Beyond Fear: Articulating a Modern Doctrine in Anticipatory Nuisance for Enjoining Improbable Threats of Catastrophic Harm

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BEYOND FEAR: ARTICULATING A MODERN DOCTRINE IN ANTICIPATORY NUISANCE FOR ENJOINING IMPROBABLE THREATS OF CATASTROPHIC HARM

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We must not make a scarecrow of the law,
Setting it up to fear the birds of prey,
And let it keep one shape, till custom make it
Their perch, and not their terror.
Measure for Measure, Act II, Scene 1

I. INTRODUCTION

Genetic technicians at Man-Bug, Inc. have spent the last seven years developing a new synthetic bacterium, Ice-Ten, that raises the freezing point of water by ten degrees. Man-Bug executives believe Ice-Ten has tremendous potential in the ski industry, which is constantly looking for better ways to keep snow on the ground longer, and are eager to rush their microbe to market. The Man-Bug technicians have conducted extensive laboratory tests and feel certain Ice-Ten poses no threat to the environment. Having obtained all required governmental permits, Man-Bug is finally ready to conduct field tests as to Ice-Ten’s capabilities on open ground.

Word of the tests has spread, however, and residents and farmers in the area of the test site are concerned about the effects the bacteria will have on their property. The farmers, in particular, are concerned about Ice-Ten getting loose and causing frost damage to their crops.

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Man-Bug knows there is some chance Ice-Ten may travel a short distance from the point of exposure and linger a bit longer than expected, but it sees this risk as small and has insured against the limited amount of damage liability it expects to incur in a worst-case scenario. Some experts in the field have postulated, however, that bacteria such as Ice-Ten, once in the open, might not only linger indefinitely, but might also spread quite far from the point of exposure. A few experts have even predicted a very slight chance of such bacteria going absolutely wild and turning the planet into a frozen ice-ball in a matter of years.\[^1\]

Confronted with the prospect of having their property transformed into an arctic wasteland, the local residents and farmers, after failing in their bid to challenge Man-Bug’s permits, have decided to file a nuisance action seeking an injunction to keep the tests from going forward.\[^2\] The question presented by this scenario and others like it is whether a court in equity is doctrinally equipped to recognize and react to a slight, but very real, threat of absolutely catastrophic harm.

Generally, tort law asks that one suffer injury prior to asserting an action in either law or equity for damages or injunctive relief.\[^3\] Even when confronted with activity that is known to be abnormally dangerous, courts often will not take steps to prevent injury from taking place, but, through the doctrine of strict liability, will ensure a plaintiff’s recovery for harm suffered by obviating the need to prove fault.\[^4\] It is also true, however, that in nuisance law courts

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\[^1\] See K. Vonnegut, Cat’s Cradle (1963). Vonnegut hypothesized an agent, Ice Nine, developed by the military as a weapon, which posed just such a threat. The significance of the threat is explored at various points in Vonnegut’s fiction and essays.

\[^2\] See Californians for Responsible Toxics Management v. Berryhill, No. 342097 (Cal. Super. Ct. Apr. 23, 1987). This unreported case, in a scenario similar to the one posed here, involved a genetic engineering firm seeking to test a bacterium, Frostban, which lowered the freezing point of water. Such a bacteria might help farmers reduce frost damage to their crops. Plaintiffs sought unsuccessfully to block open-air testing of Frostban by challenging the permitting process and never raised any common-law nuisance claims.

\[^3\] Prosser & Keeton, The Law of Torts § 1 (5th ed. 1984). “The law of torts, then, is concerned with the allocation of losses arising out of human activities . . . . The purpose of the law of torts is to adjust these losses, and to afford compensation for injuries sustained by one person as the result of the conduct of another.” Id. at 6 (citing Wright, Introduction to the Law of Torts, 8 CAMB. L.J. 238 (1944)).

\[^4\] See Rylands v. Fletcher, L.R. 3 H.L. 330 (1868) (first major case to articulate the doctrine of strict liability). Generally, the modern rationale behind the doctrine is that a defendant will be allowed to engage in abnormally dangerous activity when the benefits of the activity outweigh the risk it creates. The activity, however, “must pay its way,” and the defendant will be held strictly liable for any harm that results. Prosser & Keeton, supra note 3, § 75, at 536–37.
have long exercised a power to enjoin activity harmful to plaintiffs when recovery of damages at law will not provide an adequate remedy. In some instances, a court may go so far as to enjoin as an anticipatory or prospective nuisance activity that has not yet caused harm, but threatens to do so. In these cases, however, courts have focused only on the probability of harm, and have required a high probability (although not an absolute certainty) of injury before enjoining the threatening activity.

Increasingly, courts can expect to find themselves confronted with risk assessment problems such as the one posed in the Ice-Ten scenario above. Modern technologies such as genetic engineering will create more threats of potentially irreparable or catastrophic harm to individuals and the environment that cannot be effectively compensated after the fact. Because the threats of catastrophic harm created by modern technology can be small or altogether uncertain, actions in anticipatory nuisance will fail for an inability to show a high probability of injury. This Comment takes the position that anticipatory nuisance is a doctrine particularly well-suited to meeting the challenges posed to tort law by modern technology, but argues that the doctrine must be substantially modified if it is to realize this potential.

Section II of this Comment surveys briefly the relationship between tort law and technology and the unique risks created by modern technology. Section III describes the doctrine of anticipatory nuisance as traditionally applied by courts. Section IV identifies case precedent in which courts have sought to evade the limitations of traditional anticipatory nuisance doctrine. Finally, section V argues that a complete modernization of traditional anticipatory nuisance doctrine is appropriate within the context of the historical relationship between tort and technology and can be accomplished without unreasonably hindering technological progress.

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5 Prosser & Keeton, supra note 3, § 89, at 640.
7 Prosser & Keeton, supra note 3, § 89, at 640–41 (citing, e.g., Hamilton Corp. v. Julian, 130 Md. 597, 101 A. 558 (1917); Nelson v. Swedish Evangelical Cemetery Ass'n, 111 Minn. 149, 127 N.W. 626 (1910)).
9 E.g., Purcell v. Davis, 100 Mont. 480, 494, 50 P.2d 255, 258 (1935) (court refused to enjoin proposed oil refinery in residential neighborhood due to uncertainty of threatened noxious fumes, explosions, and fire).
II. TORT AND TECHNOLOGY

A. The Historical Relationship Between Tort and Technology

It almost might be said that tort law did not exist prior to the emergence of modern technology. Though the first seeds of tort liability were sown in England as early as the twelfth century,\(^{10}\) the field of tort remained a neglected and undeveloped backwater until well into the nineteenth century.\(^{11}\) Prior to this time, tort was hardly mentioned, if at all, in legal treatises. By the end of the nineteenth century, it had evolved abruptly into a major field of law deserving the attention of the most respected legal scholars.\(^{12}\) The reason for the sudden development of tort law is well understood. As humanity's machines, particularly the railroad, vastly increased our capacity for injuring others, that portion of the law that governs relationships between people who injure one another was forced to keep pace.\(^{13}\)

Most significant modern tort doctrines originated in or were seminally influenced by technological advance. Strict liability,\(^{14}\) products liability,\(^{15}\) market-share liability,\(^{16}\) proximate cause,\(^{17}\) contributory and comparative negligence,\(^{18}\) and even the elemental concept of

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\(^{10}\) W. LANDES & R. POSNER, THE ECONOMIC STRUCTURE OF TORT LAW 2 (1987). The first causes of action were in intentional tort, wherein damages could be recovered through the writ of trespass *vi et armis* (by force and arms) in battery cases. For a brief discussion of the development of trespass writs, see J.H. BAKER, AN INTRODUCTION TO ENGLISH LEGAL HISTORY 56-59 (1979).

\(^{11}\) L. FRIEDMAN, A HISTORY OF AMERICAN LAW 409 (1973); LANDES & POSNER, supra note 10, at 2-3; SPECIAL COMMITTEE ON THE TORT LIABILITY SYSTEM, AMERICAN BAR ASSOCIATION, TOWARDS A JURISPRUDENCE OF INJURY: THE CONTINUING CREATION OF A SYSTEM OF SUBSTANTIVE JUSTICE IN AMERICAN TORT LAW 1-2 (Report to the American Bar Association 1984) [hereinafter ABA Report].

\(^{12}\) L. FRIEDMAN, supra note 11, at 409. The first treatise on tort law was not published until 1859. *Id.* See F. HILLIARD, THE LAW OF TORTS, OR PRIVATE WRONGS (1859). Little more than 20 years later, a great deal of literature had grown up around the subject. See, e.g., O. HOLMES, THE COMMON LAW chs. 3-4 (1881).

\(^{13}\) L. FRIEDMAN, supra note 11, at 409. A good portion of the new tort suits being brought in the mid- to late nineteenth century were directly attributable to the dramatic growth of the railroad. "In 1840, there were less than 3,000 miles of track in the United States; by 1850, 9,000; by 1860, 30,000; by 1870, 52,000. Personal-injury cases grew as fast as trackage." *Id.* at 412.


negligence itself\(^{19}\) are all examples of doctrines in tort law shaped,
if not created, by the development of technological society.\(^{20}\)
Throughout the evolution of these doctrines, the creative tension
dominating judicial thinking in tort law vacillated between a positiv­
ist economic desire to protect and encourage emerging technologies
and a humanistic urge to insure that plaintiffs were compensated for
their injuries.\(^{21}\)

This tension is particularly well illustrated in railroad cases. In
the mid-nineteenth century, railroads were still young and promised
to transform the national economy.\(^{22}\) Eager to protect railroad com­
panies from crippling jury verdicts, judges therefore refashioned or
invented such concepts as assumption of risk, contributory negli­
gence, and the fellow-servant rule to keep the scope of liability under
strict control.\(^{23}\) By the beginning of the twentieth century, however,
railroads were well established and the number of persons injured
by them was rising dramatically.\(^{24}\) Courts, using such tools as the
last clear chance doctrine, \textit{res ipsa loquitur}, the vice-principal rule,
and strict liability, responded by abrogating restrictions on liability
formed just decades earlier.\(^{25}\)

This vacillation between restricting and liberalizing liability is a
pattern repeated throughout tort law. Courts are willing, indeed see

\(^{19}\) E.g., Chicago, B. & Q. R.R. Co. v. Krayenbuhl, 65 Neb. 889, 91 N.W. 880 (1902); Davison
v. Snohomish County, 149 Wash. 109, 270 P. 422 (1928).

\(^{20}\) See generally L. FRIEDMAN, supra note 11, at 409; ABA Report, supra note 11, at 1-2.

\(^{21}\) See L. FRIEDMAN, supra note 11, at 409-27.

\(^{22}\) Id. at 410. "In this first generation of tort law, the railroad was the prince of machines,
both as symbol and as fact. It was the key to economic development. It cleared an iron path
through the wilderness. It bound cities together, and tied the farms to the city and seaports."

\(^{23}\) Id. at 409-27. For an especially compelling example of a court seeking to protect a railroad
from potentially debilitating liability, see Ryan v. New York Central Railroad, 35 N.Y. 210
(1866). The defendant railroad negligently allowed one of its engines to set fire to a woodshed
on its property. From there, the fire spread to a neighboring house and thence to several
others. The court found the damage to the houses was too remote and denied recovery. Id.

\(^{24}\) Id. at 411 (emphasis in original).

\(^{25}\) L. FRIEDMAN, supra note 11, at 422. "The railway injury rate doubled between 1889 and
1906. At the turn of the century, industrial accidents were claiming about 35,000 lives a year,
and inflicting close to 2,000,000 injuries." Id.
it as part of their function, to encourage technological and economic progress, but they are also sensitive to the costs incurred in terms of human suffering.\textsuperscript{26}

\textbf{B. The Nature of Twentieth Century Technological Risk}

The machines invented in the nineteenth century and perfected in the early twentieth century are for the most part devices that cause harm in direct, visibly foreseeable, and essentially limited ways.\textsuperscript{27} It is, for instance, entirely foreseeable to an automobile manufacturer that its product, if defective, may inflict certain specific sorts of injuries upon a finite and identifiable group of people.\textsuperscript{28} Because these injuries are foreseeable, the manufacturer can take reasonable steps to prevent their occurrence. Because they will be limited in nature, the manufacturer will also be able to compensate those injuries that do occur. Thus, risks created by simple industrial technology are appropriately treated within the traditional framework of a tort system that seeks primarily to compensate victims for harm already suffered.

It is not, however, foreseeable to the Man-Bug executives in the scenario outlined above just how much harm they can reasonably expect their product to cause if it malfunctions. They have established in their own minds what they consider to be an outside limit to their potential liability, but, as proponents of Ice-Ten, their perspective is subjective. They therefore may be willing to ignore the perhaps very small chance that their product will cause catastrophic harm. If Ice-Ten does cause catastrophic harm, Man-Bug probably will not be able to compensate the victims. Such dilemmas promise to become increasingly characteristic of technologies developed in the mid- to late twentieth century.\textsuperscript{29}

As modern science cuts ever closer to a comprehensive understanding of matter, energy, and life itself, it creates technologies

\textsuperscript{26} See id. at 409–27.

\textsuperscript{27} Id. “[T]rains were also wild beasts; they roared through the countryside, killing livestock, setting fire to crops, smashing passengers and freight.” Id. at 410.

\textsuperscript{28} E.g., MacPherson v. Buick Motor Co., 217 N.Y. 382, 111 N.E. 1050 (1916) (court held that, although an automobile is not inherently dangerous, it was foreseeable that it would pose an imminent threat if negligently constructed). Just as railroads dominates personal injury law in the latter half of the nineteenth century, automobiles increasingly dominated it in the first half of the twentieth century. “In some states in the 1950’s, wrecks on the highway accounted for up to forty per cent of the cases decided by appellate courts.” L. Friedman, supra note 11, at 588.

\textsuperscript{29} Furrow, supra note 8, at 1408; Bohrer, Fear and Trembling in the Twentieth Century: Technological Risk, Uncertainty and Emotional Distress, 1984 Wis. L. Rev. 83, 86–89 (1984).
that promise tremendous benefits to society. At the same time, these
technologies have transformed, and will continue to transform, the
scale and nature of the harm with which humanity can threaten both
itself and the environment.\textsuperscript{30}

Genetic engineering, chemical engineering (including toxic chem-
ical, pharmaceutical, and pesticide production), and nuclear energy
are examples of technologies that pose risks of personal and envi-
ronmental harm that may not be effectively addressed within the
framework of the traditional compensatory tort system.\textsuperscript{31} Such tech-
nologies may threaten broad segments of the population with poten-
tially catastrophic harm and may cause injuries that are difficult to
anticipate.\textsuperscript{32} The risks posed by modern technologies thus may be
harder to quantify and identify than the more straightforward risks
posed by the comparatively simple mechanical innovations of the
nineteenth century.\textsuperscript{33}

Commentators and scholars have debated at some length on
whether courts should play an active role in the regulation of modern
technological risk.\textsuperscript{34} Those arguing against an increased judicial role
have expressed fears that courts lack the technical expertise to
evaluate complex risks and are likely to inhibit technological prog-
ress.\textsuperscript{35} These writers believe regulation of modern technological risks
should be left largely to administrative agencies.\textsuperscript{36}

\textsuperscript{30} Bohrer, \textit{supra} note 29, at 86--89.
\textsuperscript{31} \textit{Id.} at 86.
\textsuperscript{32} \textit{Id.} at 86--89.
\textsuperscript{33} \textit{Id.} Furthermore, as technology has become more complex, the analytical nature of
technical risk management has changed. \textit{See generally} Whipple, \textit{Fundamentals of Risk As-
no longer rely on the traditional trial-and-error method of identifying weaknesses in design,
but increasingly work with technologies that “demand a predictive method that does not
require error for learning.” \textit{Id.} at 10191.
\textsuperscript{34} Compare, e.g., Bohrer, \textit{supra} note 29 with Huber, \textit{Safety and Second Best: The Hazards
of Public Risk Management in the Courts}, 85 COLUM. L. REV. 277 (1985). These two writers
provide good examples of the well-reasoned extremes that may be reached in arguing this
issue. Bohrer goes so far as to argue that the threat of harm from twentieth century technology
is distinct enough to be recognized as compensable emotional distress at common law. Bohrer,
\textit{supra} note 29, at 122. Huber, in contrast, urges that common-law judges may so mishandle
complex risk assessment problems as to inadvertently increase the total amount of harm to
which people are exposed and argues that administrative agencies are better equipped to
handle the task. His article provides a good critical survey of the literature in favor of an
increased judicial role. Huber, \textit{supra}, at 329.
\textsuperscript{35} \textit{E.g.}, Huber, \textit{supra} note 34, at 329; Stewart, \textit{The Role of Courts in Risk Management},
Judges Should Know About Risk}, 2 NATURAL RESOURCES & ENV'T 35 (Fall 1986).
\textsuperscript{36} \textit{E.g.}, Huber, \textit{supra} note 34, at 329; Stewart, \textit{supra} note 35, at 10209.
Meanwhile, those in favor of an increased judicial role question whether administrative agencies are sensitive enough to the public interest in regulating such risks. These writers also raise doubts as to whether scientists and engineers involved in the development of new technologies are capable of objectively assessing the risks they create, and whether legislatures are capable of responding quickly enough to new sources of risk created by sudden accelerations in scientific knowledge.

This Comment assumes, arguendo, that an active judicial role in the regulation of modern technological risk is appropriate and that common-law tort remedies can coexist with administrative remedies. Courts, however, will be unable to play an effective role in regulating threats of widespread and potentially catastrophic or irreversible harm if they are not willing to directly address such threats before injury takes place.

III. ANTICIPATORY NUISANCE: THE TRADITIONAL APPROACH TO ENJOINING FUTURE HARM

Although tort law is primarily concerned with allocating the cost of past injury in an efficient and fair manner, it also seeks to prevent and deter injury from occurring. The standard of negligence, for example, defines an area of discretion within which the reasonable actor is expected to take precautions against foreseeable injury, and it is only when persons fail to take such precautions that compensation is mandated. In fashioning such doctrines as strict liability and products liability, courts have stated that they are concerned not only with seeing injury compensated, but also with providing strong incentives for the prevention of injury.
Anticipatory nuisance is one tort doctrine that focuses directly on the issue of whether or not injury should be prevented before it occurs. When deciding an action in anticipatory nuisance, a court does not ask whether the plaintiff should receive compensation for harm already suffered. Rather, the court asks whether the defendant should be enjoined from injuring the plaintiff in the first place. Because it allows courts to act directly to prevent injury before it occurs, the doctrine of anticipatory nuisance offers a potentially effective vehicle for addressing modern threats of catastrophic or irreversible harm.

A. Nuisance Generally

Nuisance has remained one of the more vaguely defined areas of law, due in large part to the broad range of plaintiffs’ interests and defendants’ conduct that it encompasses. Perhaps as a result of its ambiguous nature, nuisance law has been under-utilized by courts and litigants as a common-law tool for addressing modern risk assessment problems.

A private nuisance is defined generally as any activity on the part of a defendant that creates a substantial and unreasonable interference with a plaintiff’s use and enjoyment of his or her own land.
A defendant's activities may be entirely reasonable, but might still result in a substantial and unreasonable interference with a plaintiff's rights. Generally, the sensibilities of the ordinary or reasonable person living in the locality in question will provide the standard for defining substantial and unreasonable interference. Thus, private nuisance not only protects against physical damage to the property itself, but also protects against those annoyances and discomforts that are unreasonable within the local community.

Public nuisance, on the other hand, is a less precisely defined term referring to "unreasonable interferences with [rights] common to the general public" which are not necessarily linked to the use and enjoyment of property. Though these interferences are now usually set forth in statutes and are often criminal in nature, a defendant need not be criminally culpable to be liable in public nuisance. To sue for damages in public nuisance, a private plaintiff must show that he or she has suffered a unique type of injury, as opposed to a unique degree of injury, not shared by the rest of the public.

Historically, nuisance law was used for striking land-use bargains prior to the emergence of modern zoning and planning laws. The advent of industrial technology in the nineteenth century gave rise to cases in which nuisance served as a tool for adjusting the rights of industrial and agrarian or residential landowners as their respective uses of property increasingly conflicted with one another. As in the early evolution of nineteenth century personal injury law,
judges were solicitous of economic progress and generally were care­
full not to apply nuisance law in such a manner as to retard industrial
and technological development.60

Remedies in public and private nuisance actions include both dam­
ages and injunctive relief.61 Central to a determination of whether a
defendant’s activities can be enjoined as a nuisance, public or private,
is whether or not such activity or conduct is unreasonable.62 This
determination is made through what is referred to as a “balancing
of the equities,” wherein the relative hardships to the plaintiff and
the defendant are weighed against one another.63 This balancing
includes a determination as to whether the social utility of the de­
fendant’s conduct is outweighed by the harm it causes the plaintiff.64

Thus, a defendant’s conduct is deemed unreasonable, and there­
fore enjoable, only if the gravity of harm to the plaintiff, or to the
public in general in the case of public nuisance, outweighs the useful
public benefits provided by the defendant’s enterprise.65 It is impor­
tant to note the distinction between the unreasonableness of a de­
fendant’s conduct and the unreasonableness of the interference with
the plaintiff’s rights. It is entirely possible that a defendant’s conduct
can create an unreasonable interference, and thus be declared a
nuisance, yet be of such public benefit that it should not be enjoined.66
In such cases, the defendant will be allowed to continue injuring the
plaintiff, but may have to provide compensation for the injury.67

As is generally the case in equity, courts entertaining requests for
injunctive relief in nuisance actions require a showing that an action
for damages at law will not provide adequate relief.68 Because equity
considers every parcel of land to be unique, this requirement can

60 Id. at 1441–42 nn.171–72. Judges tended to protect industrial property owners by creating
partial immunities based on statutory authorizations. Also, standards of care were applied
differently to factories and railroads than they were to individual property owners. Id.
61 PROSSER & KEETON, supra note 3, § 89, at 637.
62 See id. § 88A, at 630.
63 Id. at 631.
64 Id.
65 Id. at 630.
66 See id. at 631.
67 E.g., Boomer v. Atlantic Cement Co., 26 N.Y.2d 219, 257 N.E.2d 870, 309 N.Y.S.2d 604
(1970). In Boomer, the court found that the public benefit of the defendant’s cement plant
outweighed the harm caused by cement dust drifting onto the plaintiff’s property. Thus,
instead of closing down the cement plant, the defendant was required to pay permanent
damages equal to the diminution in the value of the plaintiff’s property. Id. at 875.
68 PROSSER & KEETON, supra note 3, § 89, at 640.
usually be met by demonstrating that the defendant has seriously impaired the usefulness of the plaintiff’s property.  

In sum, nuisance generally provides legal or equitable remedies against defendants who have injured either a private property right or a common public right. Although most cases involve existing nuisances where the plaintiff has already suffered injury, courts also have recognized that activity that only threatens injury may be enjoined as an anticipatory nuisance.

B. Anticipatory Nuisance

Citing the “despotism” inherent to preventing landowners from using their property as they please, courts traditionally are reluctant to enjoin threatening activity before it causes injury. In Holke v. Herman, for example, the plaintiffs brought an action in anticipatory nuisance to restrain their neighbor from digging a pond they feared would fill with sewage. In response, the Missouri Court of Appeals stated:

In most instances the disposition is to wait until the dread is justified by the event. Experience has demonstrated that a meddlesome, interfering policy represses the spontaneous energy and many-sided activity, which arises naturally from self-interest and differences of taste and inclination among men and constitute the true springs of progress. The spirit of our laws is chary about regulating conduct or restricting action.

The Holke court also recognized, however, that the plaintiffs may have a cognizable interest in seeking to avoid anticipated harm:

The reasons for preventing a prospective mischief are at least as cogent as those for abating a present one. In the latter instance the courts act more readily because they are sure of their ground; the evil is visible. But the call for protection against an apprehended injury, reasonably certain to befall, is as imperative as that for relief from one now felt. Nor is the complaint required to wait until some harm has been experienced . . . . [Such a] requirement would make the remedy largely useless . . . .

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69 Id. Courts may also find adequate grounds for injunctive relief when continuation of the defendant’s conduct might create a prescriptive easement over the plaintiff’s land. Id.
70 Id. § 86, at 618.
71 Comment, supra note 6, at 628–29.
73 Id.
74 Id. at 130–33.
75 Id. at 135.
76 Id. at 142.
Thus, when deciding anticipatory nuisance actions, courts weigh defendants' rights to use their property as they wish against plaintiffs' rights to protect themselves and their property from apparent threats of injury. Courts have failed, however, to arrive at a single, clearly articulated definition of how imminently a defendant's conduct must threaten injury to a plaintiff before it can be enjoined.

The strictest courts will only grant prospective injunctions against defendants whose conduct can be categorized as nuisance per se. A nuisance per se is generally defined as conduct that will create a nuisance "at all times and under any circumstances, regardless of location or surroundings." A few courts describe an activity as nuisance per se only if it is illegal, holding for example that a brothel is a nuisance per se, but an airport is not.

Many courts, however, do not end their analysis with the nuisance per se test, but ask in the alternative whether the defendant's conduct "necessarily results" in a nuisance. In Purcell v. Davis, for example, the Montana Supreme Court held that the proposed construction of an oil refinery in a residential neighborhood would not constitute a nuisance per se. Nevertheless, the court held that the defendant's activity could also be enjoined if it necessarily resulted in a nuisance. After considering evidence that the refinery would be operated so as not to annoy the plaintiffs, the court denied the injunction. In another case involving a proposed oil refinery, Commerce Oil Refining Corp. v. Miner, a federal appellate court simply

77 Id. at 141. "The doctrine so often stated, that courts of equity are reluctant to restrain a threatened nuisance involves the converse proposition, that they will do so when it is apparent or extremely probable a nuisance will be created." Id.

78 Comment, supra note 6, at 632–33. The majority of anticipatory nuisance actions are brought in state courts. Thus, most confusion as to how to apply the doctrine has been at the state level. Federal courts rarely see anticipatory nuisance cases and therefore have been able to develop the doctrine more consistently. Id.

79 Id. at 630–31.


81 City of Bowie v. Board of County Comm'rs, 260 Md. 116, 127–28, 271 A.2d 657, 663 (1970); Comment, supra note 6, at 638–39. But not all illegal conduct can necessarily be termed a nuisance per se. Padjen v. Shipley, 553 P.2d 938, 939 (Utah 1976) (holding that violation of a local ordinance requiring defendant to keep his dogs 40 feet from plaintiff's home was not nuisance per se).

82 E.g., Purcell v. Davis, 100 Mont. 480, 494, 50 P.2d 255, 258 (1935). See generally Comment, supra note 6, at 639–40.

83 100 Mont. 480, 50 P.2d 255.

84 Id. at 492, 50 P.2d at 257.

85 Id. at 494, 50 P.2d at 258.

86 Id. at 491, 50 P.2d at 257.

87 281 F.2d 465 (1st Cir. 1960).
merged the two standards and defined a nuisance per se as that which necessarily results in a nuisance. 88

Other courts, however, eschew the nuisance per se and necessarily-results tests altogether and discuss the standard for enjoining anticipatory nuisances in more probabilistic terms. Thus, the Holke v. Herman court specifically held that the plaintiffs were required to show with reasonable certainty that they would be injured by the defendant’s proposed pond before an injunction could issue. 89 Likewise, in O’Laughlin v. City of Fort Gibson, 90 the Oklahoma Supreme Court stated a rule requiring clear and convincing evidence of a reasonable probability of injury for an injunction to issue against a threatened nuisance. 91 Other courts have interpreted the rule in terms of certainty of harm, 92 the definiteness of injury, 93 and the immediacy of danger. 94

Alabama and Georgia, the two states that have codified anticipatory nuisance law, have also defined the test in probabilistic terms. 95

The Alabama statute states: “Where the consequences of a nuisance about to be erected or commenced will be irreparable in damages and such consequences are not merely possible but to a reasonable degree certain, a court may interfere to arrest a nuisance before it is completed.” 96 The Georgia statute is almost identical, requiring irreparable injury that “is not merely possible but to a reasonable degree certain.” 97

These statutes and the case law described above may not evince a single clearcut standard for the enjoining of anticipatory nuisances, but they generally do require plaintiffs to show a high probability of injury before receiving relief. 98 Furthermore, in deciding anticipa-

88 Id. at 474 (applying Rhode Island law).
89 Holke v. Herman, 87 Mo. App. 125, 141 (1900). The Holke court did not rule on whether the pond was in fact enjoinable, but found there was enough evidence to argue the claim and ruled that the plaintiffs could amend their complaint. Id. at 142.
91 Id. at 509 (court found no reasonable probability that plaintiff would be injured by defendant’s proposed sewage treatment facility).
95 See ALA. CODE § 6-5-125 (1975); GA. CODE ANN. § 41-2-4 (Harrison 1980).
96 ALA. CODE § 6-5-125.
97 GA. CODE ANN. § 41-2-4. For a more detailed analysis of how courts have applied the Georgia and Alabama statutes, see Comment, supra note 6, at 645–48.
98 PROSSER & KEETON, supra note 3, § 89, at 640–41. This treatise summarizes the general rule most succinctly: “The defendant may be restrained from entering upon an activity where
tory nuisance actions, courts focus exclusively on the probability of injury to a plaintiff and do not consider the magnitude of a threatened injury.\textsuperscript{99}

Consequently, unless they can show they almost certainly will be injured by a defendant's conduct, it usually will be difficult for plaintiffs to prevail in an anticipatory nuisance action.\textsuperscript{100} Also, presumably because few plaintiffs meet the initial burden of showing a high probability of injury, courts rarely apply the balancing of the equities test generally required in injunctive nuisance actions.\textsuperscript{101} Plaintiffs, therefore, are denied the opportunity to have their interest in not being injured weighed against the social utility of the defendant's conduct.\textsuperscript{102} As a result, a plaintiff confronting a low-probability risk of catastrophic harm created by conduct of little social utility will have no remedy prior to injury.

IV. ARTICULATING A MODERN STANDARD FOR THE ENJOINING OF FUTURE HARM: PROBABILITY OF HARM VERSUS MAGNITUDE OF HARM

The vagueness of anticipatory nuisance law, resulting in an unpredictability of application, may be one reason why the doctrine is underutilized by plaintiffs.\textsuperscript{103} It is not unusual, for instance, for courts to decide anticipatory nuisance cases without identifying any applicable rule or case precedent.\textsuperscript{104} Also, the standards espoused by courts, though often unclear, generally require plaintiffs to shoulder the enormous burden of proving that a defendant's conduct will very probably, or almost certainly, injure them.\textsuperscript{105} Thus, anticipatory nuisance doctrine as applied by courts usually favors defendants who
create risk and disfavors plaintiffs who must bear it. As a result, productive and technologically intensive uses of land will often be preferred over passive, more environmentally neutral uses.\(^{106}\)

Another reason why anticipatory nuisance doctrine is generally undeveloped and little used is that there have been, until recently, relatively few fact situations that genuinely warrant such a preemptive remedy. Early industrial technology often creates effects that may annoy or injure people, but it is less likely to cause truly irreparable damage. Many courts denying relief in anticipatory nuisance actions have noted that, even if the threatened injuries do occur, the plaintiffs will still be able to seek an effective remedy after suffering harm.\(^{107}\)

As technology continues to evolve, however, and more threats of potentially catastrophic harm manifest themselves, plaintiffs are more likely to find themselves confronted with threats of injury that cannot be addressed adequately after the fact.\(^{108}\) In the Man-Bug scenario described in section I, for example, if Ice-Ten does in fact turn the plaintiffs' farms and homes into arctic tundra, a post-injury injunction will be useless and an award of damages probably will provide an inadequate remedy.\(^{109}\) If indeed Ice-Ten is capable of turning the entire planet into a frozen ice-ball, the notion of a post-injury remedy becomes altogether absurd.\(^{110}\)

In situations such as these, where there is a small probability of injury that is potentially unlimited or irreversible, the traditional anticipatory nuisance analysis that favors defendants' conduct becomes entirely ineffective. Because the traditional test requires a high probability of injury and ignores the magnitude of the threatened harm, such low-probability risks of enormous injury cannot be addressed rationally.\(^{111}\) In a few cases, courts have confronted the inherent irrationality of weighing plaintiffs' and defendants' interests

\(^{106}\) See generally, e.g., Hays v. Hartfield L-P Gas, 159 Ind. App. 297, 306 N.E.2d 373 (1974) (no injunction against 30,000 gallon propane tank within 300 feet of plaintiff's home); Turner, 39 Wash. 2d 332, 235 P.2d 300 (no injunction against rock-crushing plant in residential area); Purcell v. Davis, 100 Mont. 480, 50 P.2d 255 (1935) (no injunction against oil refinery 430 feet from plaintiff's home).

\(^{107}\) E.g., Wood v. Town of Wilton, 156 Conn. 304, 312, 240 A.2d 904, 908 (1968) (plaintiffs may receive injunction if proposed dump in residential area later creates a nuisance); Hays, 159 Ind. App. at 303, 306 N.E.2d at 377 (plaintiffs may enjoin proposed propane tank if it later creates a nuisance); Turner, 39 Wash. 2d. at 337-38, 235 P.2d at 303 (plaintiffs may enjoin proposed rock-crushing plant if it later creates a nuisance).

\(^{108}\) See supra notes 27-33 and accompanying text.

\(^{109}\) See id.

\(^{110}\) See id.

\(^{111}\) See Comment, supra note 6, at 641-42.
without considering the extent of the harm a plaintiff might suffer and have attempted to devise a more equitable means of assessing risks of future harm.\textsuperscript{112}

\textbf{A. Defining Risk in Terms of Present Fear}

One way in which courts have abrogated the limitations of anticipatory nuisance doctrine has been to ask whether the threat of future injury so frightens plaintiffs as to create a current injury.\textsuperscript{113} By defining risk in terms of present fear rather than future injury, courts can take a case out of anticipatory nuisance altogether and issue injunctions without plaintiffs showing a high probability of harm.\textsuperscript{114} The key requirement in such cases is that the fear of injury must interfere with the comfortable enjoyment of a plaintiff’s property.\textsuperscript{115}

An early case, \textit{Tyner v. People’s Gas Co.},\textsuperscript{116} provides a stark illustration of the logic of this approach. The plaintiff in \textit{Tyner} sought an injunction against a neighbor who had stored large quantities of nitroglycerin on his property and proposed to use it to “shoot” natural gas wells dug within 200 feet of the plaintiff’s residence.\textsuperscript{117} The Indiana Supreme Court did not consider at all whether this activity could be conducted safely, but noted simply “that an explosion of sixty to one hundred quarts [of nitroglycerin] at any given place on the surface of the earth could and probably would destroy life and property anywhere within five hundred yards of such explosion.”\textsuperscript{118} The court summarily granted an injunction, stating only that “[t]o live in constant apprehension of death from the explosion of nitroglycerin is certainly an interference with the comfortable enjoyment of life.”\textsuperscript{119}

Clearly, the \textit{Tyner} court focused on the magnitude of the potential injury, a tremendous explosion, rather than the probability of its taking place.\textsuperscript{120} Courts have used the same approach in situations where plaintiffs were confronted with more ambiguous, less graphic

\textsuperscript{113} E.g., Stotler v. Rochelle, 83 Kan. 86, 91, 109 P. 788, 790 (1910).
\textsuperscript{114} See id.
\textsuperscript{115} Id.
\textsuperscript{116} Id.
\textsuperscript{117} Id. at 408–09, 31 N.E. at 61.
\textsuperscript{118} Id. at 410, 31 N.E. at 61.
\textsuperscript{119} Id. at 412, 31 N.E. at 62.
\textsuperscript{120} See id.
threats of injury. In *Stotler v. Rochelle*, for example, the Kansas Supreme Court upheld an injunction in favor of a plaintiff who feared that the establishment of a cancer hospital seventy-eight feet from his home might lead to the infection of himself and his family. Acknowledging that science at that time could not substantiate the plaintiff's fears, the court refused to frame the question before it in terms of "a mere academic inquiry as to whether the disease is in fact highly or remotely contagious." Instead, the court asked "whether, in view of the general dread inspired by the disease, the reasonable enjoyment of [plaintiff's] property would not be materially interfered with."

In *Everett v. Paschall*, the Washington Supreme Court also cited an interference with the comfortable enjoyment of property as its basis for enjoining the continued operation of a tuberculosis sanitarium next to the plaintiff's home. Here, again, the plaintiff feared he and his family might contract the disease because of the proximity of the facility. The *Everett* court held that "comfortable enjoyment" must be defined according to the facts of each case and should take into account "notions of comfort and convenience entertained by persons generally of ordinary tastes and susceptibilities."

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121 83 Kan. 86, 109 P. 788 (1910).
122 Id. at 86–87, 109 P. at 788.
123 Id. at 91, 109 P. at 790.
124 Id.
125 61 Wash. 47, 111 P. 879 (1910).
126 Id. at 51–52, 111 P. at 881. Note that the sanitarium here was already operating, while the cancer hospital in *Stotler* had not yet been established. *Stotler*, 83 Kan. at 86, 109 P. at 788. One interesting feature of the comfortable enjoyment doctrine is that, once a court has acceded to the assessment of risk in terms of fear, the distinction between a threat currently in place and one not yet established becomes irrelevant. In other words, courts seem to assume that fear will result from the proposed activity and proceed to analyze the problem in terms of a present nuisance. Compare, e.g., Goodrich v. Starrett, 108 Wash. 437, 184 P. 220 (1919) (injunction against existing funeral home which plaintiffs feared would spread disease) *with* Bragg v. Ives, 149 Va. 482, 140 S.E. 656 (1927) (injunction against proposed funeral home on same grounds). This assumption may be particularly significant in actions against proposed activity that may be more or less likely to inflict harm if it is or is not conducted negligently. See, e.g., Densmore v. Evergreen Camp, No. 147, Woodmen of the World, 61 Wash. 230, 231–32, 112 P. 255, 255 (1910) (court declined to consider defendant's assertion that proposed funeral home would be operated safely).
127 *Everett*, 61 Wash. at 48, 111 P. at 879.
128 Id. at 51–52, 111 P. at 881. An ancillary question raised by the *Everett* decision and others following it is whether or not the protection of comfortable enjoyment follows from a common-law or statutory definition of nuisance. Id. at 50, 111 P. at 880; *see also* Ferry v. City of Seattle, 116 Wash. 661, 664, 203 P. 40, 41 (1922). The *Everett* court, and those citing it as controlling within the same jurisdiction, apparently did not believe their reliance on the concept
Some courts, when enjoining interferences with the comfortable enjoyment of property, have focused on the plaintiff's fear to such an extent as to virtually ignore evidence showing there is no probability of harm.\(^{129}\) In *City of Baltimore v. Fairfield Improvement Co. of Baltimore*,\(^{130}\) for example, the court prohibited the city from housing a single leper in a residential area, even while acknowledging there was little or no scientific probability of contagion.\(^{131}\) In reaching its conclusion, the court embarked on a long dissertation on the social history of leprosy, stating that "[t]he horror of its contagion is as deep-seated today as it was more than 2,000 years ago . . . [and] cannot, in this day, be shaken or dispelled by mere scientific asseveration."\(^{132}\)

The *Fairfield Improvement* decision is probably best viewed as an aberrational reaction to a widely shared irrational fear. The extremity of the court's position is analogous to language used by the *Everett* court when it confronted scientific evidence that tuberculosis was probably not highly contagious: "The question is, not whether the fear is founded in science, but whether it exists; not whether it is imaginary, but whether it is real, in that it affects the movements of comfortable enjoyment was supported at common law, but only by the Washington legislature's definition of nuisance as "unlawfully doing an act or omitting to perform a duty, which act or omission either annoys, injures or endangers the comfort, repose, health or safety of others." 61 Wash. at 50, 111 P. at 880 (citing REM. AND BAL. CODE, § 8309); see also Ferry, 116 Wash. at 664, 203 P. at 41 (citing same). It is clear, however, that interference with the enjoyment of property has generally been termed a nuisance at common law. See PROSSER & KEETON, supra note 3, § 87, at 619–20; RESTATEMENT, supra note 54, § 821D. Furthermore, the *Everett* court itself cites with approval the *Stotler* decision, handed down only five months earlier in another jurisdiction, which based its holding entirely on common-law precedent. *Everett*, 61 Wash. at 53, 111 P. at 881; see also *Stotler*, 83 Kan. at 88–91, 109 P. at 789–90.

Some courts, however, have shown themselves plainly hostile to using comfortable enjoyment doctrine to issue preemptive injunctions. See, *e.g.*, *O'Laughlin v. City of Fort Gibson*, 389 P.2d 506, 509 (Okla. 1964) (no injunction against proposed sewage treatment facility); *Nicholson v. Connecticut Halfway House, Inc.*, 153 Conn. 507, 510–11, 218 A.2d 383, 385–86 (1966) (no injunction against proposed boarding house for state prison parolees). Such courts note the precedent established by cases like *Stotler* and *Everett*, but refuse to follow it, citing instead the conventional anticipatory nuisance rule that there must be a "clear and convincing" probability of injury. *O'Laughlin*, 389 P.2d at 509. These cases tend to involve situations where the evidence weighs heavily against irreparable harm taking place, or where the threatened harm itself is of such a compensable nature that the court is willing to wait and see if it takes place. *E.g.*, *id.* Courts declining to follow such decisions as *Stotler*, however, have sometimes conceded that an injunction against a threat of future injury on the basis of the fear it creates may be appropriate in "extreme" situations. *Id.*

\(^{129}\) *City of Baltimore v. Fairfield Improvement Co. of Baltimore*, 87 Md. 352, 364–66, 39 A. 1081, 1084 (1898).

\(^{130}\) 87 Md. 352, 39 A. 1081.

\(^{131}\) *Id.* at 365, 39 A. at 1084.

\(^{132}\) *Id.*
and conduct of men." Even so, the Everett court did not go so far as to make such a sweeping pronouncement the sole basis of its injunction against the tuberculosis sanitarium. Instead, it noted there was evidence in the record of a small risk of the disease being spread by flies or through the negligence of nurses and patients. "Under the facts," the court concluded, "we cannot say that the dread which is the disquieting element upon which plaintiffs' complaint is made to rest is unreal, imaginary, or fanciful."

Thus, in cases where courts are willing to enjoin a threat of future harm on the basis of the fear it creates, they have generally required that the fear be reasonable. In determining whether a plaintiff's fear is reasonable, however, courts have tended to conduct a liberal inquiry, asking not whether the probability is high or low, but simply whether there is evidence of any probability at all. It therefore might be argued that a cause of action based on a plaintiff's fear of injury, even when such fear must be reasonable, goes too far in abrogating the standard anticipatory nuisance rule requiring a high probability of harm. To move from one extreme where the magnitude of harm may be wholly ignored in assessing risk, to another in which even the slightest probability of harm may be deemed sufficient to support an injunction, hardly seems a step toward true equity.

There is, however, precedent demonstrating how courts might narrowly tailor their use of the reasonable fear concept so as to specifically address the limitations of anticipatory nuisance doctrine without reaching too far in the opposite direction. In Ferry v. City of Seattle, the plaintiffs sought injunctive relief against the con-

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133 Everett v. Paschall, 61 Wash. 47, 51, 111 P. 879, 880 (1910).
134 See id. at 52–53, 111 P. at 881.
135 Id.
136 Id.
137 E.g., Stotler v. Rochelle, 83 Kan. 86, 91, 109 P. 788, 790 (1910) (question is whether plaintiffs have a reasonable ground upon which to base fears of contagion).
138 Compare Goodrich v. Starrett, 108 Wash. 437, 439–42, 184 P. 220, 221–22 (1919) (court enjoined funeral home where evidence indicated some chance of infection) with Dean v. Powell Undertaking Co., 55 Cal. App. 545, 548, 203 P. 1015, 1017 (1922) (no injunction against funeral home where plaintiff asserted only that he was depressed by its presence and introduced no evidence of a threat of contagion); see also Hays v. Hartfield L-P Gas, 159 Ind. App. 297, 301, 306 N.E.2d 373, 376 (1974) (injunction denied because plaintiff failed to introduce any evidence that propane gas tank adjacent to his home might actually explode). But see Tyner v. People's Gas Co., 131 Ind. 408, 31 N.E. 61 (1892) (injunction against storage and use of nitroglycerin with no discussion or evidence of probability of explosion).
139 See supra note 98 and accompanying text.
140 116 Wash. 648, 200 P. 336 (1921).
struction of a small reservoir on a hillside immediately above their homes, claiming they feared for their lives should the embankment supporting the reservoir break open.\footnote{141} Upon first hearing the case, the Supreme Court of Washington refused to issue an injunction, citing the standard rule in anticipatory nuisance requiring a high probability of injury and noting that the weight of the evidence showed the reservoir would be constructed safely.\footnote{142} "The test is, not what may possibly occur," wrote the court, "but what may be reasonably expected to happen."\footnote{143}

Upon rehearing the case little more than four months later,\footnote{144} however, the court dramatically reversed itself and issued an injunction on the basis of the plaintiffs' fears creating an interference with the reasonable enjoyment of their property.\footnote{145} Although it noted that the plaintiffs had introduced some evidence to show a small probability of the embankment breaking, the court did not find that this fact alone meant the plaintiffs' fears were reasonable.\footnote{146} Instead, the court stated: "the question of reasonableness . . . turns again, not only on the probable breaking of the reservoir, but the realization of the extent of the injury which would certainly ensue; that is to say the court will look to consequences in determining whether the fear existing is reasonable."\footnote{147}

Most striking of all is a separate concurrence by Chief Justice Parker, the key swing vote, in which he explained the reason for his change of heart:

\begin{quote}
If the breaking of the proposed reservoir would probably result in comparatively small damage and no loss of life, I would not demand proof of its safety with a high degree of certainty; but, in view of what now seems to me would be the appalling result of such breaking, I would want the necessity of its location there, and its safety, to be proven beyond all doubt, before withholding the injunctive relief prayed for.\footnote{148}
\end{quote}

Thus, the \textit{Ferry} decision is a compelling example of how a court in equity, using the concepts of reasonable fear and comfortable enjoyment, can fashion a rational and equitable standard of risk assess-
ment that is value-neutral and favors neither plaintiffs nor defend­ants. By weighing both the probability and magnitude of harm in relation to one another, the Ferry court addressed the most se­rious deficiencies of traditional anticipatory nuisance doctrine and arrived at a formula that effectively evaluates threats of future harm.

B. The Limitations of Assessing Risk with Fear

Depending as they do upon a unique emotional response to threat­ened danger, the thin line of cases espousing reasonable-fear analysis do not provide a broad enough base for reforming traditional judicial assessment of modern risk scenarios. The limitations of reasonable-fear analysis are clearly illustrated by the nature of the actions in which it has evolved.

For example, all the cases cited above involved situations in which plaintiffs complained of interferences with the enjoyment of their homes and sought to enjoin in private nuisance the intrusion of dangerous activities into areas that were strictly residential. It is therefore open to question whether courts would be as solicitous of plaintiffs' fears in situations where the enjoyment disturbed did not involve the home.

An additional limitation on using reasonable-fear analysis as the basis for preemptive injunctions is that there is no case precedent applying the doctrine in public nuisance. It may be possible to couch an argument in terms of a public fear so pervasive that it interferes with the public's enjoyment of its interests, but such an argument would find little support in the private nuisance actions brought by homeowners in the cases above.

149 See id.
150 See supra notes 98–100 and accompanying text.
151 See supra notes 116–48 and accompanying text.
152 See Blackburn v. Bishop, 299 S.W. 264, 271 (Tex. Civ. App. 1927). The extra vigilance with which this court was willing to guard the plaintiff's interest in his home was manifest in its description of that interest:

During all recorded time, man has enveloped the home with a sanctity that is not given to any other place on earth . . . .

Always 'home' has meant peace and contentment, and man's rest under his own vine and fig tree are symbolical of such a condition. Holy Writ gives us such a picture when it says: 'Judah and Israel dwelt safely, every man under his vine and under his fig tree from Dan even unto Beersheba, all the days of Solomon.'

Id. (citing 1 Kings 4:25).
153 For a brief explanation of public nuisance, see supra notes 54–57 and accompanying text.
154 See supra notes 116–48 and accompanying text.
Finally, as was true in the anticipatory nuisance cases discussed above, courts applying reasonable-fear doctrine tend to omit the balancing-of-the-equities test generally required in injunctive nuisance cases. In anticipatory nuisance actions, this omission means that plaintiffs often are denied injunctions without having their interest in not being injured weighed against the social utility of the defendant's conduct. In the context of reasonable-fear analysis, it results in a defendant's conduct being enjoined without its social utility being weighed against the plaintiff's interests.

In sum, courts have successfully used reasonable-fear analysis to take account of the magnitude of injuries threatening plaintiffs. Its application, however, has been restricted exclusively to private nuisance actions involving residential property. The scope of reasonable-fear analysis, therefore, seems too limited to address all modern technological risk scenarios that may arise. Furthermore, because reasonable-fear analysis generally favors plaintiffs by often allowing injunctions to issue against any low-probability threat of injury and by failing to take account of the social utility of a defendant's conduct, it may unreasonably hinder technological progress.

C. Defining the Risk in Terms of Probability and Magnitude

Although most courts seeking to evade the strictures of traditional anticipatory nuisance doctrine have focused on the plaintiff's fear to obviate the need for a showing of a high probability of harm, a few courts have addressed the doctrine's deficiencies in a more straightforward manner. These courts, unlike the Ferry v. City of Seattle court, have not considered the issues of probability and magnitude of injury in relation to the tangential question of whether the

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155 See supra notes 79–90 and accompanying text.
156 See Stotler v. Rochelle, 83 Kan. 86, 109 P. 788 (1910); Everett v. Paschall, 61 Wash. 47, 111 P. 879 (1910). For an explanation of balancing of the equities as applied in nuisance, see supra notes 63–65 and accompanying text.
157 See supra notes 100–02 and accompanying text.
158 See supra note 156.
160 In the Man-Bug scenario, for example, homeowners threatened by the Ice-Ten tests would be able to seek injunctions on the basis of the reasonable-fear precedent, but farmers or commercial property owners would be unable to do so. See supra notes 1–2 and accompanying text.
161 See supra notes 116–48 and accompanying text.
plaintiff's present fear of injury is reasonable, but instead have tried to consider them in the context of anticipatory nuisance doctrine itself.\textsuperscript{163}

The case of \textit{Harris Stanley Coal \\& Land Co. v. Chesapeake \\& Ohio Railway Co.},\textsuperscript{164} for example, confronted a federal appellate court was confronted with a mine operator seeking to reopen a closed coal mine on a steep mountainside approximately 100 feet above a rail line servicing both passengers and freight.\textsuperscript{165} The railroad operating the line sought to enjoin the mining company from removing pillars of coal left to provide support in the old mine, alleging that their removal would create a risk of a landslide onto the railroad tracks below.\textsuperscript{166} The trial court had declined to issue a preemptive injunction, stating only that the possibility of injury to passengers on a passing train "would require a coincidence of events that can hardly be raised to the status of probability."\textsuperscript{167}

On appeal, however, the Sixth Circuit Court of Appeals was willing to take a broader view of the nature of the risk presented.\textsuperscript{168} Although it conceded that the rail line was not heavily traveled and there was thus little chance of a landslide occurring just as a train passed, the appellate court nevertheless found a compelling reason to issue the injunction:

\begin{quote}
\textbf{[T]}he effect of a substantial mountain slide upon a passing train might well be catastrophic. It may be that such a disaster could occur only upon a concatenation of circumstances of not too great probability, and that the odds are against it. It is common experience, however, that catastrophes occur at unexpected times and in unforeseen places. The pictorial exhibits graphically depict the steep face of the cliff behind which the pillars stand, and its proximity to the railway tracks, and it is indeed bold prophecy which denies the threatened danger. A court of equity will not gamble with human life, at whatever odds, and for loss of life there is no remedy that in an equitable sense is adequate.\textsuperscript{169}
\end{quote}

The Sixth Circuit thus assessed risk in a decisive and direct manner, weighing the probability of a landslide occurring while a train was passing against the quantity of harm such a landslide would create.\textsuperscript{170}

\textsuperscript{163} See \textit{Harris Stanley}, 154 F.2d at 453.
\textsuperscript{164} 154 F.2d 450.
\textsuperscript{165} \textit{Id.} at 451.
\textsuperscript{166} \textit{Id.} at 452.
\textsuperscript{167} \textit{Id.}
\textsuperscript{168} See \textit{id.} at 453.
\textsuperscript{169} \textit{Id.}
\textsuperscript{170} See \textit{id.}.
Although the court cited no precedent for its analysis and did not mention the traditional rule of anticipatory nuisance requiring a high probability of harm, its reasoning nevertheless seems intuitively rational.\textsuperscript{171}

\textit{Village of Wilsonville v. SCA Services, Inc.}\textsuperscript{172} illustrates the problems a court may encounter when it attempts to assess risk rationally while confronting the traditional anticipatory nuisance standard more consciously than did the \textit{Harris Stanley} court. In \textit{Wilsonville}, the plaintiffs brought suit in public nuisance to enjoin the continued operation of a hazardous waste landfill adjacent to their village.\textsuperscript{173} The landfill, which was licensed by the Illinois Environmental Protection Agency and was required to obtain additional permits each time toxic waste was delivered to the site, was located over an abandoned mine site.\textsuperscript{174} The plaintiffs contended that there was a risk the abandoned mine would create subsidence in the area, causing the clay-lined trenches filled with toxic waste to break open and contaminate soil and groundwater.\textsuperscript{175} The plaintiffs also contended that the landfill operator had stored incompatible chemicals together in the same trenches, and that, if subsidence caused the trenches to break open, these chemicals might combine and ignite, sparking fires and explosions that would emit toxic vapors and fumes.\textsuperscript{176}

The trial court held that the landfill constituted a nuisance per se and ordered the defendant to close the site and remove all toxic waste from the area.\textsuperscript{177} On appeal, the defendant asserted that the weight of the evidence was against the trial court's finding and that the landfill therefore could not be enjoined as a prospective nuisance.\textsuperscript{178} In evaluating the trial court's decision, the Illinois Appellate

\textsuperscript{171} See id. Furthermore, the facts of the \textit{Harris Stanley} case do not lend themselves to treatment through the reasonable-fear analysis. Although the railroad may indeed entertain reasonable fears as to the safety of its trains, freight, and passengers, it is difficult to assert that this fear somehow interferes with the railroad's "comfortable enjoyment" of its track. \textit{See supra} note 152 and accompanying text.

\textsuperscript{172} 86 Ill. 2d 1, 426 N.E.2d 824 (1981).

\textsuperscript{173} Id. at 6, 426 N.E.2d at 826-27.

\textsuperscript{174} Id. at 7, 426 N.E.2d at 827.

\textsuperscript{175} Id. at 10-11, 426 N.E.2d at 829. The landfill site drained toward the south, away from the village itself, but toward nearby farmland. Although most of the village's water supply was purchased from another town, there were several springs and wells in the area, which were used to water gardens, livestock, and pets. At least two residents were using, or planned to use, local groundwater for drinking purposes. \textit{Id.} at 8, 426 N.E.2d at 828.

\textsuperscript{176} Id. at 12-13, 426 N.E.2d at 830.


\textsuperscript{178} Id.
Court acknowledged that the traditional standard for enjoining a threat of future harm required a high probability of injury.179 It found, however, that the rule could be abrogated in this case, stating “we do not deem it necessary here that the evidence clearly show that the harm envisioned by plaintiffs' witnesses will ‘necessarily result’ in order for the danger presented by the existence and operation of the landfill to be a basis for the injunction.”180 The court conceded that the evidence of toxic contamination was uncertain, but concluded “that the trier of fact could have determined that there was a reasonable likelihood that escape would take place some time in the future.”181

Thus, although the appellate court’s reliance upon a “reasonable likelihood” of injury allowed it to abrogate the traditional requirement of a high probability of injury, the court failed to state explicitly how it was applying the standard and what factors should be considered.182 Furthermore, the court did not explain why it ignored the traditional anticipatory nuisance standard. Although it seemed to suggest the facts of the case warranted a departure from the old rule,183 the court did not identify which elements of the evidence made this departure necessary.

On appeal to the Supreme Court of Illinois, the defendant in Wilsonville again claimed that the weight of the evidence did not show a high probability of toxic contamination and charged that the lower courts had applied the wrong legal standard in enjoining the operation of the landfill.184 While the Supreme Court upheld the injunction, it implicitly rejected the appellate court’s reasoning.185 Although the appellate court had been willing to abrogate the traditional anticipatory nuisance rule, the Supreme Court agreed with the defendant’s contention that the traditional rule requiring a high probability of harm was applicable in this case.186 The Supreme Court arrived at the same result as the appellate court, however, by finding that it was “highly probable” contamination would occur at the waste disposal site.187

179 Id. at 633, 396 N.E.2d at 562.
180 Id.
181 Id. at 634–35, 396 N.E.2d at 563.
182 See id.
183 See id. at 633, 396 N.E.2d at 562.
185 See id. at 25–26, 426 N.E.2d at 836.
186 Id.
187 Id. at 26–27, 426 N.E.2d at 836–37.
The contradiction in reasoning between the two courts illustrates how the traditional anticipatory nuisance rule can distort judicial analysis when applied to modern technological risk assessment scenarios. The evidence in *Wilsonville* was very technical, with numerous experts for both sides offering contradictory but apparently competent evidence on such esoteric matters as the likelihood of ground subsidence, the permeability of the soil and the characteristics of the various chemicals deposited at the site.\(^{188}\) The presentation of this evidence at trial took 104 days and created a record over 13,000 pages in length.\(^{189}\)

As such, it would appear difficult to argue with the appellate court's characterization of the evidence of probability of injury as uncertain.\(^{190}\) It thus seems somewhat disingenuous of the Illinois Supreme Court to have characterized the probability of injury as being so high that it satisfied the traditional standard for anticipatory nuisance injunctions.\(^{191}\) The appellate court, on the other hand, while properly appraising the probability of harm, was either unwilling or unable to identify those instances in which the traditional doctrine should be abrogated.\(^{192}\) The appellate court also failed to clearly articulate what standard should be substituted in place of the original rule.\(^{193}\)

The appellate and Supreme Court decisions in *Wilsonville* thus generate confusion as to how courts should approach modern risk assessment scenarios involving low-probability threats of potentially catastrophic or irreversible harm. Justice Ryan, however, in a concurrence to the Supreme Court opinion, offered an alternative to the

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\(^{188}\) *Id.* at 10, 426 N.E.2d at 828.

\(^{189}\) *Id.* at 6–7, 426 N.E.2d at 827. Also, the case was tried in an emotionally and politically charged atmosphere. Rudolph, *Recent Decisions, Environmental Law/Nuisance*, 70 Ill. B.J. 586 (May 1982). Residents of the village, some of them armed, threatened drivers transporting waste to the site and urged that the landfill be blown up or the road to it blockaded. The state Attorney General also filed suit in the case, siding with the plaintiffs against both the defendant and the Illinois Environmental Protection Agency, thus continuing a running feud between the two offices. Finally, a number of local officials involved in the matter, including the state's attorney prosecuting the case and the trial judge, were up for reelection. *Id.* at 588.

\(^{190}\) See *supra* note 181 and accompanying text. Furthermore, the Illinois EPA participated in all stages of the litigation and urged throughout that the landfill could be operated safely and should not be closed. Rudolph, *supra* note 189, at 586. Though an agency's word need not be taken as gospel, it seems unlikely that the Illinois EPA would militate actively in favor of the landfill remaining open if it was in fact highly likely to contaminate the area.

\(^{191}\) See *Village of Wilsonville*, 86 Ill. 2d at 26–27, 426 N.E.2d at 836–37.


\(^{193}\) *Id.*
traditional anticipatory nuisance standard that is both simple and straightforward. 194

Although Justice Ryan agreed with the majority that the evidence in Wilsonville met the traditional standard’s requirement of a high probability of injury, he nevertheless argued that the standard itself was “unnecessarily narrow.” 195 Instead, he suggested that a test balancing both probability and magnitude of injury would be more appropriate:

If the harm that may result is severe, a lesser possibility of its occurring should be required to support injunctive relief. Conversely, if the potential harm is less severe, a greater possibility that it will happen should be required. . . . This balancing test allows the court to consider a wider range of factors and avoids the anomalous result possible under a more restrictive alternative where a person engaged in an ultrahazardous activity with potentially catastrophic results would be allowed to continue until he has driven an entire community to the brink of certain disaster. A court of equity need not wait so long to provide relief. 196

In essence, Justice Ryan’s proposed standard is identical to the test applied by the court in Ferry v. City of Seattle. 197 The difference is that here it would be applied directly to the assessment of risk in anticipatory nuisance and not merely to an assessment of the reasonableness of the plaintiff’s fear. 198

V. REFORMING ANTICIPATORY NUISANCE DOCTRINE

This Comment suggests that Justice Ryan’s standard, balancing probability and magnitude of harm against one another, should entirely supplant the traditional anticipatory nuisance standard requiring a high probability of harm. Courts should apply this new balancing test in all cases where plaintiffs seek to enjoin threats of future injury in nuisance.

When considering whether or not to grant an injunction against an alleged anticipatory nuisance under this proposed test, courts should follow a three-step analysis. First, as in any case involving an injunction, the court should ask if the threatened injury is in fact irreparable at law and cannot be properly compensated with dam-

194 See Village of Wilsonville, 86 Ill.2d at 37–38, 426 N.E.2d at 842. (Ryan, J., concurring).
195 Id.
196 Id.
197 See supra notes 147–48 and accompanying text.
198 See id.
ages after the fact.\textsuperscript{199} If so, the court should next assess the risk of injury, asking if the magnitude of the threatened injury outweighs the probability of its occurring. As indicated by Justice Ryan in his concurrence in \textit{Wilsonville}, this is an inverse balancing test—as the magnitude of the harm increases, the lesser the probability required for an injunction to issue.\textsuperscript{200} Conversely, as the probability increases, a lesser magnitude of harm will justify injunctive relief.\textsuperscript{201} Finally, as is already the rule in nuisance generally, the court should balance the equities of the case, measuring the utility of the defendant's conduct and its potential benefit to society against the plaintiff's interest in receiving an injunction.\textsuperscript{202}

In giving weight to both the probability and magnitude of harm, the proposed test is closely analogous to the familiar risk assessment formula for establishing negligence espoused by Judge Learned Hand in \textit{United States v. Carroll Towing Co.}\textsuperscript{203} According to Judge Hand's formula, liability in negligence will be found if the probability of harm multiplied by the gravity of the potential injury exceeds the cost of precaution.\textsuperscript{204} This formula has been universally accepted as the standard by which the reasonable person is expected to determine whether steps should be taken to prevent injury.\textsuperscript{205} It seems only appropriate that courts in equity should use the same standard to determine whether they should take such steps in anticipatory nuisance actions.

Above all, the proposed test is inherently rational. Unlike the traditional anticipatory nuisance rule, which focuses exclusively on the probability of injury when assessing risk, the proposed test allows for a broader, more reasoned inquiry into the nature of the risk involved. By taking into account the magnitude of the threatened harm, courts can consider all issues relevant to a rational human response to danger. A calculated risk can hardly be characterized as such if the calculation involves only the probability of success or failure and ignores what is at stake.

Because the proposed anticipatory nuisance standard is a rational one, it will enable courts to arrive at correct results without running the risk of misrepresenting evidence, as the Illinois Supreme Court

\begin{footnotes}
\item\textsuperscript{199} See \textit{supra} note 68 and accompanying text.
\item\textsuperscript{200} Village of Wilsonville, 86 Ill. 2d at 37–38, 426 N.E.2d at 842.
\item\textsuperscript{201} Id.
\item\textsuperscript{202} See \textit{supra} notes 63–65 and accompanying text.
\item\textsuperscript{203} 159 F.2d 169 (2d Cir. 1947).
\item\textsuperscript{204} Id. at 173.
\item\textsuperscript{205} See Prosser & Keeton, \textit{supra} note 3, § 31, at 173.
\end{footnotes}
did in its consideration of the probability of injury in Wilsonville.\textsuperscript{206} Furthermore, the proposed standard clearly identifies those factors appropriately considered in arriving at a correct result. Thus, the proposed standard will provide a more concrete basis for analysis than was the case in the Wilsonville appellate decision, where the court seemed unable to articulate the rationale behind its conclusion.\textsuperscript{207}

Another point in favor of the proposed anticipatory nuisance standard is that it can be used in those situations not reached by the reasonable-fear doctrine.\textsuperscript{208} Because the proposed standard focuses on the central issue, the nature of the risk involved, rather than on the reasonableness of any fear plaintiffs may experience, it will be appropriate for use in both public and private nuisance actions. Furthermore, because it does not depend upon an interference with the comfortable enjoyment of property, the proposed standard is not restricted to residential property, but can be applied in all situations where any property owner's interests are threatened.

It is also important that the assessment of risk does not become so restrictive as to unreasonably hinder technological development, especially where courts are exercising a power to enjoin activity before it causes harm. By insisting that the usual balancing of the equities test be performed in all cases, the proposed anticipatory nuisance analysis allows for consideration of all relevant factors: the magnitude of injury, the probability of injury, and the social utility of the defendant's conduct. This test neither favors nor disfavors the development of technology.

The test employed in much of the reasonable-fear precedent, for example, favors the interests of risk-bearers, allowing an injunction to issue if any probability of injury is shown, therefore stifling potentially beneficial technological innovation.\textsuperscript{209} The traditional anticipatory nuisance standard, in contrast, allows new technology to create risks regardless of its usefulness to society. The neutral nature of the proposed test, however, would hinder innovation only when the risk of injury it creates outweighs the benefits it offers.

Finally, and perhaps most importantly, the proposed anticipatory nuisance standard is entirely in keeping with the historical devel-

\textsuperscript{206} See supra notes 186–91 and accompanying text.
\textsuperscript{207} See supra note 182 and accompanying text.
\textsuperscript{208} See supra notes 151–54 and accompanying text.
\textsuperscript{209} See supra notes 138–39 and accompanying text.
opment of tort law. The tension between risk-creators and risk-bearers that has defined the evolution of tort doctrine has constantly shifted in response to technological advances.\textsuperscript{210} Courts have tended to favor emerging technology that creates risk yet promises positive economic and social progress. Once a technology is established and the harm it creates becomes more manifest, the equilibrium tends to shift and courts adopt a neutral standard of risk assessment, or in some cases, as with strict liability, adopt a standard that favors the risk-bearer.\textsuperscript{211}

Although tort law's responses to simple industrial development have been primarily compensatory, today's more complex and potentially more hazardous technologies will in some situations create a need for judicial risk assessment prior to an injury taking place.\textsuperscript{212} If tort law is to play a continuing role in regulating the risks that modern society imposes upon individuals and the environment, courts must be willing to abandon traditional anticipatory nuisance doctrine. If it clings to the traditional doctrine, which strongly favors risk-creators, tort law will be unable to address effectively the unique and potentially catastrophic threats of injury created by modern technology.

VI. CONCLUSION

Tort law as we know it today has evolved largely in response to risks of injury created by technology. As technology has become increasingly sophisticated and powerful, however, it has created risks of potentially unlimited or catastrophic harm that cannot be addressed adequately within the framework of a strictly compensatory tort system. Anticipatory nuisance in its present form allows for the enjoining of threats of future harm, but only when it is highly probable that such harm will occur. Courts in some instances have managed to enjoin low-probability risks of future harm by focusing on the way in which a plaintiff's fear interferes with the comfortable enjoyment of property. This approach, however, is too restricted in its application and may thwart technological innovations that are not unreasonably dangerous.

\textsuperscript{210} See supra notes 10–26 and accompanying text.
\textsuperscript{211} See id.
\textsuperscript{212} See supra notes 27–33 and accompanying text.
By reforming anticipatory nuisance doctrine to allow for consideration of both the probability and magnitude of injury in relation to one another, and by insisting that the equities of a plaintiff's interests be weighed against the utility of a defendant's conduct in all cases, courts will be able to assess risks of future harm rationally and objectively without unreasonably hindering technological and social progress.