

# COMMENT

## REGULATING THE STANDARD OF CARE OWED TO THE PUBLIC DURING AN EMERGENCY AT A NUCLEAR POWER PLANT

### I. INTRODUCTION

Two thousand tort claims resulting from the 1979 accident at Three Mile Island (TMI) founder as the Third Circuit Court of Appeals tries to string together new federal common law from pearls of wisdom found in the Code of Federal Regulations. In 1991, the United States District Court for the Middle District of Pennsylvania was instructed by the Third Circuit Court of Appeals that Nuclear Regulatory Commission (NRC) regulations should provide the standard of care in nuclear emergency cases. The Third Circuit ruled that the Pennsylvania tort standard of care was preempted for public liability actions arising under the Price Anderson Act.<sup>1</sup> These courts now face a difficult issue—What is the proper tort standard of care set out in the federal regulations?

Having jurisdiction, but unable to determine which of the regulations create a tort standard of care, the district court certified the issue to the Third Circuit Court of Appeals.<sup>2</sup> Specifically, the district court asked, in part, “Whether 10 C.F.R. [Sections] 20.105 and 20.106 (part 20), and not ALARA<sup>3</sup> constitutes the standard of care to be applied in these actions.”<sup>4</sup> Essentially, the question presented was, “What is the regulatory-prescribed standard of care during an emergency at a nuclear power plant?”<sup>5</sup>

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1. *In re TMI Litig. Cases Consol. II (TMI II)*, 940 F.2d 832, 860 (3d Cir. 1991). The decision relating to the standard of care was ancillary to the primary issue of federal jurisdiction in that appeal. See generally 42 U.S.C. § 2210 (Supp. I 1989).

2. *In re TMI Litig. Consol. Proceedings (TMI III)*, appeal docketed, No. 94-8053 (3d Cir. Oct. 26, 1994).

3. ALARA is an acronym used to denote that the utility must limit its nuclear effluents “as low as is reasonably achievable.”

4. *TMI III*, (memorandum and order), Nos. 88-1452, 88-1551 & 88-1558, at 2 (M.D. Pa. filed July 13, 1994) (footnote omitted).

5. Judge Scirica, while concurring that federal jurisdiction was proper, was not satisfied that the majority’s dicta on the application of the federal regulations as the standard of care was correct. However, he found that applying the regulations as the standard of care was partially justified by the fact that many of the plaintiffs may assert that violation of the regulations constituted negligence *per se*. See *TMI II*, 940 F.2d at 861. Judge Scirica went on to note that the Supreme Court felt Congress was willing to accept the regulatory consequences of the application of state tort law to radiation hazards even though direct state regulation of the safety aspects of nuclear energy was pre-empted. *Id.* at 870. (quoting *Goodyear Atomic Corp. v. Miller*, 486 U.S. 174 (1988), which characterized *Silkwood v. Kerr-McGee*, 464 U.S. 238 (1984)). Nonetheless, the Supreme Court denied certiorari, possibly because the majority’s application of the regulation as the standard of care was only in dicta, whereas the standard of care, as now raised, is central to the appeal.

The emergency that occurred on March 27 at TMI, Unit 2 escalated into the only major accident at a United States commercial nuclear power plant.<sup>6</sup> Although the issue of a utility's duty in a nuclear emergency is one of first impression,<sup>7</sup> some specific questions relating to this duty have already been resolved in other circumstances. Some courts have applied part 20 operating limits as the standard of care for workers injured in operational settings.<sup>8</sup> Other courts have examined the importance of the emergency plans in both licensing and implementation contexts.<sup>9</sup> Still other courts have resolved some of the issues related to the implementation of emergency plans in cases involving emergencies at nuclear bomb test sites.<sup>10</sup> Combining these several approaches may resolve the present issue in the TMI cases.

This Comment postulates that the standard of care during any emergency should be measured in relation to factual events, not nominal operational regulatory limits. The misapplication of these standards could skew liability in future cases. Part II of this Comment explores part 20 limits as they apply to workers. Part III examines the use of the ALARA in part 20 and 10 C.F.R. part 50 (part 50) to demonstrate how ALARA fully provides radiation protection for people in many different circumstances. Part IV discusses the importance of the development and implementation of the emergency plans under part 50, and how courts faced with nuclear emergency cases apply emergency plan requirements. Additionally, Part IV briefly analyzes the factual events surrounding the TMI accident. Finally, this Comment concludes that the standard of care may best be determined by referencing the regulations that most closely match the circumstances giving rise to the case.

## II. PART 20 STANDARDS

### A. Regulations

The part 20 regulations provide radiation exposure limits that apply to workers and the public under normal nuclear power plant operating conditions, subject to the ALARA requirement. Clearly the utility owes a duty to protect workers from unreasonable radioactive exposure.<sup>11</sup> Judicial

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6. The accident at TMI was the only "loss of coolant, class 9 accident" to occur at a commercial nuclear reactor in the United States. See generally MITCHELL ROGOVIN, NRC SPECIAL INQUIRY GROUP, THREE MILE ISLAND: A REPORT TO THE COMMISSIONERS AND THE PUBLIC (1979). See also NRC, NOTICE OF VIOLATIONS, NUREG-0600 (1979).

7. *Supra* note 5 and accompanying text.

8. *Akins v. Sacramento Mun. Util. Dist.*, 18 Cal. App. 4th 208 (Cal. Ct. App. 1992); *Mahoney v. United States*, 220 F. Supp. 823 (D. Ky. 1963); *Field v. Philadelphia Elec. Co.*, 565 A.2d 1170 (Pa. Super. Ct. 1989); *Hennessy v. Commonwealth Edison Co.*, 764 F. Supp. 495 (N.D. Ill. 1991); *Roberts v. United States*, 887 F.2d 899 (9th Cir. 1989).

9. *Guard v. NRC*, 753 F.2d 1144 (D.C. Cir. 1984); *Roberts v. United States*, 887 F.2d 889 (9th Cir. 1989).

10. *In re Consolidated United States Atmospheric Testing Litig.*, 820 F.2d 982 (9th Cir. 1987); *Allen v. United States*, 816 F.2d 1417 (10th Cir. 1987); *Roberts v. United States*, 887 F.2d 889 (9th Cir. 1989).

11. Standards for Protection Against Radiation, 10 C.F.R. §§ 20.1101, 20.1201-20.1204 (1993).

application of the worker regulations elucidates the utilities' duty to the general public.<sup>12</sup> Part 20 sets operating limits for radioactive effluents that nominally comport with requirements for health and safety<sup>13</sup> in two general areas: on-site at a nuclear facility (worker limits),<sup>14</sup> and off-site (public limits).<sup>15</sup> Because no barrier stops on-site radioactive effluents from traveling off-site, part 20 provides that the utility must keep its operational on-site effluent releases ALARA.<sup>16</sup>

Certain part 20 limits require the operating utility to keep a worker from receiving unreasonable doses of radiation.<sup>17</sup> Nuclear workers have actively consented to radiation exposure as part of their employment function. However, worker safety regulations are different from public safety regulations in part because the public has not actively consented to radiation exposure.<sup>18</sup> Further, previous radiological exposures of the public can vary widely, as can an individual's particular sensitivity.<sup>19</sup> Resultingly, the NRC adopted the Federal Radiation Council's (FRC's) recommendations<sup>20</sup> that the public's exposure be limited to approximately one-tenth of that permissible for a worker,<sup>21</sup> and that the implementation of these regulations should follow the ALARA standard.<sup>22</sup>

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12. *Bennett v. Mallinckrodt*, 698 S.W.2d 854 (Mo. Ct. App. 1985); *Crawford v. National Lead Co.*, 784 F. Supp. 439 (S.D. Ohio 1989); *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238 (1984); *In re Fernald*, No. 1-85-149, 1989 WL 267040 (S.D. Ohio Apr. 5, 1989); *Lamb v. Martin Marietta Energy Sys.*, 835 F. Supp. 959 (W.D. Ky. 1993); *Bulloch v. United States*, 145 F. Supp. 824 (D. Utah 1956).

13. Standards for Protection Against Radiation, 10 C.F.R. § 20.1002 (1993).

14. Standards for Protection Against Radiation, 10 C.F.R. §§ 20.1201 to 20.1208 (1993).

15. Standards for Protection Against Radiation, 10 C.F.R. §§ 20.1301, 20.1302 (1993).

16. 10 C.F.R. § 1101 (1993).

17. *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238 (1984); *Akins v. Sacramento Mun. Util. Dep't*, 18 Cal. App. 4th 208 (Cal. Ct. App. 1992); *Field v. Philadelphia Elec. Co.*, 565 A.2d 1170 (Pa. Super. Ct. 1989).

18. *Id.* See also Federal Radiation Council Staff Report, *Background Material for the Development of Radiation Protection Standards*, F.R.C. Rep. No. 1, May 13, 1960. "Industrial workers undergo at least some degree of placement selection. It is therefore possible to exclude from exposure those individuals with undercurrent disease who might be more susceptible to injury." *Id.* at § 5.1 (4).

19. Federal Radiation Council Staff Report, *Background Material for the Development of Radiation Protection Standards*, F.R.C. Rep. No. 1 at § 5.1 (4).

20. "The FRC's principle function was to provide guidance for all federal agencies in the formulation of radiation standards." See Memorandum in Law in Support of Defendants' Motion for Summary Judgment as to All Plaintiffs Based on Compliance with Federal Safety Regulations, at 3 exhibit E, *TMI III*, Nos. 88-1452, 88-1551 & 88-1558 (M.D. Pa. filed Aug. 13, 1994)(affidavit of Lester Rodgers). See also Exec. Order No. 10,831, 24 Fed. Reg. 6669 (1959).

21. Standards for Protection Against Radiation: Dose Limits for Individual Members of the Public, 10 C.F.R. § 20.1301 (1994).

22. The utility is under an affirmative duty to show actual compliance with the dose limits of 10 C.F.R. § 20.1301. See Standards for Protection Against Radiation: Compliance with Dose Limits for Individual Members of the Public, 10 C.F.R. § 20.1302 (1994). If a licensee fails to comply with the ALARA standard or the dose limits for workers or the public, the NRC can issue fines, obtain an injunction against the utility to halt its continued operation or revoke the utility's license altogether. See 10 C.F.R. § 50.54(e),(h) (1963).

### B. *Judicial Application of Part 20*

Some courts have determined the duty owed to a nuclear worker by referencing the part 20 limits.<sup>23</sup> In *Mahoney v. United States*,<sup>24</sup> workers were used to manipulate parts of a nuclear processing plant. The workers presented evidence that they were exposed to extremely high levels of radioactivity. The judge did not impose liability because he was unwilling to determine that the worker's exposures in fact exceeded regulatory limits.<sup>25</sup>

In *Akins v. Sacramento Municipal Utility District*,<sup>26</sup> the court likewise found that workers were not exposed to radiation in excess of the part 20 limits. The court discussed the use of absolute standards for determining tort liability, as opposed to the use of the ALARA standard for determining the standard of care.<sup>27</sup> In making its determination, the *Akins* court developed five factors to consider when developing a duty: (1) the existence of physical harm; (2) the exposure to cognizable levels of radiation; (3) the knowledge of the circumstances allegedly causing harm; (4) the existence of an "event" that allegedly caused the injury; and (5) the existence of personal, non-media knowledge.<sup>28</sup> The *Akins* factors tend to explain a more basic nuclear worker issue—worker plaintiffs accept exposure to radiation within regulatory limits. *Akins* was denied compensation as a worker because, in light of the five factors, he could not prove that he was exposed to radiation in excess of the part 20 worker limits. Both *Mahoney* and *Akins* illustrate the difficulty plaintiffs face bringing a claim where part 20 serves as the standard of care.

### III. THE ALARA STANDARD

The ALARA principle is found in many different sections of the radiation protection regulations.<sup>29</sup> It provides the foundation for adequate implementation of other more specific radiation protection requirements. Although the ALARA standard appears vague, the NRC has provided exacting guidance in the regulations as well as through the Brookhaven National Laboratories (BNL).<sup>30</sup> These measures created a precise ALARA standard. BNL's ALARA center provides one day courses for NRC inspectors on the implementation of ALARA. Additionally, the BNL ALARA center compiles and updates an on-line data base that pro-

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23. See generally *Field v. Philadelphia Elec. Co.*, 565 A.2d 1170 (Pa. Super. Ct. 1989); *Hennessy v. Commonwealth Edison Co.*, 764 F. Supp. 495 (N.D. Ill. 1991); *Roberts v. United States*, 887 F.2d 899 (9th Cir. 1989).

24. 220 F. Supp. 823 (D. Ky. 1963).

25. *Id.* at 841.

26. 18 Cal. App. 4th 208, 240 (Cal. Ct. App. 1992).

27. *Id.*

28. *Id.* at 245.

29. See *infra* note 44.

30. See NRC, SAFETY RESEARCH PROGRAMS SPONSORED BY THE OFFICE OF NUCLEAR REGULATORY RESEARCH, PROGRESS REPORT, BNL-NUREG-51454, Vol. 9, No.4 (Dec. 31, 1989). See *infra* note 48.

vides current information about ALARA implementation programs.<sup>31</sup> Although the discussion of the actual implementation techniques is far beyond the scope of this commentary, it is sufficient to state that the ALARA rule is understood by members of the nuclear industry as the fundamental radiation protection standard.

#### A. ICRP Guidance

The NRC obtains guidance in promulgating its regulations from the FRC, as well as from the International Commission on Radiation Protection (ICRP) and the National Commission on Radiation Protection (NCRP).<sup>32</sup> In fact, ICRP guidance has been followed expressly in the NRC's latest amendments to part 20:

In adopting the basic tenets of the ICRP system of dose limitation the NRC recognizes that combination of the dose limits with the ALARA principle makes the degree of radiation protection significantly greater than reliance upon the dose limits alone.<sup>33</sup>

The ICRP and the NCRP synthesize reports and recommendations given during ICRP conferences and seminars held periodically throughout the world. One such seminar specifically dealing with dose limits was held in Portoroz, Yugoslavia in 1974. Scientists participating in the Portoroz seminar carefully differentiated between normal operating events and emergency events<sup>34</sup> when making their forecasts for proper radiation protection standards.<sup>35</sup> Four individual groups of scientists from the United States, England, South Africa and Argentina presented papers for review on the issue of public radiation exposure. Each of the papers was particularly concerned with developing a risk-benefit analysis upon which recommendations for particular radiation standards could be justified. When applied to an emergency scenario, the scientists concluded that the risk-

31. *Id.* at 13. In addition to the informational aspects of the center, BNL is conducting studies on the effects of high doses of radiation.

32. Standards for Radiation Protection, 56 Fed. Reg. 23,360 (1991). "The NRC [has] generally followed the recommendations of the ICRP, and the NCRP in formulating radiation protection standards." The ICRP is an independent, international body devoted to resolving radiation protection issues. It is made up of various scientists from each of the nuclear-capable countries. The NCRP is the ICRP's United States affiliate. Neither of these bodies is to be confused with the FRC, created by President Eisenhower to provide the Executive with recommendations related to radiation protection. See Exec. Order No. 10,831, 24 Fed. Reg. 6669 (1959).

33. 56 Fed. Reg. 23,360 (1991). The NRC noted that the changes did not affect the underlying ALARA principle, but were the regulatory adoption of the linear dose approximation. The changes adopted by the NRC lower the part 20 dose limits to the public from 500 millirem to 100 millirem. *Id.*

34. INTERNATIONAL COMMISSION ON RADIATION PROTECTION, PROCEEDINGS OF THE SEMINAR, POPULATION DOSE EVALUATION AND STANDARDS FOR MAN AND HIS ENVIRONMENT, VIENNA (International Atomic Energy Agency, ed. 1974)[Hereinafter PROCEEDINGS OF THE SEMINAR]. In the article *On the Use of the Risk Concept and Cost-Benefit Analysis in the Safety Assessment of Nuclear Installations*, the author describes the difficulty in determining how and what part of the population will be burdened by radiation in an operational setting. PROCEEDINGS OF THE SEMINAR, at 55, 77. Operational settings, and the effluent one would expect from normal operations are distinctly set apart from accident scenarios.

35. PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 55, 77, 109.

benefit model which provided justification for the use of nuclear power would fail to show benefits that justified the use of nuclear fuel to obtain energy.<sup>36</sup>

Two members of the United States Environmental Protection Agency (EPA) presented a paper on basic radiation protection concepts at the Portoroz conference.<sup>37</sup> They made a general cost-benefit analysis for an emergency scenario, carefully pointing out that little radiation exposure could be justified when little or no electricity was being generated.<sup>38</sup>

Discussing the duty to limit radiation exposures, D. Beninson, a member of the National Commission of Atomic Energy for Argentina, agreed with the EPA scientist's findings:

[A] system of dose limitation has two components. First there are the dose limits, related ideally to values of acceptable risks and, secondly there are the levels derived *for each source*, based on the [risk-benefit analysis] justification and the 'as low as reasonably achievable' [ALARA] concepts. When discussing standards, a very clear distinction should also be made between these two components.<sup>39</sup>

Beninson presented his own paper. He attempted to forecast the level of radioactive effluents that power plants throughout the world could collectively emit without causing a large accumulation of radioactive elements in the global atmosphere. Beninson applied a cost-benefit analysis and the ALARA standard to "each source" and considered the exposure limits set for local sources. The purpose of his paper was to justify the nominal dose limits by finding that, for certain important elements, little accumulation would occur on a worldwide scope. Beninson qualified his worldwide justification of the nominal limits by noting that global justifications were unrelated to a power plant operator's duty to limit dose to a local population. Beninson stated this plainly:

Population dose [limits] do not obviate the need for considering individual and critical group limits. The local situation will be limiting in many cases and will be most important in influencing decisions. On the other hand, collective doses will be used for applying the justification . . . concepts. [H]owever, the [dose limits] will not be limiting for [determining the utility's obligations with regard to] any reasonable acceptable level of risks.<sup>40</sup>

In crafting the concepts that support modern radiation protection standards, scientists concluded that the arbitrary dose limits do not remove a utility's duty to limit its emissions ALARA.<sup>41</sup> Beninson stated that the

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36. PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 233. Some commentators thought it possible that a serious accident might never occur. PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 94. The scientists seem to have raised the emergency issue to emphasize that the possible dose to the public is high during an emergency, and there is no corresponding benefit because electricity is not being generated.

37. W.D. Rowe, A.C.B. Richardson, *Basic Concepts for Environmental Radiation Standards*, PROCEEDINGS OF THE SEMINAR, POPULATION DOSE EVALUATION AND STANDARDS FOR MAN AND HIS ENVIRONMENT, VIENNA at 117 (International Atomic Energy Agency, ed. 1974).

38. PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 123.

39. PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 130 (emphasis added).

40. PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 233.

41. PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 233.

local situation would cause a utility to restrict its radioactive effluents to meet the ALARA cost-benefit justification.<sup>42</sup>

### B. NRC Interpretation of ALARA

The NRC's primary charge is to guard against the deleterious effects of nuclear materials.<sup>43</sup> Licensing, design, construction and implementation are all related to radiation protection and factor into the NRC decisions.

The ALARA standard is the foundational principle for all NRC regulations.<sup>44</sup> Although part 20 is titled "Standards for Protection Against Radiation," other parts also contain radiation protection standards. Radiation protection concerns are no less important during an emergency than they are during operations or licensing proceedings.<sup>45</sup> The ALARA requirement embodies a general philosophy that can be applied in any situation.

In its 1994 revision of part 20, the NRC removed all doubt regarding the application of the ALARA standard. The purpose section of the new radiation protection standards removed the balancing test from the old rules.<sup>46</sup> The regulations were modified to read, "Nothing in this part [20] shall be construed as limiting actions that may be necessary to protect health and safety."<sup>47</sup> In its changes to part 20, the Commission noted that "[o]ne reason for this is that many ALARA procedures simply reflect sound operating practice and do not lend themselves to a numerical analysis."<sup>48</sup> By making this statement, it is plain that the NRC has placed a duty

42. *Supra* note 40 and accompanying text. "[H]owever, the [dose limits] will not be limiting for [determining the utility's obligations with regard to] any reasonably acceptable level of risks." PROCEEDINGS OF THE SEMINAR, *supra* note 34, at 233.

43. Energy Reorganization Act of 1974, 42 U.S.C. § 2011 (1988).

44. Radiation Protection Programs, 10 C.F.R. § 20.1101 (1993). The ALARA standard is imbedded in Title 10 in 13 individual parts. The ALARA standard is ubiquitous in the regulations, evidence that the NRC intended ALARA to be the fundamental test of a utility's obligations. Standards for Protection Against Radiation, Definitions, 10 C.F.R. § 20.1003 (1993); Radiation Protection Programs, 10 C.F.R. § 20.1101 (1993); Planned Special Exposures, 10 C.F.R. § 20.1206 (1991); Control of Access to High Radiation Areas, 10 C.F.R. § 20.1601 (1991); Use of Other Controls, 10 C.F.R. § 20.1702 (1992); Use of Individual Respiratory Protection Equipment, 10 C.F.R. § 20.1703 (1992); Method for Obtaining Approval of Proposed Disposal Procedures, 10 C.F.R. § 20.2002 (1993); Records of Planned Special Exposures, 10 C.F.R. § 20.2105 (1991); Medical Use of Byproduct Material, Definitions, 10 C.F.R. § 35.2 (1992); ALARA program, 10 C.F.R. § 35.20 (1986); Radiation Safety Committee, 10 C.F.R. § 35.22 (1991); Contents of Applications; Technical Information, 10 C.F.R. § 50.34 (1968); High Level Radioactive Waste, Definitions, 10 C.F.R. § 72.3 (1988). Further, a comment to the amendments to Title 10 noted that "the concept of ALARA is a philosophical principle of radiation protection." Standards for Protection Against Radiation, 56 Fed. Reg. 23,360, 23,366 (1991).

45. Standards for Protection Against Radiation, 56 Fed. Reg. 23,360, 23,390 (1991).

46. Standards for Protection Against Radiation, 56 Fed. Reg. 23,360 (1991).

47. 10 C.F.R. § 20.1001(b) (1993).

48. Standards for Protection Against Radiation, 56 Fed. Reg. 23,360, 23,367 (1991). It should be noted that, although the term ALARA seems to be rather amorphous, it is a term that describes a strict set of procedures that apply to each nuclear installation specifically. See *supra* notes 30, 33.

on the utility to keep its emissions below the part 20 limits and as low as is reasonably achievable.<sup>49</sup>

When discussing a utility's duties under the revised part 20 standards, the NRC concluded that, although the new rules lower the numerical limits of part 20, they do not affect a licensee's duty to implement the ALARA regulations. Specifically, the Commission concluded that:

Some of the [numerical] concentration limits for the general public are higher or lower than previous concentration limits; and some are of the same magnitude as the previous limits. Despite the changes in the dose and concentration limits, the Commission believes that issuance of the final rule will not have a major impact on the environment. *The primary basis for this conclusion is that NRC (and agreement State) licensees have implemented radiation protection measures that keep radiation exposures and radioactive effluents as low as reasonably achievable (ALARA) in accordance with provisions of 10 C.F.R. 20.1(c) and comparable State provisions.*<sup>50</sup>

In the eyes of the NRC, the utilities' standard of care has always been to keep emissions ALARA.<sup>51</sup> The limits changed but the duties remained the same. Therefore, the limits do not describe the utility's duty. Because each nuclear operator is actively aware of the ALARA requirements crafted specifically for their facility, the ALARA standards should apply as the tort standard of care.<sup>52</sup>

### C. Judicial Application of ALARA

In *British Nuclear Fuels Ltd. v. Greenpeace Ltd. (BNF)*,<sup>53</sup> BNF was convicted of four criminal counts for releasing radioactive effluents in what a jury found to be in excess of ALARA during their operations of the Windscale and Calder nuclear reprocessing plants. The court held that BNF exceeded the ALARA requirement, absent evidence of a violation of a nominal regulatory limit.<sup>54</sup> *BNF* is significant because it is the first time ALARA was applied as the primary standard of care in a courtroom. The

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49. The typical nuclear generating station only emits 1 to 2% of the amount of radioactivity allowed under the part 20 limits, as they are required under ALARA. Samuel J. Walker, *CONTAINING THE ATOM* 324 (1992).

50. 56 Fed. Reg. 23,389 (1991)(emphasis added). The part 20 limits were amended down from 500 millirem to 100 millirem to any member of the public in one year. *Compare* 20 C.F.R. § 20.105 (1986) and 20 C.F.R. § 20.1301 (1992).

51. The NRC, in addressing comments on its changes to the radiation protection standards stated that, "ALARA procedures simply reflect sound operating practice and do not lend themselves to numerical analysis." *Standards for Protection Against Radiation*, 56 Fed. Reg. 23,360, 23,367 (1991).

52. For example, "Y" operates a nuclear power plant. Y's ALARA standard is set by the NRC which determined what past effluents were reasonable, usually about 2% of the total part 20 limits (approximately 2 millirem). *See supra* note 49. If Y wanted to operate above the ALARA standard, it would have to notify the NRC and ask permission. *See supra* note 22. Further, if Y's plant experienced an emergency, Y would be required to notify the NRC and obtain guidance with respect to its emergency plans. *See infra* notes 82, 85. In each case, ALARA is the fundamental rule, and it is applied by the NRC and the licensee together. *See supra* note 51. Therefore, ALARA operates as a kind floating baseline for radiation protection management. 56 Fed. Reg. 23,360, 23,367 (1991).

53. Civ. No. 27638, (Ct. of App. Mar. 25, 1986) (Lexis, Intlaw library, Ukcase file at \*4). England has also implemented ICRP recommendations and defines a utility's duty to limit effluents as ALARA.

54. *Id.*



ALARA issue was put to the jury as a factual problem by the English court.<sup>55</sup> Making its assessment of BNF's activities, the court applied the ALARA rule by simply asking the jury if the evidence showed BNF's discharges were as low as reasonably achievable.<sup>56</sup>

Courts in the United States have also applied the ALARA standard as the regulatory standard of care. In *Silkwood v. Kerr-McGee Corp.*,<sup>57</sup> the court found that Karen Silkwood was exposed as a member of the public, not in her capacity as a worker for Kerr-McGee. Although the method of her exposure was never conclusively determined, it was assumed by the district court that the exposure occurred in her apartment.<sup>58</sup> The Supreme Court affirmed the district court's analysis of the ALARA standard and stated that Kerr-McGee "had a duty under 10 C.F.R. part 20 to maintain the release of radiation 'as low as reasonably achievable.' Compliance with this standard cannot be demonstrated merely through control of escaped plutonium within any absolute amount."<sup>59</sup> Kerr-McGee was responsible for the plutonium and had a duty to keep any one person's exposure as low as reasonably achievable (ALARA).<sup>60</sup>

In *Crawford v. National Lead*,<sup>61</sup> radioactive water was emitted from a uranium metal production plant into the Great Miami River and the surrounding air and soil. Sufficient evidence existed that National Lead exceeded the ALARA standard in its operations, which as a matter of law, was a violation of the NRC regulations.<sup>62</sup> In view of the violation of the regulations and the abnormally dangerous aspects of working with nuclear materials, the court analyzed the plaintiff's claims under strict liability.<sup>63</sup>

*In re Fernald*<sup>64</sup> involved the same nuclear processing plant as in *Crawford*. The utility argued that the ALARA standard was discretionary, and that without evidence of a violation of the dose limits, no breach of the regulations occurred. The court disagreed, however, stating that ALARA is violated "when and if [the company] exposed the public to radiation levels exceeding what the [Department of Energy] has itself considered reasonable."<sup>65</sup> The four previous cases illustrate that ALARA is a workable standard that can be applied in a courtroom.

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55. *Id.*

56. *Id.*

57. 485 F. Supp. 566 (W.D. Okla. 1979), *rev'd on other grounds*, 667 F.2d 908 (10th Cir. 1981), *cert. granted, rev'd and remanded on other grounds*, 464 U.S. 238 (1984), *rev'd and remanded*, 769 F.2d 1451 (10th Cir. 1985).

58. 485 F. Supp. at 571.

59. *Silkwood*, 464 U.S. at 243 (citing 485 F. Supp. at 585).

60. *Id.*

61. 784 F. Supp. 439 (S.D. Ohio 1989).

62. *Id.* at 447.

63. *Id.* at 442. (quoting RESTATEMENT (SECOND) OF TORTS § 520 (1977)).

64. No. 1-85-149, 1989 WL 267040 (S.D. Ohio Apr. 5, 1989).

65. *Id.* at \*3.

IV. PART 50<sup>66</sup>A. *Licensing Regulations*

The licensing requirement for emergency planning under part 50 is another important radiation protection regulation that the ALARA standard supports. Licensing regulations provide the NRC with the power to exclude nuclear facilities from obtaining the right to operate.<sup>67</sup> They also provide the NRC with the ability to revoke that right if the licensee fails to operate its power plant in accord with part 20.<sup>68</sup>

Part 20 provides limits with respect to the release of radioactive material during operations. A breach of those limits would cause the NRC to force a shutdown.<sup>69</sup> If a licensee continues to exceed the limits of part 20 in its operation without approval, the NRC may revoke the utility's license entirely<sup>70</sup> or impose fines.<sup>71</sup> The exposure limits for workers and the public set out in part 20 are regulatory limits for enforcement of licensing requirements. They are not standards of care that can be rationally applied to accident scenarios.

Emergency preparedness standards must also be met to obtain and retain a license. Sections 50.47<sup>72</sup> and 50.49<sup>73</sup> set out specific duties that the licensee must perform before and during an emergency to ensure that off-site exposures are kept as low as is reasonably achievable.<sup>74</sup> During the licensing procedure, the NRC compares a utility's emergency plans with the standards set out in 10 C.F.R. section 50.47(b) to determine if the emergency plans will provide adequate protection for the public. After licensing, the utility is required to abide by the conditions placed on its license.

66. Part 50 is entitled "Domestic Licensing of Production and Utilization Facilities."

67. 10 C.F.R. § 50.1 (1991).

68. 10 C.F.R. § 50.100 (1975).

69. 10 C.F.R. § 20.1301(a) (1993). "Each licensee *shall* conduct operations so that [the limits are not exceeded]." 10 C.F.R. § 50.100 (1962). "A license . . . may be revoked . . . for failure to . . . operate a facility in accordance with the terms of the . . . license . . ."

70. Violations, 10 C.F.R. § 2401(b)(2) (1992). As noted in the rule, this authority derives directly from § 186 of the Atomic Energy Act of 1954, 42 U.S.C. § 2011 (1988).

71. Fines have been imposed by the NRC many times for violation of the regulations. See, NRC, NUREG-0940, Vol.10, No.4, at II.A-73 (1991); NRC, NUREG-0940, Vol.6, No.4, at II.A-19 (1987); NRC, NUREG-0940, Vol.6, No.2, at II.A-108 (1987); NRC, NUREG-0940, Vol.6, No.2, at II.A-40 (1987); NRC, NUREG-0940, Vol.5, No.3, at II.A-76 (1986); NRC, NUREG-0940, Vol.5, No.2, at II.A-35 (1985); NRC, NUREG-0940, Vol.4, No.1, at II.A-151 (1984); NRC, NUREG-0940, Vol.3, No.2, at I.A-58 (1984); NRC, NUREG-0940, Vol.3, No.1, at II.A-63 (1983); NRC, NUREG-0940, Vol.3, No.2, at I.A-25 (1983); NRC, NUREG-0940, Vol.2, No.2, at II-1 (1982).

72. Emergency Plans, 10 C.F.R. § 50.47 (1991).

73. Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants, 10 C.F.R. § 50.49 (1988).

74. Although serious accidents are uncommon, emergencies are not. For instance, when a seemingly small event takes place, the emergency plans under the Final Safety Analysis Report will activate to ensure that the event does not proceed to something more serious as it did at TMI. 1979 NRC INVESTIGATIVE REPORT No. 50-320/79-10, at 1 app. A (1979).

## B. Emergency Plans

### 1. Regulations

During an emergency, the federal regulations broadly provide that ALARA is the standard of care.<sup>75</sup> More detailed duties are found in the emergency plans themselves.<sup>76</sup> Each power plant is custom-built,<sup>77</sup> and the geographical areas surrounding each plant are unique. Therefore, the emergency plans are tailor-made for each licensee, and reviewed and approved by the NRC.<sup>78</sup> It is clear from the regulations that the utility must develop contingency plans to deal with difficulties and must report to the proper authorities in a timely manner.<sup>79</sup> Reporting is necessary so that an emergency response can be mobilized to protect public health and safety.<sup>80</sup> Further, the utility is required to undertake its own precautionary measures, enumerated in the emergency plans, which are designed to protect the public should an emergency occur.<sup>81</sup>

### 2. Judicial Application of the Emergency Plans

Within the regulations, the occurrence of an emergency is distinguished from operational events.<sup>82</sup> Those regulations concerned with emergencies speak of two separate situations: (1) the requirements of emergency plans at the time of licensing (planning),<sup>83</sup> and (2) the implementation of those plans during an emergency.<sup>84</sup>

#### a) Planning for Emergencies

Justice Ginsburg, while a member of the United States Court of Appeals for the District of Columbia, addressed the issue of the specificity of emergency plans in *Guard v. NRC*.<sup>85</sup> Justice Ginsburg noted that the

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75. Domestic Licensing of Production and Utilization Facilities, Emergency Plans, 10 C.F.R. § 50.47 (1991); Contents of Applications, Technical Information, 10 C.F.R. § 50.34a (1975).

76. The emergency plans are located in the Final Safety Analysis Report (FSAR) that is developed just prior to licensing. This is the report referred to by now Commissioner Victor Stello in his investigation of the accident at TMI. See 1979 NRC INVESTIGATIVE REPORT NO. 50-320/79-10, at 1 app. A.

77. Report to the Congress from the Commission on Nuclear Accidents, at 22 (1990).

78. 10 C.F.R. § 50.47 (1991).

79. 10 C.F.R. § 50.47(b)(2) to (b)(12), 50.47(d)(1) to (d)(7) (1991).

80. 10 C.F.R. § 47(b) (1991).

81. *Id.*

82. 10 C.F.R. § 20.2202 (1993); 10 C.F.R. § 50.33(1992); 10 C.F.R. § 50.34(b) (1968); 10 C.F.R. § 50.44 (1992); 10 C.F.R. § 50.46 (1992); 10 C.F.R. § 50.47 (1991); 10 C.F.R. § 50.48 (1988); 10 C.F.R. § 50.49 (1981); 10 C.F.R. § 50.54 (1963); 10 C.F.R. § 50.55 (1991); 10 C.F.R. § 50.56 (1971); 10 C.F.R. § 50.57 (1986); 10 C.F.R. § 50.58 (1986); 10 C.F.R. § 50.59 (1992); 10 C.F.R. § 50.62 (1991); 10 C.F.R. § 50.63 (1988).

83. 10 C.F.R. § 50.33 (1992); 10 C.F.R. § 50.34(b) (1968); 10 C.F.R. § 50.44 (1992); 10 C.F.R. § 50.46 (1992); 10 C.F.R. § 50.49 (1988); 10 C.F.R. § 50.54 (1963); 10 C.F.R. § 50.55 (1991); 10 C.F.R. § 50.56 (1971); 10 C.F.R. § 50.57 (1986); 10 C.F.R. § 50.58 (1986); 10 C.F.R. § 50.59 (1992).

84. 10 C.F.R. § 50.47 (1991); 10 C.F.R. § 50.48 (1988); 10 C.F.R. § 50.62(1991); 10 C.F.R. § 50.63(1988).

85. 753 F.2d 1144 (D.C. Cir. 1984). The issue was whether a utility may operate at full power with only provisional emergency plans and promises to provide more complete plans within six months.

NRC placed potential radiation victims under the protection of 10 C.F.R. section 50.47(b)(12).<sup>86</sup> In *Guard*, Justice Ginsburg defined how a utility may comply with the enumerated standards for off-site emergency response plans. The court held that specific arrangements must be made to protect and treat members of the public in the event of off-site releases and exposures.<sup>87</sup>

#### b) Implementation of Emergency Plans

Several courts have stated that a nuclear operator breaches his duty when he fails to comply with existing emergency plans and fails to warn those potentially affected.<sup>88</sup> In *Roberts v. United States*, two employees at a Nevada nuclear test site were exposed to radiation during an emergency.<sup>89</sup> The test site manager failed to comply with emergency regulations requiring him to respond to unexpected releases of radioactivity.<sup>90</sup> The manager's failure to implement the emergency plans served as the basis for liability.<sup>91</sup> The Court, by finding liability for failure to implement the emergency plans, overruled a line of cases that held the manager had discretion in the implementation of an emergency plan because the emergency plans themselves were inadequate.<sup>92</sup>

The *Roberts* courts overruled earlier cases by distinguishing the use of the discretionary function exception to the Federal Tort Claims Act

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Specifically, the case involved the adequacy of a planned emergency response effort. The utility compiled a list of treatment facilities that could be utilized in the event of an emergency. The actual contacts with those facilities would be made *ad hoc* in the event of an emergency. The NRC approved this plan, with revision to be completed in six months. The court found the NRC's interpretation to be "irrational." *Id.* at 1150. Further the court stated, "A provision calling for preventative arrangements is not sensibly met by [*ad hoc*] post-event prescriptions." *Id.* at 1149.

86. *Guard*, 753 F.2d at 1149 (citing 10 C.F.R. § 50.47 (1991)). This section spells out, in clear detail, what provisions must be in the emergency plans, how the responsibilities must be carried out, and by whom.

87. *Guard*, 753 F.2d at 1149.

88. *Roberts v. United States*, 887 F.2d 889 (9th Cir. 1989) (characterizing *Berkovitz v. United States*, 486 U.S. 531 (1988)).

89. The decedents were exposed to 420 millirem, and 80 millirem, and later died of leukemia. *Roberts*, 887 F.2d at 900.

90. *Id.* at 901. The emergency plans for the Nevada test site were located in Chapter 0544 of the AEC Manual and in NTSO-0601, the AEC Standard Operating Procedure for the Nevada Test Site.

91. The court in *Roberts* held that, "[t]he failure of the Test Manager and his advisory panel to comply with the requirements of Chapter 0544 of the AEC manual constituted a breach of defendant's duty to those person who might be exposed to radiation as a result of accidental release of radiation." *Roberts v. United States*, 724 F. Supp. 778, 780 (D. Nev.), *aff'd*, 887 F.2d 889 (9th Cir. 1989) (emphasis added). Breach of the duty to implement the AEC mandated emergency plan requirements constituted negligence. *Id.*

92. Responding to the effects of the use of the discretionary function in the bomb-test cases, Congress apologized to individuals it determined were left to bear the burden of the nuclear weapons program. See Radiation Compensation Act, 104 Stat. 920 (1990) (codified at 42 U.S.C. § 2210 (Supp. II 1990)).

(FTCA).<sup>93</sup> *Roberts* held that, before 1977,<sup>94</sup> scientists in charge of preparing emergency plans “[f]ailed to appreciate or prepare for the magnitude of hazards that would result” from radioactive fallout.<sup>95</sup> Therefore, no liability could be extended to the government when deficient emergency plans were implemented. However, in *Roberts*, the negligence complained of was the site manager’s failure to comply with the mandates of the emergency plans.<sup>96</sup> The sufficiency of the plans was not attacked.

The court in *Guard* also held that emergency plans are not adequate unless they meet the part 50 standards with specificity.<sup>97</sup> The principle of specificity from *Guard*, in light of *Roberts*, applies to the implementation of the emergency plans.<sup>98</sup> That is, a utility must implement the emergency plans with the same specificity with which the plans were drafted. This makes sense because only implementation of the emergency plans provides protection.

### 3. The Accident

*TMI III* should present the question of whether the emergency actions actually undertaken by General Public Utilities (GPU), the TMI licensee, were in specific accord with the emergency plans existent at the time of the accident. The official reports of investigations following the accident demonstrate that TMI’s emergency plans and NRC’s regulations were violated.

GPU knew that plant conditions at 4:30 A.M. on March 28, 1979, were so dangerous that a site emergency should have been called immediately.<sup>99</sup> A site emergency was called at 6:55 A.M., two and one-half hours later.<sup>100</sup> When a general emergency was declared, no protective actions were taken by GPU. The public received no warning until the third day, March 30, 1979.<sup>101</sup> One of the investigators, Victor Stello, clearly stated that the

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93. *Roberts*, 724 F. Supp. at 778, 779. 28 U.S.C. § 2680(c) (1988) provides that the Government may not be sued when, in the undertaking of a mandated procedure, an official has exercised his discretion while implementing the procedures.

94. The test and exposure that gave rise to the *Roberts* exposure took place on December 18, 1970, so the sufficiency of the plans themselves was not at issue. Rather, it was whether or not the plans were implemented sufficiently to protect *Roberts* from unreasonable exposures to radiation.

95. *Roberts*, 724 F. Supp. at 778 (citing *In re* Consol. U.S. Atmospheric Testing Litig., 820 F.2d at 994 (9th Cir. 1987)).

96. *Roberts*, 724 F. Supp. at 780.

97. *Guard*, 753 F.2d at 1149.

98. *Roberts*, 724 F. Supp. at 780.

99. MITCHELL ROGOVIN, NRC SPECIAL INQUIRY GROUP, THREE MILE ISLAND: A REPORT TO THE COMMISSIONERS AND THE PUBLIC, Vol. 2, Part 3, 845 (1979).

100. NRC, NOTICE OF VIOLATIONS, NUREG-0600 at 13, 15 (1979).

101. On the second and third day of the accident, March 29 and 30, GPU vented radioactive materials into the atmosphere intentionally. MITCHELL ROGOVIN, NRC SPECIAL INQUIRY GROUP, THREE MILE ISLAND: A REPORT TO THE COMMISSIONERS AND THE PUBLIC, Vol. 2, Part 3, 842-45 (1979). This action was not only a failure to implement the emergency plans with specificity, it was a conscious disregard of the duty GPU was under to reduce the risks of radiation exposure. See also NRC, NOTICE OF VIOLATIONS, NUREG-0600, at I13-88-90.

implementation of the emergency plans lacked proper specificity.<sup>102</sup> He found “[P]rocedure 1004 for implementing the Emergency Plan [at TMI] lacked sufficient specificity and failed to result in a site emergency being declared . . . .”<sup>103</sup> Stello stated that GPU failed to comply with both the operating standards and the emergency actions that were included in the Final Safety Assessment Report (FSAR).<sup>104</sup>

As noted, *Roberts* requires the utility to implement the emergency plans with specificity. GPU’s violation of the specificity requirement was a breach of their duty to protect the public from the risk of radiation exposure.<sup>105</sup> There were many violations of the emergency plans by GPU,<sup>106</sup> but the most egregious was the fact that no protective actions were taken to reduce the risk of exposure to radiation after the general emergency was declared.<sup>107</sup> In *TMI III*, the poor implementation of emergency procedures resulted in no public notification.<sup>108</sup> GPU’s emergency plan required a

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102. See *Guard v. NRC*, 753 F.2d 1144 (1984) (stating that the emergency plans must be drafted with specificity so they may be adequately implemented). *Roberts*, 887 F.2d at 889 (stating that the plans must also be implemented with specificity to protect from radiation hazards).

103. 1979 NRC INVESTIGATIVE REPORT NO. 50-320/79-10, at 1 app. A (1979).

104. The FSAR is made during the licensing procedure. It includes the finalized emergency plan, and the duties that exist should an accident occur. See *supra* notes 83, 85.

“During the course of the accident there was a significant departure from normal health physics procedures and practices. It is recognized that in the interest of overall safety during an accident of this magnitude there may be circumstances justifying departure from stringent health physics practices. Nevertheless, we believe that insufficient measures were taken to control health physics actions and decisions during the course of the accident.”

1979 NRC INVESTIGATIVE REPORT NO. 50-320/79 - 10, at 2 app. A (1979).

Investigator Stello states in his investigative letter to GPU that GPU exhibited a pattern of ignoring proper operational standards. He further stated that GPU operated the plant at elevated temperatures for an extended period, and this caused the operators to be unaware that the plant was entering an accident scenario. See 1979 NRC Investigative Report No. 50-320/79 - 10 (1979).

105. See 10 C.F.R. § 50.47(a)(1) (1991) (“[N]o initial operating license for a nuclear reactor will be issued unless there is reasonable assurance that adequate protection *can and will* be taken in the event of an radiological emergency.” Subsection (b)(6) also notes “Provisions [must] exist for prompt communications among principle response organizations to emergency personnel and the public.”). *Id.* § 50.47(b)(6).

106. NOTICE OF VIOLATIONS, NUREG - 0600 at II3-88-90 (1979).

107. The general emergency was declared at 7:24 A.M. on the 28. MITCHELL ROGOVIN, NRC SPECIAL INQUIRY GROUP, THREE MILE ISLAND: A REPORT TO THE COMMISSIONERS AND THE PUBLIC, Vol. 2, Part 3, at 843 (1979). A general emergency was defined as an “incident which has the potential for serious radiological consequences to the health and safety of the general public.” FINAL SAFETY ANALYSIS REPORT, TMI-2, Vol. 13, at 13A-4 (1974). The Rogovin Investigative Report determined that GPU vented radioactive gasses directly from the feedwater system to the atmosphere. The gasses were evolved from the reactor core two days earlier, when all coolant was removed from the core by GPU. The gasses were uncondensable, and interfered with the pressure within the feedwater system. When the pressure in the feedwater system became too great it would “dump” the water to alleviate the pressure. Ordinarily this would not have been a major problem, because a reactor was supposed to operate with three separate feedwater systems. On March 30, TMI Unit 2 was operating with only one volume of water that could be used to cool the reactor. If the operators lost that water, the reactor would have become uncovered again, causing another loss of coolant accident (LOCA). The first LOCA happened two days earlier and was the major event that caused the reactor core damage.

108. With respect to the emergency plans, Stello stated directly that: “Th[is] noncompliance [with the FSAR] demonstrate[s] serious weakness in your (GPU’s) ability to maintain an effective health physics program.” *Id.* at 2

public warning within the first few hours of the accident.<sup>109</sup> This warning may have precluded all of the asserted exposures that base the claims in *TMI III*.

## V. CONCLUSION

Safety and protection from the harmful effects of radiation is the NRC's guiding responsibility. The NRC regulations work together to provide a cohesive framework delineating the use and handling of radioactive materials. Because the use of these materials is so widespread, the scope of the regulations is broad. Therefore, it is not surprising to find safety concerns imbedded in passages of the regulations that have titles unrelated to radiation protection.

As previously discussed, the part 20 limits referenced by the district court in *TMI III* apply to operational conditions. They provide that the utility will breach its license and be subject to NRC sanctions if it releases more than a small dose of radiation. In fact, the utility will be subject to NRC sanctions without exceeding the part 20 limits if it breaches the ALARA requirements. It is thus apparent that the NRC places an even greater obligation on the utility than part 20 limits require.<sup>110</sup>

In *TMI II*, Judge Scirica<sup>111</sup> noted that some of the TMI plaintiffs were asserting claims based on negligence *per se* resulting from GPU's apparent violation of NRC regulations. However, Judge Scirica was unwilling to require the plaintiff's to meet a negligence *per se* burden of proof before liability attached. If the plaintiffs are limited to showing that a violation of an arbitrary dose limit occurred before liability attaches to the utility, they will be required to meet a much higher burden of proof than that required in an ordinary tort suit.<sup>112</sup>

Further, if the nominal limits are applied, liability in later cases could become skewed. That is, a plaintiff could never recover for his injuries, no matter how grave they are or how reckless the utility's actions may be, unless he can show exposure to radiation beyond part 20 limits.<sup>113</sup> The Price Anderson Act envisions injured parties obtaining relief in a manner less restricted than that required in an ordinary tort suit. Setting nominal limits as the standard of care could unfairly require an injured plaintiff to meet a higher, not lower, burden of proof in a suit under the Act.

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109. MITCHELL ROGOVIN, NRC SPECIAL INQUIRY GROUP, THREE MILE ISLAND: A REPORT TO THE COMMISSIONERS AND THE PUBLIC, Vol. 2, Part 3, at 845 (1979).

110. See *supra* notes 42, 44, 48, 49, 51, 52.

111. *TMI II*, 940 F.2d 832, 861 (3d Cir. 1991)(concurring that the federal court's jurisdiction over the tort cases at TMI was proper).

112. Judge Scirica noted, "If Congress intended to permit strict liability, it could be argued that it also intended to permit the less intrusive option of fault based standards of care that are more stringent than the federal regulations." *Id.* at 870 n. 3.

113. There is uncertainty on the amount of radiation exposure required to cause injury. Certain individuals are predisposed to injury by radiation. The regulations take this into account for workers and recognize that it is impossible to be so careful for the public. See *supra* notes 18, 20 and accompanying text (discussing the FRC's recommendations).

Correspondingly, a utility could become absolutely liable, under any circumstances, for any injury that might occur in conjunction with a radiation release exceeding part 20 limits, regardless of protective actions taken on the public's behalf. This liability could extend under the Price Anderson Act beyond the scope of the defendant's fault. Under this scenario, if the Price Anderson Act's funds were exceeded and Congress did not increase the available funds,<sup>114</sup> injured individuals would be left, inevitably and inequitably, "holding the bag."<sup>115</sup> Simply, the application of the arbitrary limits from part 20 violates the fundamental precept of tort law that liability should be determined by circumstances and based upon fault.

It is clear that "ALARA is a philosophical principle of radiation protection."<sup>116</sup> The NRC has applied the ALARA principle so consistently that it is thought of as the foundation principle supporting all of the NRC's radiation protection programs. Nuclear engineers have developed specific procedures to meet the ALARA requirements. Therefore, in the absence of specific guidance, one would surmise that ALARA provides the requirement for the level of radiation protection in any given situation.

The Third Circuit Court of Appeals is presented with a choice between nominal part 20 operational limits and a reasonable operational standard from the ALARA regulations. The part 20 limits should not be applied because the TMI accident was an emergency, not an operational event. The emergency plans, which are supported by ALARA, were not specifically set out in the district court's certified question to the Third Circuit. However, the emergency plans must be included in the analysis because they describe the utility's duties in an emergency. ALARA would be included in the emergency plan discussion because the ALARA principle provides the baseline duty for emergency response. The Third Circuit Court of Appeals cannot ignore the emergency regulations and ALARA as it crafts the standard of care in the TMI cases. A ruling that de-emphasizes fault and circumstances, but over-emphasizes limits and nominal requirements, could eviscerate future environmental tort litigation.

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114. Congress can, under the Act, increase the available funds in accord with the President's recommendations. See generally 42 U.S.C. § 2010 (1988).

115. See *supra* note 92

116. Standards for Protection Against Radiation, 56 Fed. Reg. 23,360, 23,366 (1991). See *supra* note 44 and accompanying text.