Toxic Tort and the Articulation of Environmental Risk

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Introduction – Our risk anxiety made real

Ten women who work in ABC television news studios and offices in Toowong Brisbane Australia, have developed invasive breast cancer within a relatively short period of time, one of the first diagnoses being in 2002 (Swan 2007). The unhappy coincidence of ten women in the same workplace developing breast cancer is disturbingly insidious. Initial investigations were not able to identify a cause or explanation. A subsequent, very thorough inquiry led by Professor Bruce Armstrong has not been able to identify the specific cause of the breast cancer either, but it has found that the Brisbane ABC studios present an unequivocal risk to health. The incidence of breast cancer in women working at the studios was not considered random or coincidental, it was found to be ten times the expected rate (Armstrong 2006). The studios have now been abandoned, and all ten cases of breast cancer have been designated a rare 'cancer cluster' (Swan 2007).

Esperance is a reasonably sized but remote town on the southern coast of Western Australia. It is a place noted for its stunning beaches which appear impossibly pristine, but parts of the town have been poisoned by lead carbonate. Up to a thousand native birds have died; rainwater tanks, backyard veggie patches and chook runs have become potentially toxic (*The West Australian* May 5 2007: 8). Six children have been found to have lead blood levels above recommended health guidelines (*The West Australian* May 5 2007: 8). All of this has happened in a place which, because of its isolation, we would assume to be outside any zone of toxic risk. However in Esperance, unlike the ABC Brisbane studios, the source of the toxin is readily identifiable — it comes from the town's port where powdered lead carbonate has been loaded on ships for export.

Both the ABC and the Esperance cases have been newsworthy because they tap a common anxiety — that the environment in which we live and work may harbour unknown toxins, or that the technology which we use every day may be doing us some sort of harm. In an interview with Dr Norman Swan on the ABC 'Health Report', Nadia Farha, one of the ABC journalists in Brisbane who developed breast cancer, articulated this anxiety. Upon learning of the findings of the Armstrong Inquiry she said:

> I was really upset, I think that's where it actually hit me that maybe working for the ABC at that particular site I could have got my breast cancer. And you think that you'd worked for an organisation all of these years, and you've given them the best of your career to find that working there may eventually kill you brought me down to earth pretty much in a hurry. I was really shocked, and I think some of the women weren't that shocked because I think that's what they expected but I hadn't expected that (Swan 2007).

The fear, anger and frustration felt by Nadia Farha and others involved in such cases of toxic exposure are easily understood. Douglas and Wildalsky have observed that in practice the environment is a pivotal focus of risk anxiety — people are afraid of 'nothing much … except the food they eat, the water they drink, the air they breathe, the land they live on, and the energy they use' (1982: 10). It is not difficult to empathise with the strong need of the people involved in these cases to identify the source of their toxic exposure and to hold somebody accountable. Especially because, while each of these cases may be shocking, the circumstances by which the women in the ABC studios or the people who live in Esperance came to be exposed to something toxic are not so exceptional. These people were simply living their lives in a manner not so very different to any other person who works in a news studio or lives in a country town by the sea. It could have been one of us who developed cancer because our workplace was a toxic site, or because our rainwater became undrinkable. It might have been the beachside town we went to regularly for summer holidays that became polluted by a toxin as dangerous as lead carbonate.

The possibility of suing in toxic tort

Taking some sort of legal action, holding somebody accountable and legally liable, would not be an unusual response to what has happened in Esperance or for the women who have developed cancer while working in the ABC Brisbane studio. Suing in 'toxic tort' (negligence) became one of many forms of legal response to the unanticipated hazards of twentieth-century technology and consumption. It has been popularised by Hollywood and made practically possible by innovative legal practitioners such as the plaintiffs' law firm Slater and Gordon, which has made its reputation in a number of high profile 'toxic tort' cases (Cannon 1998). Toxic tort has become a notorious field of litigation largely due to the super-sized damages awarded in mass toxic tort claims in the United States, but also because of claims that the development of toxic tort doctrine has allowed individuals to rationalise their misfortune through tenuous connections to improbable causes (Huber 1991). It is nonetheless exemplary of Sheila Jasanoff's observation that 'courts are often the first social institutions to give public voice and meaning to inaudible struggles between human communities and their technological creations' (1995: 12). Actions in toxic tort endorse and articulate risk anxiety, particularly in those instances where the litigation gives publicity to latent hazards that had previously been little known in the public domain (Rabin 1993: 126). As Ulrich Beck observes:

> Dangers, it would seem, do not exist 'in themselves', independently of our perceptions. They become a political issue only when people are generally aware of them; they are social constructs which are strategically defined, covered up or dramatized in the public sphere with the help of scientific material supplied for the purpose (1999: 22).

The judicial adjudication of the defendant's duty of care in the context of the foreseeability of the risk to which the plaintiff was exposed, as well as the amassing of evidence of causation, makes toxic tort litigation the occasion for anxiety about the risks of certain toxins to be quite publicly acknowledged and delineated. The litigation plays a not insubstantial role in setting normative standards for our tolerance

of toxic risk (Havemann 2003: 38, Rabin 2001: 352–3). Toxic tort litigation also provides a certain type of vehicle for articulating the relationship between our body, hazards and the environment (Kroll-Smith & Westervelt 2004, Lee 2000, Rabin 2001).

No one is suing yet, but media reports of what has happened in Esperance and in the ABC studios have focused on issues and responses to events which might well presage some of the individuals affected taking some form of legal action. Various news reports and documentaries have focused on factors such as the need of people exposed to dangerous toxins to be heard; their desire to have the matter properly investigated; their continued anxiety about the toxicity of their immediate living and working environment; their anger at becoming the particular victims of a toxic hazard; and their ongoing concern that there appears to be a continuing toxic risk that might impact on other people (ABC News Online 27 March 2007, 12 June 2007, Swan 2007, *The West Australian* 5 May 2007). While these sorts of concerns are far less tangible than any physical injury the women who worked at the ABC Brisbane studio or the people of Esperance may have suffered, they are nevertheless central to their subjective appreciation of the risk presented by the toxic exposure.

So could either the ABC women or any of the individuals exposed to lead in Esperance litigate successfully? The source of the toxicity in the ABC case is elusive, while in Esperance it is pretty clear-cut. It is therefore unlikely at this stage that it will be possible for the ABC women to sue, because establishing causation and responsibility for the exposure appears to be beyond science and in turn the law. But the circumstances by which some people in Esperance came to unwittingly make themselves vulnerable to lead poisoning by growing their own veggies and collecting rain water in tanks may yet be played out in the courts. Slater and Gordon have been to Esperance and undertaken investigations into the circumstance of the toxic exposure, but the only publicly reported action the firm has taken is a letter of demand to the Minister responsible to establish a compensation scheme which would allow those affected to avoid litigation (*The West Australian* 5 May 2007:

8). Because of their reputation Slater and Gordon's letter may well have some persuasive force. But they would know from experience that toxic tort litigation is an inefficient and often compromised endeavour, both because the hazards of post-industrial society are difficult to identify and because the causal nexus between injury/damage and hazard is difficult to trace (Cannon 1998, Lee 2000).

The success of toxic tort litigation depends on being able to identify by expert scientific evidence both the nature of the toxin and the causal link between the plaintiff's exposure to the toxin and the injuries they have suffered. John Fleming acknowledges that '[a]n abiding difficulty of toxic torts is to attribute responsibility to the defendant amidst other possible causes, such as other pollutants, unrelated diseases or carcinogens like smoking etc' (1997: 71). Tort principles of the nineteenth century were premised on the assumption that there is usually a single line of causation linking the defendant's negligence to the plaintiff's injury. However, science and medicine have developed to the point where an injury may be attributed to a range of possible causes. The medical model that is employed to determine the actual cause of the injuries is not based on direct causality. It is based on a 'multi-factor approach' which understands 'the problem of health in a broader context' whereby disease can be attributed to exposure to a variety of toxins as well as the lifestyle and patterns of consumption of plaintiffs themselves (Lanthier & Olivier 1999: 75). As demonstrated by the ABC case, scientists cannot always identify a toxin even when the effects of exposure to it are evident. Scientists also know very little about the actual effects of many known or suspected toxins, despite the fact that the effects of exposure to some toxins such as lead are well documented (Cranor & Eastmond 2001: 11). Even when a causal link is established the court may determine that at the time of the exposure the state of knowledge of the particular toxic hazard was so limited that the harm the plaintiff has suffered was not 'foreseeable'. In such a case the defendant would not be expected to know of the risk or be considered able, in a technical sense, to limit the plaintiff's exposure. (The ABC case is likely to be in this category.) If so, the defendant will not be found to have breached the duty of care that

she or he owed to the plaintiff and will not be legally liable (*Wyong Shire Council v Shirt*).

And so we come to the issue that is the focus of this paper. If the toxic exposure at the ABC Brisbane studios or in Esperance were to become the subject of toxic tort action, and we could think past the obstacles to litigation in these two cases, what would be the relevance to any such litigation of the anxiety and concerns of the potential plaintiffs? How, if at all, would their quite subjective and particular appreciation of the toxic hazard to which they have been exposed be assessed? Does what Beck (1992) or Douglas and Wildalsky (1982) would label the plaintiffs' 'risk anxiety' have any legitimate role in the determination of a toxic tort claim? I suggest that although toxic tort litigation clearly does not offer the same forum as a television documentary or a news report for exploring these matters, it is not utterly divorced from their significance. As former Australian High Court Justice Michael McHugh has observed, the application of tort doctrine 'depend[s] not only upon the ascertainment of facts but on a moral and social evaluation of those facts' (1989: 13).

Discussion of toxic tort cases often focuses on the inevitable disputes over the veracity of scientific evidence (see for example Cranor & Eastmond 2001, Edmond & Mercer 2002, 2004, Huber 1991). In this piece I consider the interaction of scientific evidence with other more commonplace evidence of the non-expert plaintiff and others who actually experienced the toxic exposure (as have Jasanoff 1995, Morrow 2000, Rabin 1993, 2001, Toffolon-Weiss & Timmons Roberts 2004). My object is not so much to determine the degree to which toxic tort litigation gives public voice and meaning to a plaintiff's particular experience of toxic exposure, although their 'day in court' is obviously in some sense an attempt by the plaintiff to give 'voice' to their subjective appreciation and particular experience of the toxic exposure. My analysis is less ambitious; it considers the dynamic interaction of the scientific and lay evidence in toxic tort litigation. In doing so I take up the concept of 'risk' as a device for examining and comparing the various ways by which toxic tort litigation engages

with and analyses a case of toxic exposure that is alleged to have caused an injury or loss.

Analysing toxic tort litigation through the figure of risk

In her theorisation of the interrelationship between law and risk Jenny Steele has observed that risk calculation, vocabulary and techniques are taken up in litigation in specialised ways to facilitate appropriate judgments regarding risk-taking limits and responsibilities, although in other domains they can serve quite a different purpose (2004: 9). 'Risk' has many meanings and functions. It is a quantitative, actuarial calculation which measures the probability of an event occurring and, as such, is a commodity that can be traded. Risk is also a socially constructed notion which shapes decision and policy-making (Dean 1999). The concept of risk is readily employed in everyday discourse and mediates the relationships people have to certain activities (Lupton 1999). It is a label which is attached to hazard, danger and uncertainty in both a scientific and in an everyday sense (Ewald 1991). Risk is also culturally constructed as the focus of a certain type of anxiety (Douglas 1992). None of these understandings of risk is isolated from other knowledges of risk; indeed, differing conceptions of risk are often conflated in particular contexts, like the courtroom, to create wholly unique means of understanding risk suited to a particular task, such as assigning legal liability (Valverde, Levi & Moore 2005: 86). In terms of this discussion 'risk', simply put, is a way of conceptualising, measuring and talking about environmental hazards. Rather than being a label which attaches to certain hazards, 'risk' here is a product of certain forms of thinking and calculation.

The shift from thinking about risk in non-legal terms to assessing its role in the litigation process is not a straightforward manoeuvre. Steele observes that the courts necessarily engage in a quite specialised legal sense with the vocabulary and techniques of risk in their adjudication of disputes involving the appropriate limits and responsibilities of risk-taking (2004: 9). Risk is conceptualised and employed by the

law in a variety of ways. Pat O'Malley's (2004) depiction of the three manifestations of risk in the legal domain is applicable to toxic tort litigation. O'Malley contends that risk is the *object* of various forms of legal intervention, the purpose of which is to assign responsibility for the management of risk-taking. Risks are assigned moral value — the law either privileges or seeks to limit various forms of risk — and *techniques* of risk assessment are employed to determine the limits of legal liability.

The assessment of risk in the toxic tort claim

Possible exposure to the risk of harm is not enough to found a tort claim. The plaintiff must be able to demonstrate that they have actually suffered an injury attributable to the defendant's negligence. Even though toxic tort may become an occasion for the litigious expression of popular risk anxiety, the traditions of common law litigation require the parties to support their case with expert testimony as to the actual, rather than simply apprehended, nature of the risk to which the plaintiff was exposed. Scientific calculations and assessments of the harm the plaintiff suffered and the actual risk they were exposed to are central to the resolution of any toxic tort claim. The plaintiff must not only provide medical evidence of his or her actual injury — that will not be sufficient to determine the claim. Whether the defendant should be held responsible for the plaintiff's injury will depend in large part upon the risk calculations of the epidemiologist and the environmental engineer. The court's application of various technical or scientific risk technologies allows an 'objective' assessment of both the foreseeability of the plaintiff suffering an injury as well as the causal nexus between the injury and the toxic exposure or environment.

However, the success of a plaintiff's or defendant's case is not wholly determined by scientific and technical expert evidence; it will also be determined by evidence of other, non-scientific and quite subjective, calculations of risk. There are four interrelated conceptions of risk which I take up in the following discussion of the interaction of scientific and lay evidence in most toxic tort cases. They are: the

insurantial, the scientific, the everyday or common sense, and the clinical. The function of insurance has facilitated the emergence of toxic tort as a specific form of negligence action (Fleming 1992). The scientific assessment of risk by the epidemiologist has become increasingly important in toxic tort cases in marking the boundary between tenable and tenuous claims in toxic tort (Edmonds & Mercer 2002, Jasanoff, 1995: 16). The role of everyday or common sense notions of risk is not so evident in toxic tort litigation. Unlike epidemiological calculations of risk it has not been the focus of academic debate. Nevertheless the particulars of the plaintiff's claim are scrutinised through the lens of everyday or common sense conceptualisations of the plaintiff's and defendant's conduct (Valverde, Levi & Moore 2005: 86, *Seltsam v McGuiness*). I suggest here that one way of conceptualising how the individual plaintiff's particular experience of toxic exposure interfaces with broader population-based assessments of risk produced by the epidemiologist or environmental engineer is to think of the actual litigation as applying a 'clinical risk' approach. Unlike epidemiological assessments of risk, which identify risks factors across populations, the clinical risk approach conceptualises the risk in terms of its impact on specific individuals. 'That is, the individual is treated not simply as representative of a risk category but as a unique case to which certain risk factors apply' (O'Malley 2004: 25). In toxic tort litigation the court to some extent adopts a clinical gaze or perspective. The court's assessment of the plaintiff's case not only involves situating the incidence of her or his toxic exposure in the context of accepted knowledge about the risk associated with exposure to the toxin. It is also the court's appreciation of the parties' personal and quite specific experience and exposure to risk, and their behaviour in the face of such exposure, which in large part determines the outcome of the proceedings.

Insurantial risk

Actions in tort take place against and within the operation of various state regulated and private schemes of insurance. Commentators on

the development of tort law have identified a number of key effects insurance and insurability have upon the tort system in general and the conduct of tort litigation in particular. Perhaps the most profound effect is identified by Fleming, who argues that without liability insurance 'the tort system would have long ago collapsed under the weight of the demands placed upon it' (1992: 11). As liability insurance became relatively common the historical conservatism that militated against the emergence of new forms of action was displaced. Jane Stapelton observes that the increasing 'public policy reliance' on a prudential response to risk has been paralleled by 'a general broadening of the catchment of situations recognised by the courts as giving rise to tort entitlements' (1995: 820).

It is argued that liability insurance has transformed the very nature of tort law. Morton Horwitz, discussing the impact of liability insurance on the development of tort law in the United States, observes that:

> The individualistic world of Warton's 'moral causation' and 'free agency' had begun to be transformed into a world of liability insurance in which the 'legislative' question of who should pay would ultimately undermine the self contained, individualistic categories of private law (1982: 211).

Joanne Conaghan and Wade Mansell are of the view that although 'individual responsibility continues to be the perspective that informs most cases, collective responsibility and loss spreading through the mechanism of liability insurance tends to be the incidental by-product' (1993: 11). The social theorist François Ewald, who is noted for his genealogical study of insurantial risk in which he characterises risk not as a thing but as a form of rationality, also argues that insurance directly challenges the juridical practice of assigning responsibility according to legal right (1991: 201). However, rather than insurance being the passive servant of the law, as Horwitz and Conaghan and Mansell seem to assume, Ewald reminds us that the law and insurance each provide a means of assigning responsibility and making compensation for loss, and that the rationality of each may be applied to the same object in pursuit of different ends. He says '[i]nsurance and law are two practices of responsibility which operate quite heterogeneous

categories, regimes, economies; as such, they are mutually exclusive in their claims to totality' (Ewald 1991: 201). The fundamental difference between the two is that the juridical focus on the occurrence of an event is singular and moral. By contrast, the insurantial approach eschews any question of moral responsibility and instead factors the probability of such an event occurring and recurring in a predictable rule-like fashion (Ewald 1991: 203).

Peter Cane argues that the most significant characteristic of any tort action is the correlativity of the parties: 'Every cause of action in tort has elements concerned with the conduct of interacting parties' (1997: 13). As a consequence, the real implications of insurance coverage generally do not figure in the courtroom because 'it will always be possible to rationalize a rule of tort law in terms of principles of personal responsibility … even if it also rationalizes the decision in terms of loss spreading' (1997: 230). Horwitz argues that the correlative character of tort litigation described by Cane is to some extent a chimera. He says of the usual tort case that '[l]iability for injury has become just another cost of doing business, which could be estimated, insured against, and ultimately included in the price paid by the public' (1982: 211). If one is talking about the standard personal injury claim then Horwitz's assessment of the current trajectory of tort litigation is accurate. Fleming observes that a defendant's insurance may very likely undermine any deterring or punishing effect that might have followed a finding of legal liability (1992: 10). This argument is supported by Beck's analysis of the effects of *expert* risk calculation: 'the calculus of risks … permits a type of "technological moralization" which no longer need employ moral and ethical imperatives directly' (1999: 51). However, we need to allow that 'technological moralization' might operate alongside, or simultaneously, with traditional notions of moral causation. As Ewald reminds us in the case of toxic tort litigation, the notion of 'moral causation' should not be discarded too readily. Such litigation is not resolved by a simple reference to an insurantial calculation of risk.

> Under the regime of juridical responsibility … [t]he accident is due to some individual fault, imprudence or negligence; it cannot be a rule. Moral thought uses accident as a principle of distinction … a unique affair between individual protagonists (Ewald 1991: 203).

Insurers may have a capacity through the rule of subrogation to dominate the litigation process but they do not litigate as if factors beyond their own actuarial calculations are irrelevant. A determination of legal liability in toxic tort cases inherently incorporates an assessment of the moral culpability of not only the defendant but also the plaintiff. That moral culpability is, as I argue further below, bound up with assessments of whether the plaintiff was suitably risk-averse. In making such assessments the courts weigh up competing accounts of the type of risk to which the plaintiff was exposed. These accounts come from the parties themselves, experts who provide technical assessments of the hazard or harm to which the plaintiff was exposed and lay witnesses such as workmates whose role is to furnish the court with a real appreciation of the environment in which the plaintiff was exposed to risk.

Scientific risk

Expert scientific evidence relating to causation, and to the risk presented by exposure to a particular toxin, toxic event or environment, is an integral part of all toxic tort litigation. Inevitably the manner in which scientific disciplines such as epidemiology conceive of and articulate risk impacts upon *legal* conceptions of risk. Epidemiology is the study of 'the incidence, distribution and aetiology of disease in human populations and applies the findings to alleviate health problems' (Freckelton 2000: 133). The strength of the associations the epidemiologist might find between a possible cause and the incidence of disease depends upon excluding alternative causes as well as the size of the population or cohort studied (Billauer, Moskowitz & Gallinari 1989: 66). Reliable epidemiological studies are available for only half of the known and likely human carcinogens (Cranor & Eastmond 2001: 10). Nevertheless epidemiological studies have assumed considerable

importance in toxic tort litigation not only because they allow the court to make some sort of objective assessment on the question of causation but also because they provide an identifiable basis for determining the limits of the very foreseeability of toxic risk. Epidemiological expertise forms part of the evidence which courts use to map a global picture of the potential hazards to which a plaintiff may have been exposed. It is from this global position that the conduct of both the parties is judged. Edward Christie notes that:

> A feature of a toxic tort dispute is that a plaintiff can rarely introduce particularistic evidence which directly addresses the question of proof of causation in the individual plaintiff's case … [P]arties must, instead, rely on evidence which indicates an increased risk, or increased probability, of disease incidence following exposure to a specific chemical (1992: 303).

Because epidemiological studies develop actuarial calculations of risk which are generally not created for legal purposes, there is often contest in litigation regarding the value or methodological reliability of epidemiological evidence (Billauer, Moskowitz & Gallinari 1989: 66). Contest over the veracity of expert scientific evidence to some extent merely reflects the fact that there is no such thing as scientific objectivity or certainty. As Jacqueline Peel observes, '[t]he empirical basis of science is both a strength and a weakness' because the potential for 'various types of logical errors' is inherent in all scientific knowledge claims (2005: 35). Science in the courtroom is not the science of the research laboratory: it is employed in an adversarial context. The testimony of expert scientific witnesses is thus 'strategically framed' and the courts consider the evidence in that context (Jasanoff 1995: 48). Indeed, Australian courts freely acknowledge that:

> The pragmatic assessment of probable cause as a basis for tortious liability cannot be wholly constrained by the scientific and philosophical purity of epidemiology, which essentially depends upon a comparison of the data obtained in controlled circumstances (*EM Baldwin & Son Pty Ltd v Plane; Jsekarb Pty Ltd v Plane*).

Steele notes that the court pragmatically employs an adjudicatory model which 'constructs a moment of decision which may be purely hypothetical [knowledge of the risk which exposure to the toxin presented at the time of the plaintiff's exposure] and uses this to draw the "right" conclusion' on whether the defendant should have known of the risk and whether the exposure is likely to have caused the injury (2004: 9). It is a dynamic apparent in the leading case of *Seltsam v McGuiness* (hereinafter *Seltsam*) in which the NSW Court of Appeal held that epidemiological studies 'should be regarded as circumstantial evidence which may, alone or in combination with other evidence, establish causation in a specific case' (¶63,566). The court recognised epidemiology's 'potential utility' in toxic tort cases on the basis that it might 'fill the gap' where 'medical science cannot determine the existence or non-existence of a causal relationship for purposes of attributing legal responsibility' (*Seltsam*: ¶63,566). However, despite Chief Justice Spigelman's thorough examination of the utility of epidemiological evidence, he did not identify the point at which epidemiological or other forms of scientific evidence should be considered compelling (Freckelton 2000: 140), largely because that question can only be determined in the context of a wider body of non-scientific evidence which combines, in Spigelman's words, with the epidemiological evidence like 'strands in the cable' and from which causation might be inferred by the court as a matter of 'commonsense' (*Seltsam*). But whose common sense? Is a judge's common sense in any way akin to that of the journalist working in the ABC's Brisbane studio, whose common sense tells her that despite the lack of a conclusive scientific explanation, coincidence alone does not explain why ten women in the one workplace have all developed invasive breast cancer (Swan 2007)?

Jasanoff observes that the exercise of the court's discretion (its 'commonsense') is inevitably shaped by the degree to which 'judges are swayed by their perceptions of what "science" is and who is a "scientist" when they certify an expert's credibility' (1995: 59). Debate about the proper interpretation of the United States Supreme Court's ruling on the standards that should apply in determining the admissibility

of expert scientific evidence in *Daubert v Merrell Dow Pharmaceuticals, Inc* (hereinafter *Daubert*) demonstrates how assessments of risk such as those produced by epidemiologists are not neutral elements in the legal assessment of risk. The debate regarding the proper interpretation of *Daubert* is about more than simply what type of science should be recognised in the court room — it concerns 'the social and moral viability of particular technological choices' (Jasanoff 1995: 65–6).

The Supreme Court took the opportunity in *Daubert* to develop criteria which would allow courts to secure 'relevant and reliable evidence' and overcome the inconsistent jurisprudence that had developed in relation to the admissibility of expert evidence (Edmund & Mercer 2004: 234). The court was persuaded by a number of influential amicus briefs presented by corporate-sponsored think tanks to privilege certain measures of scientific integrity, such as Popper's falsification standard, when determining the validity and probative value of scientific evidence(Edmund & Mercer 2004: 244). The *Daubert* decision listed four criteria trial judges should take into account in assessing claimed expertise. The court indicated that these criteria were intended as a guide only and that the inquiry should be flexible. However, as is often the case when a superior court attempts to set criteria for future guidance, the *Daubert* guide soon lost its intended flexibility and qualification, and through its very application was transformed into a checklist for the application of a fixed rule. Edmund and Mercer note that in subsequent decisions *Daubert* has become the basis for imposing a much more stringent admissibility threshold (2004: 244, 250). Cranor and Eastmond suggest that courts have 'misunderstood or learned the wrong lessons' from *Daubert* and several other Bendectin cases, and that the courts now expect other cases involving different toxins which have been subject to far less scientific scrutiny than Bendectin to be able to meet impossibly high evidentiary standards (2001: 9). As a consequence they argue, *Daubert* reforms have locked out plaintiffs who have based their claim on 'reliable, but not ideal, scientific evidence' (2001: 6). Edmunds and Mercer cite the fate of *Newman v Motorola Inc* (hereinafter *Newman*) in support of the argument that:

> *Daubert*-inspired quests to establish scientific truth … may assist in discouraging ongoing legal scrutiny of intransigent scientific controversies involving uncertain risks (2004: 243).

Newman was one of the first cases relating to the hazards of mobile (cell) phone use. Its failure has been significant for a large cluster of potential toxic tort claims relating to the harm caused by mobile phones (Edmunds & Mercer 2004: 239–40, Capriotti 2002). Blake J, in a decision that was affirmed on appeal, rejected the evidence of the plaintiff's expert epidemiological and oncological witness, Professor Lennart Hardell. She did so by what Edmund and Mercer argue was a 'strategic manipulation of the *Daubert* criteria' (2004: 240). While Hardell's research and opinion were not mainstream, the relevant 'real world' science on the biological effects of electromagnetic radiation and mobile phone use is hardly settled. Public concern about the risk it presents, coupled with the want of scientific certainty about the risk, has been serious enough to have generated independent inquiries in several Western countries (Capriotti 2002: 2–3, Peel 2005: 108–9). There simply has not been the passage of time and sufficient scientific research to produce large-cohort epidemiological studies of the effects of electromagnetic radiation generated by cell phones (Capriotti 2002: 4). Cranor and Eastmond note that even when a potential toxic hazard comes to scientific attention it takes considerable time and resources to accumulate a body of reliable scientific evidence evaluating its effect on humans and the environment, and 'it takes longer still to establish a scientific consensus' (2001: 13). In the case of *Newman*, Hardell's testimony was rejected on the basis that the judge disapproved of his methodological approach (*Newman*: 14). Edmunds and Mercer argue that her reasoning and approach to the admissibility of Hardell's evidence demonstrate how 'ideal images of the scientific method can be used in legal settings to help deconstruct or marginalize particular forms of expertise' and, in so doing, 'restrict the entry of (novel) scientific claims' (2004: 241–2). The 'commonsense' approach of the Australian cases to causation currently favours a broader, less idealised approach to expert scientific evidence which recognises that scientific evidence is unlikely to be able to fully determine questions of legal

causation. However, what counts as 'commonsense' can shift and the *Daubert* legacy in the US is instructive on this point.

When a court places greater emphasis on scientific evidence of the causal nexus the plaintiff's lived experience of the hazard assumes less importance in the proceedings. The trajectory of the *Daubert* ruling, for instance, has been to shift the court's attention away from a holistic focus in which the 'scientific evidence supports a claim framed in lay terms' towards what Karen Morrow has labelled, in her analysis of British and Irish nuisance cases, a 'harder' approach to causation in which the evidence of the plaintiff is marginalised in favour of scientific evidence (Morrow 2000: 144–9 n32). In the nuisance case of *Graham and Graham v Re-Chem* (hereinafter *Graham*) Morrow notes the court was not satisfied that the plaintiffs' evidence established a causal nexus between the damage suffered by the plaintiffs and the emissions from the defendant's incinerator. Their evidence was judged 'very confused and confusing, contradictory and riddled with inconsistencies' (quoted in Morrow 2000: 148). The fact that there had been findings by official inquiries regarding the hazards of the defendant's incinerator was also considered to be of little consequence, even when coupled with the plaintiff's testimony. This was because the reports documenting that risk were in general terms and did not evidence that activities of the defendant specifically caused the plaintiff's damage. In essence, the plaintiff's case failed in the court's view because the plaintiffs had not provided 'detailed clinical, pathological and histological evidence of … toxic insult'; their case was not buttressed by sufficiently persuasive and detailed scientific evidence (quoted in Morrow 2000: 148).

It is possible to find cases which evidence both a 'hard' and a 'soft' approach to causation as Morrow has done. A court has immense power to characterise a plaintiff's evidence, simply through language, as either more or less authentic than the scientific evidence. In making this point Morrow turns to the case of *Hanrahan v Merck, Sharp & Dohme (Ireland) Ltd*, which stands in sharp contrast to *Graham's* case. On appeal in *Hanrahan* Henchy J found that the defendant's expert scientific evidence, based on readings of emissions from the plant

and computer models, did not pay due attention to the 'real physical context of the emissions' as evidenced by the plaintiff's witnesses. He held that '[t]heoretical or inductive evidence cannot be allowed to displace proven facts … [This] would be to allow scientific theory to dethrone fact' (quoted in Morrow 2000: 146).

The degree to which a court aligns 'legal causation with scientific causation' not only determines what type of science will count in the litigation, it will also impact upon the significance and weight attached to other forms of non-scientific evidence (Edmonds & Mercer 2002: 103). The discussion now turns to examine the relevance of other non-scientific, and quite subjective, calculations of risk.

Risk and common sense

In our 'lived life' we tend to understand risk in terms of its common or everyday meaning rather than as an actuarial calculation or an object of scientific analysis. In its common, everyday sense, risk is a term used to describe danger or hazard (Ewald 1991). Risks of this kind are not statistical calculations, they are social or cultural constructs. Such ideas of risk often have some genesis in a scientific prediction of risk, but they have developed to encompass an array of popular knowledge, beliefs and practices that are not limited by the confines of scientific discourse (Douglas 1992: 24). Research by cognitive psychologists has demonstrated that

> 'lay' people evaluate health and environmental threats according to a different set of criteria than may be reflected in expert assessments. … [T]he risk perception of lay members of the community appears to be influenced by various contextual factors that lie outside the realm of scientific research (Peel 2005: 68).

These factors include familiarity with a technology, the degree of control which can be asserted over it and the potential for the application of the technology to have catastrophic effects (Peel 2005: 68). Jasanoff observes that

> people will tolerate a higher probability of death and injury from activities that they feel they can meaningfully control (smoking, eating, automobile driving) then from activities that heighten their sense of powerlessness or distrust (nuclear power, pesticide use, air transportation) (1995: 13).

Robert Lee argues that 'the public experience of risk is not one of unthinking acceptance of a position expounded by experts, nor is it a simple choice between expert positions' (2000: 86). Notwithstanding the trend in some post *Daubert* litigation in the United States, risk is not calculated solely according to expert scientific evidence by courts in toxic tort litigation either. In *Chappel v Hart* the Australian High Court observed causation is 'a question of fact resolved as matter of commonsense and experience[;] the conclusion is often reached intuitively' (*Chappel v Hart*: 562).

A plaintiff's subjective appreciation of their toxic exposure and its consequences is as vital as evidence of the defendant's conduct to the court's determination of legal liability. This dynamic is readily apparent in Seaman J's decision in *Napolitano v CSR Ltd* (hereinafter *Napolitano*). The plaintiff in that case, Mr Napolitano, had worked for two years for the defendant in its blue asbestos mine in Wittenoom. He sued the defendant in tort not only because he had developed mesothelioma (a fatal asbestos-related disease) but also because over a period of years he had developed a psychiatric illness which he attributed to his long-standing fear that he would succumb to mesothelioma. The defendants admitted liability for the plaintiff's mesothelioma but denied liability for his psychiatric illness. The court regarded the 'question of liability for psychiatric injury to be a matter of major complexity' (*Napolitano*: 6). Nevertheless the judgment is characterised by a pragmatic and candid take on the evidence rather than the usual careful rationalisation and artifice that attaches to judicial decision-making. Seaman J's decision has been criticised for its 'lack of analysis of principle or authority' (Mullany 1997: 137). But for the purposes of this discussion it is perhaps all the more instructive for that omission, as it means the clinical gaze of the court on the particulars of the plaintiff's experience of living with the risk of such massive past exposure to asbestos is all the more apparent.

It was necessary for the court to establish on the balance of probabilities that the plaintiff's 'illness of mind' was caused by the defendants' conduct — that causal nexus was 'determined by applying common-sense to the facts' of the case (*Napolitano*: 20). Seaman J cursorily distinguished Mr Napolitano's situation from other nervous shock cases and then refocused on the particulars of the plaintiff's case, observing that:

> It seems to me the controlling features of liability for psychiatric illness cannot be determined in the abstract and this case cannot turn on statements of policy apt to very different factual situations (*Napolitano*: 22).

Anxiety or fear of contracting a disease is not, on its own, a basis for any form of compensation beyond payment for medical monitoring of the plaintiff's health. Seaman J did not break from that legal requirement. Mr Napolitano's condition was a recognisable mental illness, but analysis of the judgement suggests that it was the particulars of Mr Napolitano's experience and fear, made palpable by the psychiatric diagnosis and ultimately vindicated by the fact that Mr Napolitano was to die of the very disease he feared, that primarily motivated the judge's decision. Seaman J's conclusion was that Mr Napolitano had suffered 'a very long period of misery and anxiety and fear' (*Napolitano*: 25) and that his

> depressive illness was induced by the perception of the plaintiff of the distressing phenomena of asbestos-induced illness in his fellow Wittenoom workers who were his friends and in particular Mr Cinquina [his best friend] (*Napolitano*: 20–1).

Mullany suggests that '[o]ne gleans the impression from his judgement that Seaman J simply formed the opinion that it was just in the particular circumstances to compensate the plaintiff' (1997: 137). This notion of what is 'just' leads us to the next point of this discussion, which is that legal liability in toxic tort actions is very much determined in the context of a moral evaluation of the parties' conduct and of their attitude and response to risk.

Together with an expectation that the individual will monitor him- or herself and be risk-averse, risk in its commonly understood sense has, according to the social anthropologist Mary Douglas (1992), become inextricably linked with blame. Whereas the technical calculations of epidemiological risk are treated as objective everyday notions of risk are a basis for ascribing moral culpability. In the courtroom toxic tort litigation, despite its consideration of detailed scientific evidence, appears to turn as much upon moral assessment of the parties' conduct as on scientific argument and testimony or points of law. Indeed, Robert Rabin describes tobacco litigation in the United States as 'a last vestige of a vision of nineteenth century tort law as an interpersonal morality play' (1993: 122). The clinical risk approach (discussed below) that conceptualises risk in terms of the impact on specific individuals is taken up here in part because it facilitates analysis of how the moral conduct of the parties is framed and assessed in toxic tort litigation.

Clinical risk assessment

The main consideration of much risk commentary in the social sciences is how risk is produced by collective anxiety and politics (Beck 1992, Douglas 1992), or as a function of certain forms of scientific or actuarial calculations (for a survey of this commentary see Lupton 1999, O'Malley 2004). When legal commentators consider the function of risk assessment in litigation, their focus also tends to be on actuarial or other scientific calculations of risk. It is a literature that is rarely interested in how the individual actually engages or copes with, or is otherwise affected by, risk. The clinical approach to thinking about risk which is prevalent in public health programs is taken up in this argument because its focus is on the relationship between expert assessments of risk and the individual *as* an individual (not simply as a member of a risk-prone population). Clinical risk approaches, informed by risk expertise, develop programs which aim to reduce the exposure of members of these groups, rather than whole populations, to risk (O'Malley 2004: 22, Weir 1996).

Public health programs — such as those aimed at pregnant women, drug-users or smokers — use clinical risk techniques such as diagnoses and therapeutics. The clinician, working on the basis of 'probabilistic indicators of future conditions' or 'risk' to a certain type of patient's health, develops a program of intervention aimed at minimising these risks (O'Malley 2004: 22). For example, in light of known risk factors gleaned from epidemiological studies and past clinical experience, pregnant women have become subject to an increasing array of interventions aimed at protecting the health of the unborn foetus. Regular ultrasounds and blood tests are scheduled for the pregnant woman/patient; she will be advised what foods she should eat and which she should avoid; she is told to abstain from alcohol, quit smoking and even, when it might be appropriate, to consider terminating a pregnancy (O'Malley 2004: 7–8, Weir 1996). The clinical governance of pregnancy allows an expectant mother to 'identify generic pregnancy anxieties' with her own 'particular characteristics and behaviour' (O'Malley 2004: 8). These types of clinical interventions are not simply imposed on a passive patient; being pregnant is shaped and framed by a wider public discourse and common knowledge of how one should manage pregnancy — a knowledge that was not available to previous generations of pregnant women. O'Malley, taking up Lorna Weir's (1996) analysis, argues that the experience and responsibility of being pregnant have changed such that a rational expectant mother will now not only accept but positively embrace and seek out the clinician's advice (O'Malley 2004: 8).

Toxic tort litigation is not therapeutic, beyond the fact that successful litigation and/or the threat of further litigation forces some defendants who are found liable to reform their practices so that the hazard of exposure is limited or eradicated. However, it is argued here that the focus of clinical risk techniques on the individual's exposure to risk is a useful way of thinking about how the figure of the plaintiff (like the patient) is constructed within the domain of toxic tort litigation. This focus on the formation of the plaintiff is necessary to this discussion because, despite the broader risk discourse within which any toxic tort litigation takes place, the individual litigating

parties remain the primary focus of the court (Cane 1997: 13). Jasanoff observes that in this type of litigation the courts tend to

> favour a holistic (or medical) to a reductionist, or toxicological model of illness. The holistic view focuses on the suffering individual and asks whether, given the totality of circumstances, this person could have been affected in the stated way by the stated exposure … this approach presumes that issues of general or specific causation must be addressed together, within the context of the *plaintiff's lived life* (1995: 125 emphasis added).

Whether or not the plaintiff, as much as the defendant, adopted appropriate risk-averse behaviour in the face of risk is implicated in the court's assessment of the plaintiff's case. The dynamic which I suggest operates is identified in sociological terms by Deborah Lupton:

> The modern concept of risk, like that of taboo, has a 'forensic' property, for it works backwards in explaining ill-fortune, as well as forwards in predicting future retribution. Thus the experience of a heart attack, a positive HIV test result, or the discovery of a cancerous lesion are evidence that the ill person has failed to comply with directives to reduce health risks and therefore is to be blamed for his or her predicament (1993: 430).

The clinical risk approach highlights the manner by which the toxic tort litigation constructs a certain type of legal subject. The success of the plaintiff's case will in part be determined by whether they are able to situate themselves as risk-averse or irresponsible in the face of known risk (Morrow 2000, Rabin 1993, Toffolon-Weiss & Roberts 2004).

Risk, blame, responsibility and liability

As Ewald (1991) observes, how we construct and understand risks determines our response to them. For example, a materially founded apprehension of risk (such as the fact that past heavy exposure to asbestos may cause mesothelioma some time in the future, or findings of abnormally high lead levels in a pre-school child) is apt to produce anxiety, especially if there is no technical capacity to control the risk (Beck 1992, Douglas 1992, Lee 2000). By contrast, if risks are

understood as probabilities they are seemingly amenable to control in a number of forms (although that control may not be so much real as contrived). It may be control exercised at a distance through insurance, or it might be control exercised at the level of the individual, as in a clinical setting where the clinician situates the individual and her lifestyle or patterns of consumption against a background of known risk (O'Malley 2004).

The knowability of risk, underpinned by the scientific capacity to identify hazardous activities and substances, imposes responsibility not only on hazard creators but also on their potential victims. It produces a moral imperative to actively take up risk-averse behaviour, such as giving up smoking or employing work-safe practices (O'Malley 2004). Lupton argues that, in a sociological sense, risk in modern society has come to replace the old-fashioned (and, in modern secular society, now largely discredited) notion of sin as a term that 'runs across the gamut of social life to moralise and politicise dangers' (1993: 428).

For the tort plaintiff who has been the victim of exposure to a lethal toxic substance in circumstances where others had responsibility for their well-being, the opportunity for a 'day in court' is an opportunity for the moral rightness of their claim to be recognised. While it is not being argued that a court deciding a toxic tort case necessarily frames its decision solely in terms of moral culpability of the parties, blame and responsibility are nevertheless central to the discourse within which the case is argued and considered. Cane observes that:

> Tort law is concerned with people's responsibility for their acts and omissions. And because it deals with interactions between people, it contains principles relevant not only to the conduct of injurers but also to the conduct of victims (1997: 13).

The allocation of blame and the finding of liability are influenced by subjective assessments of the moral character and reputation of the litigants. The fact that expert calculations of risk tend to produce an amoralisation of the dispute does not necessarily preclude *non-expert* understandings of risk becoming the basis for ascribing blame.

Asbestos and tobacco litigation: The credibility of the plaintiff

Liability in toxic tort cannot be assessed outside the context of the broader cultural values about risk-taking. On this point the relative success of tobacco and asbestos litigation is instructive. Public concern about and knowledge of the risks associated with both asbestos and tobacco is sophisticated and widespread. The hazards of exposure to tobacco and asbestos are readily identifiable and scientific evidence of the injuries that can be caused by exposure to each toxin is well documented (Kune & Kune 2003). Because the practical scientific limitations of establishing an association between exposure to either of these toxins and harm is not as significant as it has proved to be in other types of toxic tort claims, it is not surprising that tobacco and asbestos litigation have become two notable categories of toxic tort (Rabin 2001: 352–3).

In contrast to plaintiffs whose injuries are the result of asbestos exposure, plaintiffs claiming compensation for smoking-related injuries have generally not had the same degree of success. The difference between the relative success of the asbestos and tobacco toxic tort litigation does not lay in the scientific evidence, as there is a wealth of evidence available regarding the toxic nature of exposure to both asbestos and tobacco. The factor which marks the difference between the two types of tort is the circumstances in which each type of toxic exposure typically occurs. It is not only the court's view of what is required by the law to establish causation which finds a plaintiff with asbestos-related lung cancer in a better position than a plaintiff with smoking-induced lung cancer. It is also the clinical focus of the litigation on 'particulars', on the individual's attitude to risk and the care and responsibility the individual has taken for him- or herself.

In his account of the fate of tobacco litigation in the United States, Rabin (1993) has observed that there are two different types of plaintiffs in toxic tort litigation: those who are characterised as victims and those who are seen as irresponsible. Deep-pocket tobacco company defendants have relied with some success on arguments that smoker-plaintiffs have not acted responsibly in failing to heed health warnings

printed on tobacco product packaging and advertising (Capriotti 2002: 7, Kearns 1999). In an observation highlighting the significance of the court's clinical focus on the plaintiff's conduct in the face of toxic exposure, Rabin argues that the plaintiff faces considerable difficulty in managing the expert evidence relating to the health effects or addictive nature of smoking, despite the fact that in a strictly evidential sense it supports the plaintiff's case.

> [T]he addiction expert's translation of scientific data on reinforcement, withdrawal, reactive effects, and other esoteric phenomena into terms that make sense to the jury remains a rather abstract undertaking. The expert is in no position to say anything about the individual smoker … By contrast, the defense on the addiction issue is grounded in particulars: the claimant could have quit, knew the risks, evinced a life-long taste for dangerous activities, and so forth (1993: 124).

To succeed, the tobacco plaintiff has to be able to argue a case that moves beyond the blame that everyday conceptions of risk attach to their failure to be risk-averse. By contrast, the plaintiff who has been exposed to asbestos was usually not in a position to voluntarily limit his or her exposure. The moral claim of the asbestos-diseased plaintiff is illuminated by the fact that the world's major asbestos producers knew of the dangers of asbestos exposure and conspired to keep it a secret (Rabin 2001: 353). Since the revelation of the 'Cigarette Papers' plaintiffs in tobacco litigation are now able to take up a similar strategy, particularly those who commenced smoking in their childhood before the dangers of cigarette-smoking were widely known in the public domain, or those who switched to low-tar cigarettes in the mistaken belief that they presented less risk to health (Rabin 2001).

This focus on the credibility of the plaintiff operates in other toxic tort litigation as well. In their study of several tort actions relating to the toxic contamination of land and urban housing in Louisiana, Melissa Toffolon-Weis and Timmons Roberts observe that many of the plaintiffs in those cases were poor and had limited access to quality health care. As a result they had only a limited appreciation of the

factors that posed a risk to health. The credibility of their claims was readily undermined because the plaintiffs

> may have been exposed to dangerous work and lifestyle factors that are often presented by the defense as alternative causative factors. Government and corporate officials do not take the symptoms of these people seriously. They attribute the poor health of these communities to unhealthy lifestyles (eg. eating fatty foods, smoking, drinking alcohol and taking drugs) …. Further, middle class jurors' own prejudices may affect their judgments when viewing poorer individuals with different life experiences (Toffolon-Weis & Roberts 2004: 261).

Morrow's analysis of the nuisance cases in Ireland and England also shows that a defendant can prevent the success of a plaintiff's claim, even in the face of what seems to be strong scientific evidence of causation, by discrediting the plaintiff's lifestyle and conduct. Just as a worker with lung cancer following asbestos exposure has to counter claims that his past tobacco use may in part be responsible for his injuries, Morrow found that farmers who complained that their health, and that of their livestock, were effected by toxic emissions had to counter claims that their illness was attributable not to the defendant but rather to their own unhealthy lifestyle and poor farming practices (Morrow 2000: 149). In some cases the causal link between the toxic emissions and the damage suffered may well have been tenuous, but the point is that the plaintiff is unlikely to succeed unless she or he can demonstrate that they have been risk-aware and risk-averse.

The very fact that toxic tort actions are necessarily premised on what Cane (1997) labels the 'correlativity' of the parties may make them an uncertain prospect if a plaintiff is not able to convincingly argue their moral claim to compensation. Lee, developing Cane's analysis, contends that liability in tort is determined in the context of certain assumptions about socially appropriate conduct; tort law is a means of enforcing 'social rules' (2000: 78). The function of 'social rules' and the moral dynamic of an assessment of risk and liability is evident in the case of *Christopher Haar v Uneedus Scaffolding Pty Ltd* (hereinafter *Haar*), in which the responsibility of both the defendant

employer and the plaintiff employee were assessed in the context of the broader cultural values about risk taking. Mr Haar had been exposed to asbestos in the late 1970s in his employment as a rigger. He worked alongside other workers employed by a different contractor to remove asbestos from the building around which Harr was erecting scaffolds. In breach of a range of health and safety regulations, Haar's defendant employer neither provided any special clothing to protect Haar against asbestos nor require him to wear any, even though the asbestos-removal workers wore special masks and suits. What might seem a clear-cut case against the defendant was muddied by the defendant's counterclaim that Harr's smoking was implicated in the development of his cancer. The defendant claimed that because Harr was aware at the time of the hazards of smoking he was contributorily negligent. The jury reduced the damages award by twenty percent for contributory negligence but the presiding judge declined to accept the jury's finding. O'Bryan J held that even though at the time of Haar's exposure health warnings were printed on cigarette and tobacco packaging, and even though Haar had not denied that he had been aware that there was some scientific evidence that smoking could cause cancer, he had not acted negligently. The law of contributory negligence required the court to consider Haar's conduct in light of 'the circumstances and conditions in which he had to do his work' (*Podreresek v Australian Iron and Steel Pty Ltd*). Those conditions, it was held, included the fact that most manual workers smoked. Site agreements at the time even allowed workers designated 'smoko' breaks. O'Bryan J held that, despite the increased public awareness of the hazards of tobacco consumption, smoking was a routine, normal, accepted practice of workers in Haar's circumstances at the time, so this did not make him culpable for his injury.

Concluding comments

The case of the women who developed breast cancer while working at the ABC Brisbane news studio and offices highlights the difficulty of identifying the toxic hazards of post-industrial society, while the case of the people who were exposed to lead in Esperance is evidence of the

unpredictable nature of exposure to toxic hazards. Each of these incidents of toxic exposure has prompted the respective state governments to conduct inquiries into the circumstances surrounding the exposure and has been the subject of extended media report. These people have encountered the type of lurking toxic hazard that commentators such as Beck (1992) and Douglas (1992) argue we have come to dread. Toxic tort litigation is a response to this sort of exposure. It provides a means for claiming compensation not provided by other investigative initiatives such as a government inquiry. But perhaps as significantly, toxic tort litigation reveals and reports the existence of environmental hazards in a manner which focuses on the impact of the toxin on them personally, and publicly delineates the harm they have suffered. Unlike a public inquiry, which inevitably produces a generalised account of the toxic exposure, toxic tort litigation allows the articulation of the real, rather than simply theorised or projected, experience and consequence of toxic exposure (Kroll-Smith & Westervelt 2004).

But suing in toxic tort is not straightforward. The ubiquitous and unpredictable nature of exposure to toxic hazards means that establishing foreseeability of the risk and causation are more, rather than less, typical of any potential toxic tort claim. The focus of discussion here has not been so much on assessing whether these particular cases would succeed if a toxic tort claim was made, but rather on considering the interface of the different types of evidence a court hearing a toxic tort case is likely to consider. Four interrelated concepts of 'risk' have been employed as a device for comparing the various ways in which a plaintiff's claim is conceptualised and assessed in toxic tort litigation. These conjunctions of risk include insurantial, scientific, common sense and clinical notions producing a heterogeneous and multi-dimensional understanding of how a court assesses a toxic tort claim. While the central focus of the litigation is the plaintiff's situated and particular experience of the toxic exposure, their claim is also assessed in light of more theoretical and generalised constructions of toxic risk, as well as commonly held attitudes to managing the risk of toxic exposure that assume the plaintiff, and not just the defendant, is an informed and 'rational' individual, both risk-aware and risk-averse.

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