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E. Blythe Stason

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# TORT LIABILITY FOR RADIATION INJURIES

E. BLYTHE STASON\*

The discovery that atomic chain reaction will produce substantial quantities of heat together with highly radioactive by-products gives rise to anticipation of an entirely new technology and of many new lines of industrial, medical, and agricultural endeavor. In due course widespread use will be made of the potentialities of this new source of energy.

At the same time the likelihood of personal and property injuries resulting from overexposure to radiation brings about a new hazard against which protection must be afforded so far as it is possible to do so. The health and safety codes that are now being formulated at national, state and local levels all bear witness to the hazards of the business and the desire of public authorities to minimize them so far as possible. However, notwithstanding such precautions, it is only realistic to assume that the atomic age will bring with it some unique types of injury resulting from overexposure to alpha, beta, and gamma radiation and other hazards connected with the fission of the atom. In this paper I shall survey the principal doctrines, laws, and suggested enactments in so far as they bear upon the civil liability of reactor operators, isotope users, product manufacturers, and others who may be responsible for injuries occasioned by radiation.

At the outset we should examine briefly the wide range of possibilities of radiation injury, for this wide range in and of itself has an important bearing upon the shape which the law will take in this unique area.

Nuclear accidents may involve only minor incidents, consisting perhaps of no more than a slight overexposure of a single individual with no serious damage resulting therefrom. On the other hand, however, accidents may range in size and severity up to and including vast devastating affairs with widespread damage to persons and property, involving very large sums, even larger than the financial capacity of the largest of our corporations. Moreover, accidents may result from rather commonplace, routine, and normally quite safe operations, such as the use of radioisotopes as tracers in medical diagnosis, or they may arise from undertakings of a unique and hazardous character, calling for all of the ingenuity of modern science and engineering to provide essential safety for the public. Again, as to location, accidents may take place in the relatively unpopulated areas of the country, or they may result from activities located close to centers of population where industrial activity is most likely to be carried on.

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\* Dean, University of Michigan Law School.

With respect to the injuries themselves, they may take a variety of forms which in themselves will have effect upon tort liability, particularly on questions of evidence, damages, and statutes of limitation. Short of fatality, injuries may include such serious afflictions as cancer, cataract, leukemia, and genetic damage. Somewhat less serious could be the shortening of the life span, damage to the bone marrow, superficial burns, loss of hair, and psychosomatic effects resulting from fear and anxiety. Property injuries may involve expense of decontamination, loss of use for a period of time, or even complete destruction of all useful value.

Also bearing on the question of tort liability will be the nature of the operation from which the radiation emanates. The facility may be an atomic power plant or fuel processing plant in which large quantities of fissionable material are kept on hand, quantities sufficient if placed in the proper configuration to result in chain reactions and widespread effects. Or, on the other hand, the user may be a private industry utilizing small quantities of radioisotopes for industrial purposes. The party responsible may be a supplier of component parts or materials for atomic facilities, or the activity may be a university laboratory or some other research organization. All of these and probably many other possibilities must be kept in mind as we attempt to analyze the problem of tort liability connected with radiation injuries.

It is fortunately true that, up to the present time, atomic industry has proved to be remarkably safe. There have been a few accidents in critical facilities; the NRX reactor at Chalk River "ran away" and the countryside was more or less contaminated; a control rod test incident took place at the Argonne Laboratories resulting in substantial overexposure of four members of the staff; Borax No. 1 ran away at Arco, and EBR-1 did likewise. There has been one incident involving overexposure in connection with industrial radiography, and in recent months we have read about the "Windscale accident" at one of Great Britain's plutonium producing reactors located in Cumberland. Although this accident resulted in contamination of milk supplies in the vicinity, there was no known personal damage and full compensation has been made for the damaged milk which was duly discharged into the sea. Notwithstanding these incidents which do in fact indicate the potentialities of the business, we may properly conclude that atomic industry has proved itself to be safe for those who work in the plants and for those who live in the vicinity.<sup>1</sup>

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1. See A Summary of Accidents and Incidents Involving Radiation In Atomic Energy Activities, June, 1945 through December, 1955, by Daniel F. Hayes, Safety and Fire Protection Board, Division of Organization and Personnel, U.S.A.E.C., available from the Office of Technical Services, Department of Commerce, Washington, D. C.

There has been but little actual case law involving radiation injuries. The most highly publicized and dramatic case concerned the radium dial painters of New York, *LaPorte v. United States Radium Corporation*.<sup>2</sup> In this case the decedent had been employed for approximately a year and a half painting watch dials with radioactive luminous paint. She had been following the common practice of pointing the bristles of the paint brush with her lips, thereby ingesting small quantities of radioactive material. Twelve years after she left the company she began to exhibit symptoms of radium necrosis. She commenced an action for damages and shortly thereafter she died. The action was revived by her legal representative.

There was a two-year statute of limitations. The action actually took the form of a suit in equity to enjoin the defendant from pleading the statute of limitations as a bar. This action was dismissed. Because of the statute, the plaintiff was unable to recover damages. In view of the significance of the case as a forerunner of litigation resulting from radiation accidents a more detailed review of the circumstances seems desirable.

The decedent had been employed by the defendant between May, 1917 and December, 1918. She worked with about 80 other girls in a large factory room ventilated by a skylight and by windows which were regulated by the girls as they saw fit. There were no special methods or scientific devices for ventilation. Consequently a certain amount of radioactive dust in the workroom was undoubtedly absorbed by breathing, this being in addition to absorption through the mouth.

The evidence revealed some interesting early history of radiation injury. As early as 1917 many dangers to the human body from radiation and radium emanation were recognized by scientific experts. Long exposure to irradiation and x-ray had resulted fatally among a few technicians and scientists. As early as 1914 an article had been published in Germany entitled "Concerning Occupational Injuries Due to Radioactive Substances," and in 1916 another similar article entitled "Occupational Diseases Due to Radium; Report of Cases" had been published in the *Journal of the American Medical Association*. Notwithstanding these researches, there was no question but that the defendant, The United States Radium Corporation, was utterly ignorant of the harmful effects attendant upon its factory processes until 1924 when its attention was directed to a case of radium necrosis suffered by one of its former employees. At that time the company had examinations made of several of its employees, but the examining agency reported that there was no other evidence showing damage.

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2. 13 F. Supp. 263 (D.N.J. 1935).

According to some of the literature produced in evidence, prior to 1925 or thereabouts, although there were suggestions in the literature of hazards from radium, many persons actually hailed it as a boon to humanity, and its internal use by injection, inhalation, etc., were frequently advocated. The court voiced an interesting observation with respect to the standard of care to be imposed upon the defendant as follows:

It is tempting in the light of knowledge of today [*i.e.*, 1935] and the experience since 1920 to create the thought that the defendant must have been negligent in some way. Today, industrial methods which the defendant then employed would not be merely negligent but criminal. But it should be carefully noted that this case must be decided on the facts as they existed in the light of the knowledge of 1917 to 1920. Were safety measures such as scientific ventilation, masks, periodical medical examinations, abolition of brush pointing, and other now known precautions to be considered necessary as of 1920?

Actually, the defendant and its research bureau failed to anticipate what later research and scientific investigation proved to be a fact, namely, that the defendant's dial painters in 1920 were exposed to the gravest of dangers in their occupation.

The fact is that this experience was not brought home to science and medicine until a considerable number of cases such as that at bar had been considered and then the knowledge came slowly, only to be accepted as fact several years after the first necrosis cases were exposed.<sup>3</sup>

Further said the court:

On the contrary, the court is constrained to find that in 1920 and up to 1924, in which time the two-year period of limitations would have elapsed, there was neither knowledge of an occupational hazard in the dial-painting industry nor, in the light of the knowledge concerning radium, reason for the defendant to believe or to have known of the hazard. The defendant could not have been under a duty to disclose a hazard which, so far as it or the world knew, did not exist.<sup>4</sup>

Accordingly the court held that the plaintiff's request for an injunction to prevent the pleading of the statute of limitations on the ground of "equitable fraud" on the part of the defendant could not be sustained and the bill was dismissed.

From our present point of view the *LaPorte* case is interesting on several grounds. In the first place, the company was not confronted with a doctrine of strict liability, which, as we shall see, will figure importantly in radiation cases. In the second place, the standard of care required in connection with determining negligence did not compel the defendant to engage in advanced research to ascertain the hazards inherent in his industrial processes. He discharged his duty of care by acting with reasonable prudence in accordance with

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3. *Id.* at 271.

4. *Id.* at 275.

common knowledge of his time. He was not obliged to govern his actions according to facts that might have been disclosed by intensive research beyond the limits of current common knowledge.

This principle has an important and obvious application to the processes of industrial utilization of the atom with respect to which so much still remains either undiscovered or, at least, is not currently of common knowledge. We must always be conscious of the fact that tomorrow's discoveries may teach us that today's practices are unduly hazardous to persons and property. Yet the operator in the atomic field cannot be expected to be aware of the revelations of the future. On the other hand he cannot safely close his eyes to the contemporary revelations of research. He must be up to date, and if he is really wise, he will keep a careful eye on the future as well.

#### CURRENT THEORIES OF LIABILITY

There are three principal theories of tort liability applicable to radiation injuries. They are negligence, nuisance, and strict liability, the latter sometimes being called liability without fault.

*Negligence* has been defined as "conduct which involves an unreasonably great risk of causing damage,"<sup>5</sup> or, in different terms, conduct "which falls below the standard established by law for the protection of others against unreasonably great risk of harm."<sup>6</sup> Conduct falls short of this standard when the individual against whom the charge of negligence is made has failed to act as the reasonable man of ordinary prudence would act under similar circumstances. The standard is an objective one rather than one based upon personal judgment of the particular individual. Negligence as a legal basis for imposing liability emerged as a judicial doctrine after the Industrial Revolution, departing from the more primitive concepts of the earlier common law. Over the last century or more it has developed into the widespread and omnipresent theory of liability applicable to most forms of human activity and enterprise.

*Nuisance*, or at least "private nuisance," as commonly understood is "a term applied to unreasonable interference with the interest of an individual in the use or enjoyment of land."<sup>7</sup> The interference may be either intentional or negligent, or it may result from an abnormally dangerous activity for which strict liability is imposed. According to Dean Prosser, liability for nuisance must "result from conduct of the defendant which is found to be unreasonable in the light of its utility and the harm or risk which results."<sup>8</sup> According to some authorities,

5. Terry, *Negligence*, 29 HARV. L. REV. 40 (1915).

6. 2 RESTATEMENT, TORTS § 282 (1934).

7. See PROSSER, TORTS 389 (2d ed. 1955).

8. *Id.* at 389.

the conduct giving rise to nuisance liability must be either tortious or criminal in addition to interfering with the use of the land of another.<sup>9</sup> However, the courts have in fact by their decisions broadened the concept to include acts causing damage to the property of others that are neither tortious or criminal in the ordinary sense.

*Strict liability* is the third and probably the most significant theory demanding consideration in connection with radiation injuries. Something like strict liability was originally the rule of the common law, but it was replaced during the years of the Industrial Revolution by the doctrine of negligence. Today the pendulum is swinging back again, and it is accurate to say that there is a strong trend in the direction of developing a policy of strict liability embracing an ever-increasing area of industrial activity. This is particularly true when injuries arise out of activities involving unusual danger to persons and property in the community. The operator who carries on such a dangerous activity in a community where harm is likely to result to individuals can be deemed by that very fact to be guilty of committing a fault, or in any event it can be said, as certain courts have in fact said, that the person who carries on such activities should be obliged to pay the damages resulting therefrom in order that such activities shall "pay their way." This doctrine of strict liability then becomes a measure of social expediency.

These then are the primary doctrines of the common law related to the subject of our inquiry.

#### LIABILITY OF REACTOR OPERATORS

We may now ask ourselves the question: What liability is likely to be imposed upon reactor operators and others engaged in handling fissionable materials in critical quantities? Will it be absolute liability for all injuries occasioned by their activities, or at least for all injuries resulting from chain reactions? Or will liability be limited in whole or in part to responding in damages for injuries caused by negligence which is duly alleged and proved by the plaintiff?

##### (a) *The Doctrine of Rylands v. Fletcher*

Every student of the common law is familiar with the case of *Rylands v. Fletcher*<sup>10</sup> decided by the English courts in 1868 announcing a rule of absolute liability against an operator who "brings on his land and collects and keeps there anything likely to do mischief if it escapes." In this instance a mill owner built a water reservoir on his

9. E.g., Seavey, *Nuisance, Contributory Negligence, and other Mysteries*, 65 HARV. L. REV. 984 (1952). The American Law Institute *Restatement of Torts*, follows Prosser rather than Seavey; see RESTATEMENT, TORTS, Scope Note to ch. 40 (1939).

10. L.R. 3 H.L. 330 (1868).

land over an abandoned mine shaft that, unknown to him, connected with a mine located on the plaintiff's adjoining premises. The water accumulated in the reservoir and thereafter escaped into and through the abandoned shaft into the plaintiff's workings. The House of Lords with Lord Cairns speaking, said:

If, in what I may term the natural user of the land, there had been any accumulation of water . . . . the Plaintiff could not have complained . . . . On the other hand, if the Defendants, not stopping at the natural user of their close, had desired to use for any purpose which I may term a non-natural use . . . . and if in consequence . . . the water came to escape and to pass off into the close of the Plaintiff, then it appears to me that that which the Defendants were doing, they were doing at their own peril.<sup>11</sup>

In accordance with this opinion three points have emerged in the application of the *Rylands* doctrine; namely (1) liability is imposed only in case of bringing on to the land a dangerous substance likely to cause mischief, (2) this activity must be a "non-natural" use of the land, and (3) there must be an "escape" that causes damage. The vague character of these limitations has resulted in much uncertainty in the application of the doctrine.

One of the leading British legal writers, Dr. Stallybrass, addressed himself to the first of these points, *i.e.*, the dangerous character of the substance, in the following words:

The principle of law behind all these cases is, it is submitted, that if a man takes a risk which he ought not to take without also taking upon his shoulders the consequences of that risk, he shall pay for any damage that ensues. In every case the question really is: was the risk one which the defendant was entitled to take only on a condition of paying compensation to those injured there, irrespective of any negligence on his part? And the answer to that question will not depend on whether the thing in question was dangerous *per se* but upon whether it was dangerous in the circumstances of the particular case.<sup>12</sup>

Is the doctrine of the *Rylands* case to be applied to radiation injuries resulting from reactor operations—or to some of them, and, if so, to which ones? Is it also to be applied to other operators who keep on hand critical quantities of fissionable materials, *e.g.*, fuel processing and re-processing plants? It is clear that the application to the widely variant specific situations will present difficulties.

The English courts have adhered to the doctrine in a considerable variety of cases involving some seventy English decisions, and naturally, the principle has been carried from England to the United States where it has been given consideration by most of the state supreme courts. It is a doctrine which has an obvious application to nuclear

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11. *Id.* at 339.

12. Stallybrass, *Dangerous Things and the Non-Natural User of Land*, 3 *CAMB. L.J.* 376, 387 (1929).

reactors, for the reactor owner and operator certainly brings to his premises something which is "likely to do mischief if it escapes." Moreover, it is not too extreme to characterize the reactor as a "non-natural user" of the premises. Therefore, the doctrine of *Rylands v. Fletcher* would seem to be directly pertinent.<sup>13</sup>

Turning, however, to the American decisions involving the doctrine we find not a little conflict of view. The doctrine was early repudiated by the supreme courts of New York,<sup>14</sup> New Hampshire,<sup>15</sup> and New Jersey,<sup>16</sup> and throughout the years it has been repudiated, by name at least, in nine additional states, namely, Kentucky, Maine, Oklahoma, Pennsylvania, Rhode Island, Texas, and Washington. On the other hand, an even greater number of American courts have accepted the doctrine and applied it in one way or another, thus following the lead of early decisions by the supreme courts of Massachusetts and Minnesota.<sup>17</sup> Decisions applying it have been rendered in Arkansas, California, Colorado, District of Columbia, Indiana, Iowa, Kansas, Maryland, Missouri, Ohio, Oregon, South Carolina, and West Virginia.<sup>18</sup> It would appear that in the United States the doctrine has met with far more favor than otherwise.

The doctrine has been applied to a wide variety of cases. It has been applied to the storing of explosives and inflammable liquids, to blasting, fumigating, crop dusting, to oil well operations, and to the emission of smoke, dust, or noxious gases.

On the other hand, courts have declined to apply the doctrine to more conventional activities notwithstanding the minor hazards involved. For example, they have declined to apply it to cases involving injury occasioned by water in water mains, gas in household supply devices, electric wiring, gasoline in filling stations, steam boilers, and other activities which are deemed more normal and natural in relation to the location where they are carried on and the purposes they fulfill.

It is a fact, moreover, that certain courts have declined to apply *Rylands v. Fletcher* in cases that have involved situations of an unusually hazardous character but which are not out of line with the economy and the customs of the country. Such a case is *Turner v. Big Lake Oil Company*.<sup>19</sup> This case involved oil producing operations in Texas where such operations play a very large part in the economy.

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13. For citation of many English cases, see PROSSER, TORTS 329, 330 (2d ed. 1955).

14. *Losee v. Buchanan*, 51 N.Y. 476 (1873).

15. *Brown v. Collins*, 53 N.H. 442 (1873).

16. *Marshall v. Welwood*, 38 N.J.L. 339 (1876).

17. *Ball v. Nye*, 99 Mass. 582 (1868); *Cahill v. Eastman*, 18 Minn. 324 (1871).

18. The cases are exhaustively collected in PROSSER, SELECTED TOPICS IN THE LAW OF TORTS 152-57 (1953).

19. 128 Tex. 155, 96 S.W.2d 221 (1936).

Turner brought suit against the oil company relying on both negligence and strict liability claiming damages for pollution of his land and water holes. He alleged that the defendants permitted salt water to escape from oil producing operations on their property. The jury found that the defendants were not guilty of negligence and the court as a matter of law refused to apply a doctrine of strict liability. The opinion indicated that the court was affected in large measure by the importance of the oil producing business to the economy of the state of Texas.

On the other hand, in almost the same year, in the nearby state of Kansas, a more predominately agricultural state, the supreme court held exactly the contrary in the case of *Berry v. Shell Petroleum Company*.<sup>20</sup> This also was an action for damages to real property caused by the seepage of salt water thereby ruining the water supply on the plaintiff's property. The salt water came from the operations of an oil producing field. The plaintiff placed reliance upon the doctrine of absolute liability making no allegations of negligence. The court held the defendants liable. It first spoke in terms of nuisance for which the plaintiffs were entitled to maintain an action at law for damages on account of special injuries sustained by them. Then the court referred and relied upon *Rylands v. Fletcher* saying that negligence is not a necessary element of recovery in such cases. "We are aware of the fact," said the court, "that such a ruling places a great burden upon the oil industry. It is, however, no new principle which we are announcing. It is old as the industry of man. We consider that the water supply of the people is of greater importance than the operation of a business at a reduced cost." Thus the nature of the economy of the area becomes an important if not a controlling factor in applying the *Rylands* doctrine and a principle of relative social utility emerges.

We should also refer to one other case of considerable significance: *Green v. General Petroleum Corporation*.<sup>21</sup> In this case the plaintiffs instituted an action to recover damages for injuries to their property occasioned by the defendant's oil drilling operations. It appeared that in the process of drilling for oil on his own premises, although the defendant had exercised reasonable care and was not guilty of negligence in any way, a stream of oil, gas, mud, and rocks shot into the air and onto the plaintiff's property located about two hundred feet from the operations. The defendant denied liability asserting that under the California decisions there was no such thing as liability without negligence. The court agreed that the discovery and production of oil is a legitimate and lawful business and is not a nuisance

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20. 140 Kan. 94, 33 P.2d 953 (1934).

21. 205 Cal. 328, 270 Pac. 952 (1928).

per se. Nevertheless, the court held the defendant liable for damages. The precise theory of liability is not carefully stated, but the court said that one must so use his own land as not to cause injury to another. Without referring to *Rylands v. Fletcher*, the court stated the applicable rule under the California law as follows:

Where one, in the conduct and maintenance of an enterprise lawful and proper in itself, deliberately does an act under known conditions and, with knowledge that injury may result to another, proceeds, and injury is done to the other as the direct and proximate consequence of the act, however carefully done, the one who does the act and causes the injury should in all fairness, be required to compensate the other for the damage done. The instant case offers a most excellent example of an actual invasion of property of one person through the act of another.<sup>22</sup>

Although the court does not make it clear whether liability is based upon a theory of trespass (because of the actual invasion of the plaintiff's premises), or nuisance, or strict liability along the line of *Rylands v. Fletcher*, it was clear nevertheless that the defendant was compelled to respond in damages. A reactor owner would doubtless be in a similarly vulnerable position, or, perhaps, even more so because he could be charged with bringing onto his premises the substances that have escaped and caused harm.

(b) *The American Law Institute Restatement Doctrine*

There is another basis of possible strict liability of reactor operators which should be mentioned. The American Law Institute *Restatement of Torts* has dealt with the subject, enunciating the pertinent tort doctrine in the following terms:

§519 *Miscarriage of Ultrahazardous Activities Carefully Carried On.* Except as stated in paragraph 521-4 one who carries on an ultrahazardous activity is liable to another whose person, land or chattels the actor should recognize as likely to be harmed by the unpreventable miscarriage of the activity for harm resulting thereto, from that which makes the activity ultrahazardous, although the utmost care is exercised to prevent the harm.

§520 *Definition of Ultrahazardous Activity.* An activity is ultrahazardous if it (a) necessarily involves a risk of serious harm to the person, land or chattels of others which cannot be eliminated by the exercise of the utmost care, and (b) is not a matter of common usage.<sup>23</sup>

We must ask ourselves whether or not the *Restatement* doctrine is likely to be applied by the courts to atomic reactors or to other facilities that aggregate critical quantities of fissionable materials. Should we conclude that such operations "necessarily involve a risk of serious harm which cannot be eliminated by the exercise of the utmost care"? Or, on the other hand, may we argue with good reason

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22. *Id.* at 955.

23. See 3 RESTATEMENT, TORTS § 520 (1938).

that reactors may some day become "matters of common usage," whatever that term may mean? The *Restatement* doctrine was not formulated until 1938 and thus far only a very few cases have been decided in which it has been interpreted and applied. In California, for example, the courts seem to have adopted the rule, possibly for the reason that they have in at least three cases expressed disapproval of the rule of *Rylands v. Fletcher*, and they are seeking some basis for granting relief in proper cases.

In a recent opinion in *Luthringer v. Moore*<sup>24</sup> the California court imposed strict liability, relying squarely on the rule. In that case the defendant was hired to fumigate the basement of a restaurant neither owned nor occupied by him. The plaintiff was employed by a pharmacist whose shop was located in an adjacent building. The hydracyanic acid gas which was used for fumigation seeped into the pharmacist shop and caused injury to the plaintiff. He brought action for damages. The court, citing the *Restatement*, found that the defendant's activity was "ultrahazardous," that it was not a "matter of common usage," and, therefore, that the plaintiff should be held absolutely liable regardless of negligence.

The courts in a few other states have also relied upon the *Restatement* rule. In *Bedell v. Goulter*<sup>25</sup> the Oregon Supreme Court relied upon it in a case involving injuries to real property caused by concussion and vibration from blasting operations. The Pennsylvania Supreme Court reached a similar result in *Federoff v. Harrison Construction Company*,<sup>26</sup> also a blasting case. Another blasting case with a similar result was decided by the Supreme Court of Connecticut in *Whitman Hotel Corporation v. The Elliott & Watrous Engineering Company*.<sup>27</sup>

On the other hand there have been courts in at least three other states that have considered but rejected a request for application of the *Restatement* doctrine to the particular cases at hand. In *Smith v. Okerson*<sup>28</sup> the New Jersey court declined to apply the *Restatement* rule. The case involved the spraying of an alfalfa crop, it appearing that some of the arsenic solution was carried by the wind to the plaintiff's adjoining fields. In a Delaware case, *Fritz v. E. I. Du Pont de Nemours & Co.*,<sup>29</sup> the Delaware court declined to apply the doctrine in a case involving escaping chlorine fumes. Again, in *Midwest Oil Company v. City of Aberdeen*<sup>30</sup> the South Dakota Supreme Court, in

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24. 31 Cal. 2d 489, 190 P.2d 1 (1948).

25. 199 Ore. 344, 261 P.2d 842 (1953).

26. 362 Pa. 181, 66 A.2d 817 (1949).

27. 137 Conn. 562, 79 A.2d 591 (1951).

28. 8 N.J. Super. 560, 73 A.2d 857 (1950).

29. 45 Del. (6 Terry) 412, 75 A.2d 256 (1950).

30. 69 S. D. 343, 10 N.W.2d 701 (1943).

the absence of proof of negligence, declined to hold the defendant city liable under the *Restatement* doctrine for damages inflicted upon the plaintiff's gasoline filling station by a break in the city's water main. The court did not regard a water main as "an ultrahazardous activity."

We may say, therefore, that the doctrine of the American Law Institute *Restatement* has not yet been widely applied although it is a worthy attempt to achieve precision and definiteness in the field of absolute liability. It is certain that the doctrine will be resorted to by the plaintiffs in the event a nuclear reactor or other critical facility goes awry and causes damage.

*(c) Nuisance as a Remedy for Radiation Injuries*

In order to complete the review of American doctrines involving or related to absolute or strict liability we must give brief consideration to a considerable group of cases disposed of either wholly or in part under the law of private nuisance. Of especial interest is a doctrine that has been developed which for want of a better name has often been called "absolute nuisance," or "nuisance per se."

In general, a private nuisance may result whenever there is an interference with the use or enjoyment of the land of the plaintiff occasioned either by the intentional misconduct of the defendant, or conduct which is negligent, or conduct with respect to which the courts are inclined to apply strict liability without proof of either intent or negligence. It is this third category with which we are primarily concerned. A nuisance case normally is disposed of by a petition in equity in which the plaintiff seeks an injunction to restrain the defendant and perhaps asks damages as well. However, the decisions reveal that the courts of law also, in actions in which damages alone are sought, frequently refer to nuisance principles and apply them in reaching the conclusion that the circumstances call for the imposition of the equivalent of absolute liability.

In considering the possible relation of nuisance doctrines to liability for radiation injuries we should take account of two classes of cases. The first includes cases in which the defendant intentionally maintains an activity in a neighborhood where in normal operation it causes annoyance or injury to occupants of property in the vicinity, *e.g.*, the operation of a plant that gives off sulphuric acid fumes, or, in the atomic field, possibly radioactive gases. The second class covers cases of unduly hazardous operations which, in normal and successful operation cause no harm whatsoever, but if an accident takes place trouble ensues, *e.g.*, storage of nitroglycerin, or, in the atomic field, operating a reactor or a fuel processing plant. The courts have evolved and apply a "balance of convenience" doctrine to both types of cases, with the result that no nuisance is found and no liability is imposed,

apart from negligence, if the activity is reasonable in relation to its location, its proximity to population, its economic worth and other related factors. If otherwise, however, the court will enjoin or will give judgment for damages, or will afford both such remedies as the equities may require. It is apparent that such a doctrine will embrace many cases that would fall within the scope of *Rylands v. Fletcher* as currently interpreted, and therefore the two doctrines are concurrent in effect to a considerable degree. Some courts use the two doctrines interchangeably, or perhaps both in the same opinion. Doubtless defendants in radiation accident cases will encounter this double-barrelled approach with considerable frequency in the years to come. For example, we have previously referred to the case of *Berry v. Shell Petroleum Company*,<sup>31</sup> an action for damages in which the court based its conclusion of absolute liability both upon a theory of nuisance and also upon the precedent of *Rylands v. Fletcher*. Many such cases could be cited.

It is also apparent that many courts which purport to reject the principle of *Rylands v. Fletcher* do in fact reach like conclusions under the name of absolute nuisance. As stated by Professor Prosser:

There is in fact no case applying *Rylands v. Fletcher* which is not reasonably duplicated in all essential respects by some American decision which proceeds on the theory of nuisance.<sup>32</sup>

A wealth of authority could be cited in support of the foregoing statement, but the following will serve as illustrative and typical cases. In none of them was there showing of either negligence or wrongful intent. In *Longtin v. Persell*<sup>33</sup> the plaintiff recovered damages in an action involving use of explosives producing vibrations which were held to constitute an actionable nuisance; in *Holman v. Mineral Point Zinc Co.*<sup>34</sup> the plaintiff was refused an injunction but was awarded damages in an action to abate as a nuisance and to recover damages for losses caused by defendant's plant emitting sulphuric acid fumes; and in *Bartell v. Ridgefield Lumber Co.*<sup>35</sup> the plaintiff also recovered damages but was denied an injunction asked by him to prevent the operation of defendant's sawmill which emitted sparks, smoke, and soot. Other cases that might be cited involve percolating water, storage of explosives, fireworks, oil wells, mining operations, the accumulation of sewage, and bad odors, noxious gases, smoke, dust, etc. In other words, the cases in which American courts have resorted to an absolute nuisance doctrine as the basis of strict liability cover much the same territory as that covered by cases

31. 140 Kan. 94, 33 P.2d 953 (1934).

32. PROSSER, *SELECTED TOPICS IN THE LAW OF TORTS* 170 (1953).

33. 30 Mont. 306, 76 Pac. 699 (1904).

34. 135 Wis. 132, 115 N.W. 327 (1908).

35. 131 Wash. 183, 229 Pac. 306 (1924).

directly based upon *Rylands v. Fletcher* and the doctrines developed thereunder.<sup>36</sup>

As these cases have developed, however, there would seem to be at least one important difference between *Rylands v. Fletcher* and the doctrines of nuisance. The *Rylands* theory focuses primarily upon the "dangerous nature" of the instrumentality, and if it escapes and "does mischief," strict liability is imposed without further question. On the other hand, the nuisance doctrine, in accord with the general approach of courts of equity where most of the cases arise, is more likely to produce decisions based upon a balance of public convenience or a balance of interest between the plaintiff and the defendant. The court of equity has discretionary authority, particularly (although not exclusively) used in connection with issuing the injunction. Intangible factors, including, among others, a high measure of social utility or economic value, may serve to exculpate an activity that otherwise would be deemed a private nuisance. The fact that the strict liability cases which we are now considering normally (although not always) have arisen in courts of equity has given rise to the idea of balancing of equities. It should be observed that this element not only serves to mitigate undue hardship, which is good, but also it serves to create a decidedly vague and indeterminate standard to be applied in the field under consideration. Under such a theory the lines of demarcation between strict liability and otherwise become shadowy indeed.

In any event it is clear that, in disposing of cases involving injuries occasioned by reactors or other critical facilities, the courts will be involved in applying one or perhaps all of the three doctrines heretofore mentioned, *i.e.*, *Rylands v. Fletcher*, the American Law Institute *Restatement*, and nuisance. The owners and operators will stand but little chance of escaping strict liability.

#### LIABILITY OF OPERATORS OF LESS HAZARDOUS USES OF ATOMIC ENERGY

Reactor operators do not stand alone as possible sources of radiation injuries. Other possible defendants include those who use radioactive isotopes for radiography, for thickness measurements, in tracers, in medical diagnosis and therapy, in biological and agricultural experiments, in irradiation of food and drugs, in the use of wear-testing devices, and in dozens of other highly useful applications, either currently in use or envisaged for the near future. These uses of atomic energy are widespread at the present time and are increasing at a very rapid rate. They have enormous economic value and have become a

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36. Many other cases are cited in PROSSER, *SELECTED TOPICS ON THE LAW OF TORTS* 166-71 (1953).

more or less normal part of our industrial life. Nevertheless, they involve some unique hazards. Shall we treat such uses as a normal part of our existence, subject to the normal rules applicable to other types of injuries arising in connection with industrial activity? Or shall we apply the strict liability principles sketched in the earlier portion of this article?

The answer to this question cannot be given on the basis of direct precedent, but it is suggested by the many dozens of cases that have been decided by American courts in connection with the use of x-ray machines.<sup>37</sup> Persons undergoing examination or treatment by means of these machines run two primary dangers: the danger of harm from the x-rays themselves and the danger of harm from the powerful electric currents necessary to produce the rays. In case of injury arising from either of these dangers it is uniformly held that the general principles of the law applicable to other injuries caused by physicians and surgeons shall be utilized. Accordingly a medical practitioner is bound only to exercise reasonable skill and care in his patient's behalf. He is liable only for negligence and is not held strictly liable for x-ray injuries inflicted on his patients. Moreover, the plaintiff's right of recovery on a theory of negligence for x-ray injuries is contingent upon proof of proximate causation, an element not always easy to establish. In passing it may be noted that a proximate cause defense frequently asserted by physicians from whom recovery for injuries by x-rays is sought is that the cause of injuries was not the negligence of the physician but instead the unusual and unpredictable susceptibility of the patient to harm from exposure to x-rays. This is an issue quite likely to arise in connection with radiation accidents. In addition, the broad rules of contributory negligence and assumption of risk are applicable to x-ray cases, as are the rules concerning the burden of proof. In short, in connection with x-ray injuries we apply the negligence doctrine in all of its facets, as distinguished from the doctrine of strict liability.

There is no reason to suppose that the use of radioactive isotopes for medical purposes will result in different standards of liability from those applied in the case of x-ray machines. The hazard is comparable, and the extent of usage is growing by leaps and bounds.

Moreover, it is altogether likely that most of the other uses of radioactive material above referred to, *e.g.*, radiography, thickness measuring gauges, etc., will be similarly treated. Their normality will be accepted, and they will be subjected only to the standards of due care prescribed with respect to other industrial mishaps, in connection with which proof of negligence is required.

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37. See the many cases cited in 41 A.L.R.2d 329 (1955).

LIABILITY OF PRODUCT MANUFACTURERS  
IN THE ATOMIC FIELD

It is a fact that the possibility of this type of liability is going to assume substantial proportions in connection with atomic affairs. Manufacturers will inevitably be brought into court to respond to claims for damages for alleged injuries resulting from component parts of reactors fabricated by them, and devices produced by them making use of radioactive products, and sold on the market for industrial, medical, and other uses. Will such manufacturers be subjected to strict liability or will liability ensue only in the event the plaintiff succeeds in proving negligence?

Every lawyer is familiar with the New York case, *MacPherson v. Buick Motor Company*.<sup>38</sup> The plaintiff was injured when a wheel collapsed on a car manufactured by the defendant company. The car had been purchased by the plaintiff through a dealer. Although the wheel came to the defendant from a supplier, the defect was such that reasonable inspection would have disclosed it. The defendant was held liable for negligence, notwithstanding the fact that there was no so-called "privity of contract" between the plaintiff and the defendant. The liability in other words was based not upon contractual but upon tort principles, with the court expounding a duty owed by the defendant to the plaintiff in the following terms:

If the nature of a thing is such that it is reasonably certain to place life and limb in peril when negligently made, then it is a thing of danger. . . . If to the element of danger there is added knowledge that the thing will be used by persons other than the purchaser, and used without new tests, then, irrespective of contract the manufacturer of this thing of danger is under a duty to make it carefully.<sup>39</sup>

Since this decision in 1916 the scope of manufacturer's liability for injuries occasioned by his products, not only to immediate purchasers but also to remote purchasers or even to strangers who may be injured has been constantly broadened by court decisions.

The *Buick* case involved injury caused by a negligently manufactured chattel. More recent cases have made it clear that liability also attaches when a negligently manufactured component part has been incorporated into fixtures on real property. The moral of this for manufacturers of component parts for reactors and for other building contractors in the atomic business is apparent.

Moreover, under current court decisions we must take note of the adoption of limited areas of absolute liability of product manufacturers, as in the case of manufacturers of food, drugs, and similar arti-

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38. 217 N.Y. 382, 111 N.E. 1050 (1916).

39. *Id.* at 1053.

cles intended for human consumption. Very recently this doctrine has been extended into other areas. For example in *Graham v. Bottenfield's, Inc.*<sup>40</sup> the plaintiff who had had her hair dyed by a beautician with disastrous results sued the distributor of the hair dye which caused her injury. The court held that, as in the case of food products, failure to prove negligence was no bar to recovery.

What will be the result in the case of the manufacturer of articles containing radioactive substances? Such substances may, of course, be used for human ingestion in medical diagnosis or therapy, and therefore will be already included in the field of strict liability. But in any case even though no ingestion is involved, since the tendency is to extend the law to eliminate the requirement of proof of negligence, especially in connection with articles that are likely to cause harm to users, it may well come about that the manufacturer of radioactive articles will be held in all instances to the absolute liability which is now being applied in the food and drug cases.

Furthermore, the giving of evidentiary effect to the doctrine of *res ipsa loquitur* becomes of significance. This doctrine places the burden of proof on the defendant to prove that he exercised all reasonable care, once a prima facie case has been made by showing circumstances from which negligence will be presumed in the absence of proof to the contrary.

Finally we find an ever-widening imposition of a duty to warn the public of the dangers inherent in manufactured products, as a result of which the manufacturer does not stand much chance against the injured person who hails him into court.

In the field of manufactured products for use in atomic activities all of these juristic developments are surely going to make themselves felt, and manufacturers of such devices are going to be required to exercise extraordinary care to insure or otherwise protect themselves against possibilities of having to pay for damages suffered by remote purchasers or users of their products or even by innocent bystanders.

#### SOME CONCLUSIONS CONCERNING TORT LIABILITY FOR RADIATION INJURIES IN COMMON LAW COUNTRIES

The foregoing analysis leads to certain conclusions concerning tort liability for radiation injuries that can now be briefly stated as follows:

1. Available legal theories do not provide us with clear-cut answers to the difficult questions that will be presented by radiation over-exposure. A reactor containing critical quantities of uranium is relatively more dangerous than a cobalt 60 radiography capsule, and the latter is more of a hazard than a radioisotope thickness gauge.

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40. 176 Kan. 68, 269 P.2d 413 (1954).

What fissionable materials and radioisotopes are to be regarded as "dangerous substances" likely to "cause mischief" if they escape? Which are "ultrahazardous"? Which are "non-natural uses" on the one hand, or "matters of common usage" on the other? Which are of such great social or economic significance that they should be encouraged, and which are otherwise? These are difficult questions that can be answered only as the law slowly pricks out the boundary lines by the careful process of case by case decision. Unless all atomic uses are to be cast into a single mold and made either subject to strict liability or to negligence doctrines, these lines must be drawn, placing instances of strict liability on one side and cases to be decided by negligence on the other. Yet common law methods afford but little assistance in drawing this line.

2. Since we can begin to envisage the problems that are likely to emerge and readily recognize the need of prompt and definitive disposition of them, we should give serious consideration to expediting the process by legislative means, thus giving the effective solution needed to afford reasonable assurance to a new and useful facility.

3. Countries with civil codes are giving the matter a substantial amount of attention at the present time. In West Germany, Switzerland, Belgium, France, and, indeed, all of the countries in Euratom and the Organization for European Economic Cooperation, studies are in progress seeking to resolve the difficulties by the adoption of appropriate legislation. It seems altogether likely that in the United States we shall be best served if we proceed likewise and get into our statute books appropriate legislation drawing the lines and stating the conditions of liability.

#### STATUTES AND PROPOSED STATUTES DEALING WITH LIABILITY FOR RADIATION INJURIES

Statutes dealing with tort liability are no novelty in contemporary legislation. The example which comes first to mind is the workmen's compensation legislation almost universally enacted in this country. Other statutes dealing with their respective fields are the Federal Safety Appliance Act applicable to interstate railroads, the Pure Food and Drug Acts imposing liability upon manufacturers or sellers of defective foods or drugs, and the Aeronautic Acts of the several states. There is good reason to believe that, in due course, radiation injuries will also be covered by appropriate legislation, for such legislation could readily be drafted to clarify the lines of demarcation between strict liability and liability for negligence only, thus removing the uncertainties of the judge-made law. To date the problem has been given far more attention in England and on the Continent of Europe

than it has in the United States. It will be worth our while to examine foreign developments.

It is in England, the country of origin of *Rylands v. Fletcher*, that the most positive and sweeping legislation has been placed in effect. The Parliament of the United Kingdom in adopting its Atomic Energy Authority Act of 1954 made the Authority absolutely liable for all radiation injuries not only from reactor operations but also from other nuclear activities, by providing a section 5(3) reading as follows:

It shall be the duty of the Authority to secure that no ionizing radiation from anything on the premises occupied by them or from any waste discharged (in whatever form) on or from any premises occupied by them cause any hurt to any person or any damage to any property whether he or it is on such premises or elsewhere.

This section places the English Atomic Energy Authority under an absolute duty which permits of no exceptions whatsoever, even for acts of God. Moreover, the act covers all kinds of radioactivity both that resulting from chain reactions and that from less dangerous sources. Thus, the Authority in Britain is under an exceptionally broad duty to see that their reactors and all other atomic activities are proof not only against the vicissitudes of normal operational activity but also against acts of God, falling airplanes, and mishandling by strangers. Finally, the Authority's liability is without financial limit.<sup>41</sup>

It should be noted, however, that section 5(3) applies only to the Atomic Energy Authority, namely the British government agency. It does not apply to private industry. At the present time such industry is not extensively engaged in England in atomic operations, but it doubtless will be so engaged in the near future. If accidents take place, the common law doctrines, including *Rylands v. Fletcher*, would then be controlling, unless in the meantime parliamentary legislation is enacted.

But Parliament is about to act. On February 10, 1958, the British government announced its intention to introduce legislation providing for the licensing and inspection of all privately owned atomic energy operations, announcing, further, that all such private owners would be subject to the same duty as that of the Atomic Energy Authority with respect to the prevention of damage and the obligation to make recompense for personal injury or property damage occasioned by

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41. See discussion by C. J. Highton, General Counsel for the United Kingdom Atomic Energy Authority, in a paper entitled *International Problems of Tort Liability and Financial Protection Arising Out of the Use of Atomic Energy—Law Relating to Atomic Operations in Great Britain* presented to the International Bar Association Convention, Cologne, Germany, July 21, 1958. See also Highton, *The Legal Aspects of the Development of Atomic Energy in the United Kingdom*, 12 VAND. L. REV. 223 (1958).

their operations. In other words, the British do not seem to feel that *Rylands v. Fletcher* is adequate for atomic energy purposes, and they intend to provide a very comprehensive strict liability measure covering all atomic operations, government, private, and otherwise. There is some uncertainty at the present time as to whether or not the act to be applied to private industry would require strict liability for escaping radioisotopes as distinguished from chain reactions. A high government official has indicated that he does not believe the act in its final form will be quite so drastic. In any case this proposed measure represents the current thinking in the land of origin of the common law—one of the principal competitors for the world's atomic business in the future.

In Germany also the matter of liability for atomic injuries has recently received extensive and intensive consideration. As early as 1955 German lawyers and insurance experts were studying the liability problems likely to arise from peaceful uses of atomic energy. As a result of these deliberations a draft of a Federal Atomic Energy Act was prepared. In 1957 this draft was ready for adoption, but because of political obstacles final action was deferred. In the meantime several of the West German Lander having research reactors operating or under construction have investigated the matter, and in January 1958, Land Nordrhein-Westfalen adopted a measure that included in interim treatment of civil liability and insurance coverage therefor.

The 1957 German draft bill as proposed by the government of the Federal Republic of West Germany contains an exceptionally thoughtful treatment of the question of liability. Under this measure if damage is caused to persons or property as a result of defective operation of any nuclear fission process or of radiation from a radioactive substance emitted from any installation involving a critical mass of fissionable material, the owner of the plant becomes absolutely liable for all damages, except in cases arising from acts of God. On the other hand, in cases of injury from other radioactive substances the owner can exculpate himself from liability by proving that he has used "every precaution possible under the circumstances." This is in effect a negligence doctrine with an inversed burden of proof. The provision for the inversion of the burden of proof is not, however, made applicable to physicians or dentists who are especially favored by reason of following the usual practice of placing the burden on the plaintiff.

The draft also provides limits upon maximum liability; in case of death a maximum of DM 100,000 is included; or, in case of incapacitating injury, a yearly payment not to exceed DM 6,000. The total amount

for any one accident shall not exceed DM 15,000,000, except in the case of negligence for which there is no limit.

The draft also would revise the statutes of limitation to make them more realistic in view of the peculiar nature of radiation injuries especially the length of time between overexposure and the delayed incidence of cancer, cataract, leukemia, and other characteristic afflictions.<sup>42</sup>

A somewhat similar measure is being currently drafted in Switzerland where the matter has been under careful study since 1954. The second draft of this measure was completed by the commission in charge on May 6, 1958, and it is now ready for submission to the Swiss Parliament. This draft also provides for absolute liability for activities involving chain reactions of fissionable material. A maximum limit upon liability is set at S.Fr. 30,000,000.<sup>43</sup>

These German and Swiss bills are almost certain to become law in their respective countries within the next year unless the present thinking in regard to the subject is changed by the drafts currently being prepared by two important international organizations, namely Euratom and the Organization for European Economic Cooperation. The insurance companies of the six countries forming Euratom have created an *ad hoc* Working Group under the chairmanship of Professor J. Basyn of the "Institut Supérieur de Commerce" of Antwerp. This group has prepared a draft for a proposed international convention concerning third-party liability for radiation injuries.<sup>44</sup> It is also reported that the OEEC has prepared a draft of a general liability law. This draft is not yet available but it will be released in the near future and will probably affect developments in many of the countries that participate in that organization.

These drafts have value to interested persons in the United States, for they point the way toward a solution of the civil liability problem by statutory prescription of absolute liability in its proper field, with reasonably clear-cut definitions and appropriately worded exceptions. Of special importance is the handling of the chain reaction activities, making them subject to strict liability, but leaving other radioactive activity subject to the normal principles of negligence. Such statutes, if they become law, will establish an orderly system of liability for radiation injuries substituting for the present unsatisfactory state of

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42. The original draft of this measure was submitted to the Bundestag in a report dated May 9, 1957 (Paper 3502) as a result of the deliberations of the 38th Parliament Commission on Atomic Questions. A revised version, translated into English by Centre d'Etudes de la Commission Permanente du Risque Atomique (CERA) can be found in Information Bulletin No. 12, July, 1958.

43. The draft Swiss Federal Law may also be found in translated form in Information Bulletin No. 12 of CERA.

44. *Ibid.*

affairs under judge-made law. They can and should provide a system of redress for injured persons based upon careful legislative appraisals of the entire field rather than the details of single cases. Such appraisals can take account of economic and social needs as well as justice to the individual and the problems of a new and valuable industry.