background on this subject, see the following article: (1) Nachman Brautbar, M.D. “Chemicals and Cancer: Establishing Causation Through Medical Toxicology” (available on the Internet at http://www.environmentaldiseases.com/article_chemicals_and_cancer.html. Dr. Brautbar describes/defines
causation, the role of epidemiological studies, and scientific criteria for establishing causation (application of animal studies to human cancers, chemicals proven to be carcinogenic in human studies, material safety data sheets and regulatory agencies, level of exposure, medical and forensic application of regulatory levels, and an expert’s checklist to prove causation).

70. 293 F.1013 (D.C. Cir. 1923).
71. See Frey v. U.S. supra and People v. Kelly (1976) 17 C. 3d 24, 30, 130 C.R. 144. (The California Supreme Court refused to adopt the Daubert standard—discussed below—and ruled that the Frey formulation should remain a prerequisite for the admission of expert scientific testimony in California state courts).
72. 509 U.S. 579, 125 L.Ed. 2d 469, 113 S.Ct. 2786.
76. Id., 509 U.S. at 591-94.
77. Id., 509 U.S. at 592 n.10.
78. Daubert v. Merrill Dow Pharmaceuticals, Inc., 143 F. 3d 1311, 1316 (1995) (“Daubert II”) (self-serving assertions by expert that his conclusions were derived by “scientific method” are insufficient).
79. 118 S.Ct. at 519.
83. 91 F.3rd 1105 (1996).
84. Id at 1108-09.
85. Id. at 1106.
86. Id. at 1108.
87. (9th Cir. 1998) 159 F. 3d 905.
88. A motion in limine (limine, Latin for “threshold”, is a motion made at the start of a trial requesting that the trial court exclude certain evidence from trial).
89. (9th Cir. 1996) 89 F.3d 594.
90. (5th Cir. 1996) 100 F.3d 1150, 1159.
91. 292 F.3d 1124 (9th Cir. 2002). (This opinion seemingly concerned only the plaintiffs who made exposure to radioactive emission (not Cr(VI)) exposure, but as of August 2003, it seems that the breath of this opinion, which reversed the trial court’s summary judgement for defendants is being contested, as plaintiffs appear to assert that the reversal also applies to plaintiffs who allegedly suffered from Cr(VI) only.
92. For nonlawyers, we suggest purchasing Real Life Dictionary of the Law by Gerald N. Hill and Kathleen Thompson Hill. Many of our definitions of legal terms come from this source.
93. 15 Cal. Forms of Pleading and Practice Annotated, Ch. 17, at 12-12.1.
94. Id.
95. Id. at 38. H. Punitive damages are available in at least 47 of the 50 states. See also the Model Punitive Damages Act put forth by the Chicago based National Conference of Commissioners on Uniform State Laws (NCCUSL). (The NCCUSL, created in 1891, is “an organization comprised of more than 300 attorneys, judges, and law professors, appointed by the states as well as the District of Columbia, Puerto Rico, and the U.S. Virgin Islands, to draft proposals for uniform and model laws on subjects where uniformity is desirable.
Chromium(VI) as the Basis for a Toxic Tort—a Legal Perspective

and practicable, and work toward their enactment in legislatures.” See the NCCUSL’s web site, at www.nccusl.org).

96. BAJI 14.60.

97. *Ayers v. Township of Jackson*, 525 A. 2d 287, 303 n.8 (N.J. 1987) Testimony of Dr. Joseph Highland, plaintiffs’ toxicology expert—plaintiffs sued the township arising from contamination of water by toxic pollutants leaking into an aquifer from the township’s landfill.

98. *Id.*

99. For a good discussion of what plaintiff needs to prove in order to obtain “future meds,” see Flahavan, Rea and Kelly, California Practice Guide: Personal Injury (2003). At § 3:60. In California (as in other states), the plaintiff must establish the following: (1) The reasonable value of each of the expected future medical charges; (2) that the future medical care, services or supplies are reasonably certain to be needed and given in treatment of the injury; and (3) that the condition requiring the future medical care is causally connected to the injuries inflicted by the defendant.

100. 59F3d 121, 125 (9th Cir. 1995)

101. 39F3d 1011, 1016-17 (9th Cir. 1994)

102. 972F2nd 1527, 1536 (10th Cir. 1992)

103. 801F Supp 1432, 1438 (M.D. PA 1992)

104. 764F Supp 1467, 1469 (M.D. Fl. 1991)

105. 750F Supp 1233, 1244 (PA 1990)

106. 704F Supp 782 (N. Ohio 1988)

107. 680F Supp. 1176, 1179-1180 (Tenn. 1988)

108. 621F Supp 370, 376 (W.D. Tenn. 1995)

109. 596F Supp (N.D. Cal 1984)

110. 584F Supp 12 1425 (S.D. Ohio 1984)


112. 758F2d 936, 942 (3rd Cir. 1985)

113. 755F Supp 1344 (S.D. W. VA. 1990); 958F2d 36 (4th Cir. 1991)


116. 858 P.2d 970 (U.T. 1993)

117. 156 Ariz. 375, 752 P.2d 28 (App. 1987)


120. 543 P.A. 664, 674 A.2d 232 (1996)

121. 548 P.A. 178, 696 A.3d 137 (1997)


123. See Scott P. DeVries and Patrick J. Richard, “Traditional and Novel Theories of Liability and Damages in Toxic Tort Actions” (2000) and Barry R. Ostrager and Joseph M. McLaughlin, “Class Actions and Mass Torts” (Undated, but apparently written in 2001). Both articles are available on the Internet. See also David T. Person, “Recent Developments in Medical Monitoring Claims in Mass Tort Litigation,” (Undated), also available on the Internet. Lastly, see Schwartz,
Behrens, Burton and Groninger, “Medical Monitoring—Should Tort Law Say Yes, 34 Wake Forest Law Review 1057–1081 (1999) (the authors conclude that because of the complexities and important public policy concerns “inherent in allowing such awards, decisions about whether to permit medical monitoring should be made by legislatures and not by courts.”).


125. Id. Abuan v. General Elec. Co. 3F 3d 329, 334 (9th Cir. 1993); In re Paoli R.R. Yard PCB Litigation (Paoli II) 35 F.3d 717, 787 (3d Cir. 1994) (Plaintiff must suffer from “a significantly increased risk of contracting a serious latent disease”).

126. DeVries and Richard, supra.

127. Id. The court was not impressed by one of plaintiff’s experts, who testified that “medical monitoring is justified at any level of risk” and that medical monitoring of the population at large would be a “good idea.”

128. DeVries and Richard, supra.

129. DeVries and Richard, supra.


132. Ayers, 525 A.2d at 314.


134. Id. at 434, 1175 Ct. 2113.


136. Id. at 436, 117 S.Ct. 2113.


139. 155 L.Ed.2d. 261, 123 S.Ct. 1210 (2003).


141. 855F2d 1188, 1204 (6th Cir. 1988).


143. 788F2d 315, 319 (5th Cir. 1986), recon.den., 797 F.2d 256 (5th Cir. 1956) (en banc).

144. DeVries and Richard at p.15

145. 586F Supp 14, 17 (Colo. 1984)

146. 821 F. Supp. 266 (D. Del. 1993)

147. Generally, “[a] person whose property is taken, damaged, or destroyed by the negligent or wrongful act or omission of another is entitled to compensation for the damage sustained in such a sum as will restore the person as nearly as possible to the person’s former position.” 36 N.Y. Jur.2d. Damages § 72; Cashin v. New Rochelle, 256 N.Y. 190 (1931). “[T]he proper measure of damages for
permanent injury to real property is the lesser of the decline in market value and the cost of restoration. Jenkins v. Etlanger 55 N.Y.S.2d. 35, 39, 447 N.Y.S.2d. 696, 698 (1982). In environmental contamination cases, plaintiffs can recover "damages for diminution in the fair market value of their real property allegedly caused by contamination from hazardous substances."

148. This is usually referred to as the "restoration rule." United States Steel Corp. v. Benefield, 352 So. 2d. 892 (Fla. 2d. DCA 1977), cert. den., 364 So. 2d. 881 (Fla. 1978). Benefield concerned 26 acres of a 750 acre land tract that the defendant damaged by removing phosphate minerals which had been deposited on the land as a by-product of a mining operation. As the land was originally bought for $466 per acre, and repair of the 26 acres would cost $13,084 per acre, the court held that the restoration cost should not be awarded if it was more than the diminution in market value. Id. Accordingly, the court held that the diminution in value was the appropriate measure of damages.

149. 639 So.2d. 595 (Fl. 1994).

150. Id. at 596.


152. See Paul Pederson, “Contaminated property appraisals: a practical guide to minimizing liability, available on the Internet. Though written by a Canadian appraiser for a Canadian audience, its 95% applicable to the U.S. See also Mundy and Associates: “Stigma and Value,” available on the Internet.

153. ex rel. is the abbreviation for the Latin term ex relatione, meaning “upon being related” or “upon information”, used in the title of a lawsuit by the United States Department of Justice (or by a state Attorney General) on behalf of the government, on the instigation of a private person, who needs the state to enforce his rights and the public’s rights.