
The Complete Federal Preemption of Nuclear Safety Should Prevent Scientifically Irrational Jury Verdicts in Radiation Litigation

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NATURAL BACKGROUND RADIATION

Mankind has lived and evolved in a sea¹ of ionizing radiation,² known as natural background radiation, for as long as we have inhabited this planet.³ Natural

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¹ NAT'L INST. OF HEALTH, OFFICE OF COMMUN AND PUB. LIAISON AND THE RADIATION SAFETY BRANCH OF THE OFFICE OF THE DIR., FACT SHEET: WHAT WE KNOW ABOUT RADIATION (April 2000), § 1, <http://www.nih.gov/health/chip/od/radiation/> [hereinafter "NIH Fact Sheet"].

² Ionizing radiation is that form of radiation having enough energy to ionize matter it hits. Ionization occurs when an atom's electron is knocked out of orbit. Sources of ionizing radiation include cosmic rays from space, naturally occurring uranium ore and radon gas, medical x-rays, and numerous man-made radioactive elements produced by fission ("splitting of the atom"). NIH Fact Sheet, *supra* note 1, at § 1.

³ NIH Fact Sheet, *supra* note 1, at § 2 ("Everyone who lives on this planet is constantly exposed to naturally occurring ionizing radiation (background radiation). This has been true since the dawn of time."). See also 10 C.F.R. § 20.1003 (2005) (background radiation defined); *Johnston v. U.S.*, 597 F. Supp. 374, 388-389 (D. Kan. 1984) (discussing relative harmlessness of background radiation); NAT'L ACAD. OF SCIENCES, HEALTH RISKS FROM EXPOSURES TO LOW LEVELS OF IONIZING RADIATION, BEIR VII PHASE 2 (2006)("BEIR VII") at 3. The various BEIR Reports are produced by the Committee on the Biological Effects of Ionizing Radiation, National Research Council, National Academy of Sciences.

background radiation averages 300 millirem (equal to 0.3 rem) per year (approximately 1 millirem per day).⁴ “A dose of 5 rem [5,000 millirem] will be accumulated in the first 17 years of life and about 25 rem [25,000 millirem] in a lifetime of 80 years.”⁵ Thus, while the average American thinks they normally receive a zero dose of radiation from nature, in actuality they absorb approximately 25,000 millirem of radiation during their lifetime at a dose rate of 300 millirem each per annum (approximately 1 millirem per day).⁶ To the best of our scientific knowledge, such a level of radiation exposure is both normal and safe, as will be discussed *infra*.

Radiation emitted by soil, as a result of naturally occurring radionuclides in different concentrations across the country, is one component of natural background radiation.⁷ Colorado soil emits a dose of 90 millirem per year.⁸ Kansas soil emits a dose of 46 millirem per year.⁹ Florida soil emits a dose of 23 millirem per year.¹⁰ These are normal “dirt doses.” Moving from Florida to Colorado increases a person’s radiation dose from soil by 67 millirem per year, equal to an additional 1.3 millirem of radiation per week. Moving from Kansas to Colorado increases a person’s “dirt dose” 44 millirem each year or 3.6 millirem of additional radiation each month. Moving from Florida to Kansas increases a person’s “dirt dose” 23 millirem each year. The average American, moving interstate considers these small millirem doses trivial and safe without considering the differences in radiation dosages. No one moves from Colorado to Kansas or Florida to reduce their radiation dose. Nor does any state or federal agency consider the additional yearly dose in Colorado to be of any significant health consequence; there are no signs around Colorado warning of higher radiation levels and none are needed. Land is sold and used all over the United States without regard to the radiological difference normally found in the soil, which can amount to an additional dose of 67 millirem per year or 5,360 millirem over an 80 year lifespan.

The scientific community knows a great deal about natural background radiation and its potential health effects.¹¹ Either mankind developed protective biological

These most relevant to radiation risk are BEIR III, BEIR V and BEIR VII.

⁴ BEIR VII, *supra* note 3 at 3; Radiation is measured in units known as rem and millirem in the metric system. Thus, 1 rem equals 1,000 millirem. See *Landry v. Florida Power & Light Corp.*, 799 F. Supp. 94, 95, n. 2 (S.D. Fla. 1992). A millirem of radiation is a very small amount of radiation, just as a millimeter is a very small distance.

⁵ HEALTH PHYSICS SOC’Y, RADIATION RISK IN PERSPECTIVE, POSITION STATEMENT OF THE HEALTH PHYSICS SOC’Y (Aug. 2004) at 1, <http://hps.org/documents/radiationrisk.pdf>. The Health Physics Society (“HPS”) is the professional society of radiation protection scientists. It publishes statements of the scientific consensus of experts in radiation protection. These are known as HPS Position Papers and can be found on the HPS website (www.hps.org) under “Special Publications”.

⁶ The NIH estimates 350 millirem/yr. NIH Fact Sheet, *supra* note 1, at § 2.

⁷ Soil contains many naturally occurring radioactive substances such as uranium, radium and thorium. It also contains a very small amount of man-made radioactive material, such as plutonium, due to world wide fallout from the atmospheric testing of nuclear weapons. NIH Fact Sheet, *supra* note 1, at § 2.

⁸ *Johnston*, 597 F. Supp. at 422.

⁹ *Id.*

¹⁰ *Id.* at 423.

¹¹ See *e.g.*, HEALTH PHYSICS SOC’Y, COMPENSATION FOR DISEASES THAT COULD BE CAUSED BY RADIATION MUST CONSIDER THE DOSE, POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY (Adopted March 2000, Reaffirmed March, 2001) at 2, <http://hps.org/documents/Compensation.pdf> (noting that “our knowledge about the potential health effects of ionizing radiation is extensive.”).

mechanisms as he evolved in this natural environmental situation,¹² or the actual cancer risk from such low levels of radiation is so insignificant it has not been detectable from the extensive data mankind has collected from scientific studies of radiation's effects.¹³

Based on over one hundred years of scientific observation and study,¹⁴ we can conclude that, while high doses of radiation have been shown to cause some cancers in some of the people exposed,¹⁵ ***low doses, comparable to those received from natural background such as 1 millirem per day or 300 millirem per year, have not been linked to any harmful effect.***

The most reliable studies of the effects of radiation exposure at the low levels experienced by occupational workers have not been able to detect adverse health effects associated with lifetime exposures smaller than approximately 10 rem [10,000 millirem].

There is substantial and convincing scientific evidence for health risks following high-dose exposures. However, below 5-10 rem [5,000 to 10,000 millirem] (which includes occupational and environmental exposures), risks of health effects ***are either too small to be observed or are nonexistent.***¹⁶

For very small radiation doses, scientific tests have determined that any potential health effects are, at most, hypothetical:

“Epidemiological studies have not demonstrated adverse health effects in individuals exposed to small doses (less than 10 rem [10,000 millirem]) delivered in a period of many years.”¹⁷

Seeing as how such small doses are comparable to exposure to daily natural background radiation, the Health Physics Society “has concluded that estimates of risk should be limited to individuals receiving a dose of 5 rem [5,000 millirem] in

¹² NIH Fact Sheet, *supra* note 1, at § 4 (“Our cells, however, have several mechanisms to repair the damage done to DNA by radiation.”).

¹³ *Id.* at § 2 (“This low-level background radiation is a part of the earth's natural environment and any degree of risk associated with it has not been demonstrated to date.”), § 5 (“Low-level exposures received by the general public have shown no link to cancer induction.”).

¹⁴ *Id.* at § 1 (“In 1902, skin cancers were reported in scientists who were studying radioactivity. . . . The role of [high doses of] radiation in causing leukemia in humans was first reported in 1944 in physicians and radiologists.”).

¹⁵ *Id.* at § 2 (Even among the Japanese survivors of the atomic bombs only about 12% of all cancers they developed are related to the radiation they received.)

¹⁶ HEALTH PHYSICS SOC'Y, OCCUPATIONAL RADIATION-SAFETY STANDARDS AND REGULATIONS ARE SOUND, POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY (Mar. 2000) at 1, <http://hps.org/documents/occupational.pdf> (emphasis supplied).

¹⁷ HEALTH PHYSICS SOC'Y, RADIATION RISK IN PERSPECTIVE, POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY, *supra* note 5, at 2.

one year or a lifetime dose of 10 rem [10,000 millirem] in addition to natural background.”¹⁸ Any potential harm at exposure below those levels is hypothetical.¹⁹ If a person receives a dose of less than 5,000 millirem per year, or less than 10,000 millirem over many years over and above the normal 25,000 millirem they receive from natural background radiation, no estimate of increased risk should be attached to such a low dose because extensive scientific studies do not validate the existence of any risk.

Even though no concrete evidence of increased risk for low doses exists, federal officials must set radiation safety standards, and ask radiation scientists to make recommendations for those standards. Both officials and scientists resort to a speculative assumption that some risk may still exist, even if unproven today. Speculation as to the level of the risk from low dose exposures, when no risk has actually been observed at those doses, is known as the linear non-threshold hypothesis (“LNT”).²⁰

As with many potentially toxic agents, there may be a certain dose of radiation below which no harm will occur to the human being. If there is in fact a threshold of exposure below which carcinogenic effects do not occur, science has not yet proven or disproven it, thus any current measurement of such a threshold must be termed a threshold or non-threshold *hypothesis*. . . .

If one assumes that the risk per rem is the same at low dose as it is at high dose, one is assuming that if a million people exposed to 100 rem have 10 excess cancers, then a million people exposed to 10 rem will have one excess cancer and a million people exposed to one rem will have 1/10 of one excess cancer. When such an assumption is drawn on a standard dose response graph, the result is a straight line. This assumption is known as the linear hypothesis. . . .

As the name itself notes, this assumption is not a proven fact. It is only a hypothesis . . . [and a]nyone who has been trained in the scientific method realizes that a hypothesis is a scientist’s educated speculation.²¹

¹⁸ *Id.*

¹⁹ HEALTH PHYSICS SOC^Y, COMPENSATION FOR DISEASES THAT MIGHT BE CAUSED BY RADIATION MUST CONSIDER THE DOSE, POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY, *supra* note 11, at 2 (“The likelihood of radiation-induced disease below this level, if it exists at all, is so small that it is not measurable, **it is not a matter of scientific fact**, and it can only be estimated utilizing **hypothetical** mathematical dose-response models.”) (emphasis supplied).

²⁰ BEIR VII at 6-7 and 7 (Figure PS-3).

²¹ *See Johnston*, 597 F. Supp. 374 at 392-393 (citing BEIR III, *supra* note 3, a predecessor to BEIR V and VII); *see also* BEIR V, *supra* note 3, at 181 (“Finally, it must be recognized that derivation of risk estimates for low doses and dose rates through the use of any type of risk model involves assumptions that remain to be validated . . . [t]hus, **the possibility that there may be no risks from exposures comparable to external natural background radiation cannot be ruled out**. At such low doses and dose rates, it must be acknowledged that the lower limit of the range of uncertainty in the risk estimates extends to zero”) (emphasis supplied); *Whiting v. Boston Edison Co.*, 891 F. Supp. 12, 25 (D.

FEDERAL RADIATION SAFETY STANDARDS

Three federal agencies, the Nuclear Regulatory Commission (NRC), Department of Energy (DOE), and Environmental Protection Agency (EPA) are well aware of the problem of natural background radiation, and regulate it to some extent. Both the NRC and the DOE allow persons who elect to work around radiation (nuclear workers) to receive up to 5,000 millirem (5 rem) per year.²² The EPA does not have jurisdiction over nuclear workers. Both the NRC and the DOE allow members of the general public who reside near licensed nuclear facilities or who enter them to receive up to 100 millirem (0.1 rem) each year from radiological activities licensed by the NRC and DOE.²³ Both the NRC and the EPA allow “contaminated” land to be used for any purpose so long as a person residing on that land would not receive a dose greater than 25 millirem per year from the “contamination.”²⁴ There is a uniform regulatory nuclear safety consensus that 5,000 millirem per year is adequately safe for nuclear workers, 100 millirem per year is adequately safe for members of the general public, and 25 millirem per year is adequately safe for “contaminated” land.²⁵

THE ROCKY FLATS FACTS

Rocky Flats was a facility that constructed component parts for nuclear weapons.²⁶ It ceased operation in 1989,²⁷ was remediated, and is now a wildlife refuge.²⁸ However, over many years of operation, a few events resulted in the release of small amounts of radioactive material²⁹ now deposited in barely detectable

Mass. 1995) (“The linear non-threshold model cannot be falsified, nor can it be validated. . . . It has no known or potential rate of error. It is merely an hypothesis.”).

²² Nuclear Regulatory Comm’n, 10 C.F.R. § 20.1201(a)(1)(i) (2006); Dept. of Energy, 10 C.F.R. § 835.202(a)(1) (2006).

²³ Nuclear Regulatory Comm’n, 10 C.F.R. § 20.1301(a)(1) (2006); Dept. of Energy, 10 C.F.R. § 835.208 (2006).

²⁴ Nuclear Regulatory Comm’n, 10 C.F.R. § 20.1402 (2006); Env’t Prot. Agency, 40 C.F.R. § 190.10(a) and § 191.03(a) and (b) (2006).

²⁵ See *supra* notes 22, 23, & 24. Federal regulators and radiation protection professionals strive for excellence in radiation protection and attempt to keep doses below these dose limits but excellence is not the standard of care.

²⁶ Cook, et al. v. Rockwell Int’l Corp. and the Dow Chem. Co., 273 F.Supp.2d 1175, 1178 (D. Colo. 2003).

²⁷ AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, ASTDR PUBLIC HEALTH ASSESSMENT FOR ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE at 1 (admitted at trial as Defense Exhibit 454).

²⁸ See *Flats Cleanup Plan Approved*, BOULDER DAILY CAMERA, Sept. 30, 2006, at C02, available at 2006 WLNR 17131773 (announcing the signing by the EPA, the DOE, and the state of Colorado of a document outlining the DOE’s responsibilities in protecting the land from contamination, making a key step towards turning most of the 6,200 acres surrounding the former Rocky Flats plant into a national wildlife refuge); Launce Rake, *Explosive Issue Pits Jobs Against Nukes, Critics Question Need for Plutonium Center at Test Site*, LAS VEGAS SUN, Dec. 1, 2006, at A1, available at 2006 WLNR 20780750 (“The federal government spent \$7 billion to clean up the Rocky Flats plant, much of which today is a wildlife refuge.”); Jay Robb, “*Abundance Approach*” Boosts Results; *Innovative Tactic Cleaned up Colorado’s Polluted Rocky Flats Site 60 Years Ahead of Schedule*, HAMILTON SPECTATOR (Ontario, Canada), Sept. 23, 2006, at E01, available at 2006 WLNR 16506936 (Outlining the steps taken to make Rocky Mountain Flats into the wildlife refuge it became by October 2005).

²⁹ See U.S. DEPT. OF ENERGY, OFFICE OF LEGACY MGMT., ROCKY FLATS HISTORY, http://www.lm.doe.gov/documents/sites/co/rocky_flats/RockyFlats_HistoryBook_rev2.pdf (last visited Feb. 1, 2007) (“[T]he sudden shutdown in 1989 by the FBI/EPA raid had left large quantities of plutonium and other hazardous substances in various stages of processing and storage. In addition, some

amounts on some parts of the wildlife refuge.³⁰ Remediation decontaminated the refuge land so thoroughly that the highest dose a refuge worker could receive from the remaining contamination is about 1 millirem per year: equal to one day of natural background radiation for an average American.³¹ Plaintiffs' land surrounded the refuge and was not decontaminated. Theoretically, some radioactive particles, in the future, could migrate from refuge land to plaintiffs' land, and cause a trivial dose to a person working or residing on plaintiffs' lands. Any such dose would necessarily be approximately the same as the 1 millirem per year maximum dose to a refuge worker working full time on the remediated but still trivially "contaminated" refuge land. Therefore, a potential for a tiny dose exists.

The State of Colorado hired a team of independent experts to assess the maximum dose any refuge worker or person on the surrounding land could receive from the "contamination" remaining after a clean up satisfactory to the DOE, EPA and State of Colorado.³² These experts determined a person living and working on plaintiffs' lands would not receive a dose, if any, exceeding 2 millirem per year.³³ Such a trivial dose is 5,000 times less than the 10,000 millirem threshold at which the Health Physics Society states some risk can be attached to a dose.³⁴ Each year a Rocky Flats area resident would receive a dose of 90 millirem from radioactive material, not attributable to Rocky Flats, normally found in Colorado soil.³⁵ If the 90

past practices of waste disposal and material storage posed potential environmental and health risks.").

³⁰ ASTDR PUBLIC HEALTH ASSESSMENT FOR ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE at 2 ("contaminants from past releases remain in the local environment").

³¹ COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, PROPOSED MODIFICATIONS AND ADDITIONS TO ATTACHMENTS TO THE ROCKY FLATS CLEANUP AGREEMENT at 11 (Nov. 12, 2002) (admitted at trial as Plaintiff's Exhibit 1469. ("The resultant calculated annual dose to a wildlife refuge worker is about 1 mrem/yr.").

³² See Risk Assessment Corp. *Historical Public Exposures Studies on Rocky Flats*, <http://www.racteam.com/Experience/Projects/RockyFlats.htm#Findings> (last visited March 15, 2007) (Detailing the administration of, procedures used in, timeline and findings of the studies).

³³ Pl. Ex. 1469, 10 ("... an annual dose to the unrestricted user (rural resident) that is well below the unrestricted use regulatory limit, or about 2 millirem/year."). The risk from such a dose is trivial and entirely speculative. Doses from past releases were just as trivial. When the doses are this low any risk at all remains speculative. Various scenarios were calculated, such as the dose to a rancher or a dose to laborer working outside. "The laborer had the highest risk of all scenarios . . . Maximum incremental lifetime cancer incidence risk was in the 10⁻⁴ range (a 1 in 10,000 chance of developing cancer during a lifetime)." ROOD, A.S. AND GROGAN, H.A., *COMPREHENSIVE ASSESSMENT OF EXPOSURE AND LIFE CANCER INCIDENCE RISK FROM PLUTONIUM RELEASED FROM THE ROCKY FLATS PLANT*, RAC REPORT NO. 13-CDPHE-RFP-1999-FINAL (1999), http://www.racteam.com/Experience/Publications/RF_Comp_Pu_Risk.htm. The cancer risk from plutonium radiation was highest to someone who ranches on the land, yet remains trivial and entirely speculative. The labor scenario exhibited the highest risks. Total risks (the sum of all four organs) for the rancher ranged from 1.0 x 10⁻⁸ (5% value) to 2.1 x 10⁻⁶ (95% value)." *Id.* Applying the linear no-threshold hypothesis yields only a one in one hundred million to two in one million risk of developing any form of cancer. Likewise, the risk from the chemical beryllium was to one chance in 250 million. "Geometric mean incremental lifetime cancer incidence risk estimates for beryllium inhalation were greatest for the rancher scenario (3.9 x 10⁻¹⁰)." MCGAVRAN, P.H. AND ROOD, A.S., *ESTIMATED EXPOSURE AND LIFETIME CANCER INCIDENCE RISK FROM BERYLLIUM RELEASED TO THE AIR FROM THE ROCKY FLATS PLANT*, RAC REPORT NO. 2-CDPHE-RFP-1997-FINAL(Rev. 1)(1999), http://www.racteam.com/Experience/Publications/RF_Be_Risk.htm. The EPA has determined that one chance in ten thousand to one chance in one million is an acceptable risk. "All risk estimates were well below the EPA point of departure for acceptable risks (10⁻⁶ to 10⁻⁴)." *Id.*

³⁴ HEALTH PHYSICS SOCIETY, RADIATION RISK IN PERSPECTIVE, POSITION STATEMENT OF THE HEALTH PHYSICS SOCIETY, *supra* note 5, at 2.

³⁵ *Johnston*, 597 F.Supp. at 422.

millirem per year are safe, certainly an additional 1 or 2 millirem per year is not significant. Conversely, if the additional 1 or 2 millirem dose is of any consequence, the entire population of Colorado should relocate to states with lower natural background radiation and no one should be allowed to move to Colorado. The increased radiation due to Rocky Flats contamination is so small it equates to the normal background radiation each American receives every day, since normal average natural background in the United States is 300 millirem per year or about 1 millirem per day. A dose of just one or two millirem over a year is less additional radiation than a Floridian receives by taking a two week vacation to Colorado (1.3 millirem additional radiation per week x 2 weeks = 2.6 millirem additional dose). If 2 millirem is of any consequence, people should not vacation in Colorado. Obviously, the additional dose attributable to the minor contamination on the refuge land and the hypothetical dose to anyone living or working on land surrounding the refuge are not consequential.

The Center for Disease Control Agency for Toxic Substances and Disease Registry (ATSDR)³⁶ conducted a public health assessment for residents of the private land around the Rocky Flats site and concluded “that exposure to contaminants do not exist at levels high enough to cause adverse health effects”.³⁷

Overall, ATSDR believes that available sampling data, epidemiological studies, exposure investigations and other relevant reports paint a consistent picture of the public health implications of environmental contamination near the Rocky Flats Environmental Technology Site (RFETS). Local residents have previously been exposed to trace amounts of site-related contaminants and some exposures continue today; however, past, current and future exposures are below levels associated with adverse health effects.³⁸

The relevant state and national experts all agree the trivial radiation dose to residents from radionuclides potentially dispersed from Rocky Flats is so small it carries no risk of harm and constitutes a lower dose than the additional yearly dose commonly accepted when moving from state to state. While some of the land is now, or may later become, technically “contaminated” with some particles emitting radiation, a quantitative assessment demonstrates the level of contamination is of no practical consequence.

Essentially, the situation on the refuge and surrounding land is no different than public drinking water or air which is safe even though it contains a minor level of contaminants. The NRC and the EPA both agree on a federal safety level for

³⁶ “The Agency for Toxic Substances and Disease Registry (ATSDR), based in Atlanta, Georgia, is a federal public health agency of the U.S. Department of Health and Human Services. ATSDR serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and diseases related to toxic substances.” <http://www.atsdr.cdc.gov> (last visited April 17, 2007).

³⁷ AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, ATSDR MEDIA ANNOUNCEMENT, ATSDR PUBLIC HEALTH ASSESSMENT FOR ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (Sept. 14, 2004), <http://www.atsdr.cdc.gov/NEWS/goldenco091404.html> (last visited April 17, 2007).

³⁸ *Id.* The ATSDR Final Report was admitted into evidence as Defense Exhibit 454.

radiological contamination of land: a yearly dose that does not exceed 25 millirem.³⁹ The less than 2 millirem yearly potential dose from the Rocky Flats contamination is less than one tenth the 25 millirem yearly dose the NRC and EPA consider adequately safe for unrestricted use. Moreover, the NRC has stated that its dose limits are conservatively set to incorporate a "significant safety factor" so that substantial injury or damage should not occur unless exposure exceeds those limits by a "significant multiple."⁴⁰

A person working or residing on the land around the old Rocky Flats Plant potentially would receive a dose of no more than 2 millirem per year. That is 2,500 times less than the amount of radiation considered safe for nuclear workers to receive. Neither the State of Colorado nor the EPA have required or suggested any clean up of plaintiffs' lands. They have placed no restrictions on the use of that land. It is suitable, just as it is, for agricultural use, housing developments, and shopping malls.

THE COOK JURY VERDICT

Approximately 13,000 landowners⁴¹ around Rocky Flats sued the operators of the site⁴² for the minor dose which may occur from the potential radiological "contamination" (allegedly a "plutonium" plume) of some of their adjacent land.⁴³ The Federal District Court handling the case tried these claims to a jury as a class action pursuant to Colorado nuisance and trespass causes of action.⁴⁴ Judge Kane instructed the jury to determine whether or not Rocky Flats was a nuisance⁴⁵ in the past, whether or not the minor contamination constituted a trespass⁴⁶ of Rocky Flats radioactive material onto plaintiffs' lands and, if so, to determine compensatory and punitive damages.⁴⁷ After the trial, the jury returned a verdict of \$354,000,000.00 in property damages for "contamination" and \$199,000,000.00 in punitive damages for a total of \$553,000,000.00.⁴⁸

The EPA, DOE and Colorado's joint determination that the maximum dose to any

³⁹ Nuclear Regulatory Comm'n, 10 C.F.R. § 20.1402: Env't'l Prot. Agency, 40 C.F.R. § 190.10(a) and § 191.03(a) and (b).

⁴⁰ Nuclear Regulatory Comm'n, 10 C.F.R. § 140.81(b)(1) (1997); *see also* TNS v. Natl. Lab. Rel. Bd., 296 F.3d 384, 402 (6th Cir. 2002) *cert. denied* 537 U.S. 1106 (2003) (citing 10 C.F.R. § 140.81(b)(1), this view is bolstered by considering that the minimum annual exposure considered safe is 25 millirems under 10 C.F.R. § 20.1402, while nuclear workers are allowed to receive up to 5,000 millirem per year as per 10 C.F.R. § 20.1201(a)(1)(i) (2006).

⁴¹ Jon Sarche, *Jury Says Dow, Rockwell Should Pay Landowners*, CHI. TRIB., Feb. 19, 2006, § Real Estate, available at 2006 WLNR 7212316 [hereinafter "Sarche"].

⁴² Although the site was owned by the Department of Energy, it was operated by independent contractors, Dow and Rockwell, which contracted with DOE for that purpose. *Cook*, 273 F.Supp.2d at 1178.

⁴³ *Cook*, 273 F.Supp. 2d at 1179.

⁴⁴ *Id.* at 1199, 1201.

⁴⁵ *Id.* at 1213.

⁴⁶ *Id.* at 1201 ("Plaintiff need not demonstrate that plutonium and other Plant-derived contaminants are present on their properties at levels of toxicological concern or are otherwise causing damage to their properties in order to prevail on their trespass claim.").

⁴⁷ *Id.* at 1213.

⁴⁸ Sarche, *supra* note 41.

resident would not exceed 2 millirem per year was admitted into evidence.⁴⁹ The determination by the Center for Disease Control Agency for Toxic Substances and Disease Registry that “contamination” did not, and would not, exist at high enough levels to cause adverse health effects was admitted into evidence.⁵⁰ The HPS Position Statement that no estimate of increased risk should be attached to a person receiving a dose under 10,000 millirem over many years was admitted into evidence.⁵¹ Nevertheless, the jury awarded astronomical damages for land which is perfectly safe.

During this trial the jury received an additional 1.3 millirem “dirt dose” each week because the trial was in Colorado instead of Florida. The jury did not resign and move to Florida in order to “save” the 1.3 millirem additional radiation dose each week. The jury considered 1.3 millirem per week adequately safe: they have accepted that additional dose all their life because they live in Colorado. Yet, they irrationally awarded damages of over half a billion dollars for the potential dose of less than 2 millirem per year.

THE PROBLEM CREATED BY *COOK*

When the federal regulatory expertise deems the potential “contamination” so slight it presents no human health risk; when the professional society of radiation protection scientists conclude such a trivial dose presents almost no risk, and when the amount of radiation in question is less than that which is commonly accepted by the jury and by Americans as they move from state to state, one must question how a reasonable jury could arrive at such a huge verdict. This is a critical question in this case because plaintiffs’ counsel told the jury to distrust and disregard federal radiation safety standards.⁵² One must also examine whether the presiding judge erred in his handling of the case. Certainly, the *Cook* jury verdict creates a conflict between radiation risk as determined by federal authorities and radiation risk as determined by a lay jury. Both cannot be correct. Either one or the other must be wrong.

THE COMPLETE FEDERAL PREEMPTION OF NUCLEAR SAFETY

Federal law preempts radiation safety.⁵³ Unfortunately, the *Cook* judge and jury disregarded federal regulations of radiation safety. There are currently 104 NRC licensed operating nuclear reactors in the United States.⁵⁴ They provide 20% of the

⁴⁹ Colorado Department of Public Health and Environment, *supra* note 31, at 10.

⁵⁰ *Supra* note 27, at 1 (admitted at trial as Defense Exhibit 454).

⁵¹ *Supra* note 5, at 1 (admitted into evidence as Defense Exhibit 688).

⁵² See Merrill G. Davidoff, Peter Nordberg, & David F. Sorensen, *Nuclear Win Was Years in the Making: How Plaintiffs’ Law Firms Took on Two Corporations and the Federal Government – and Prevailed*, NAT’L L. J., Jan. 29, 2007, at S1 (“The defendants seemed to want the jurors to have faith in official government ‘standards’ for radiation exposure—a series of everchanging numbers built on sometimes controversial science From our vantage, the defendants appeared to be asking the jury to trust the Official Story.”).

⁵³ *Pacific Gas & Elec. Co. v. State Energy Resources Conservation & Dev. Comm’n.*, 461 U.S. 190, 208, 103 S.Ct. 1713 (1983) (“the safety of nuclear technology was the exclusive business of the federal government.”).

⁵⁴ ENERGY INFO. ADMIN., U.S. NUCLEAR REACTORS, http://www.eia.doe.gov/cneaf/nuclear/page/nuc_reactors/reactsum.html (last visited Mar. 1, 2007).

nation's electricity.⁵⁵ In addition, there are 18 nuclear facilities associated with nuclear weapons production, one of which was Rocky Flats.⁵⁶ Finally, there are many nuclear fuel cycle sites where some work is done with radioactive material.⁵⁷ At some point each of these sites will be decommissioned, as Rocky Flats was, and the land transferred to other uses. The NRC allows the land upon which a nuclear power plant once stood to be decommissioned and transferred to private ownership for unrestricted uses as long as the residual radioactivity on the land (i.e. the "contamination" remaining after clean-up) would not cause a dose to a resident of the land exceeding 25 millirem per year.⁵⁸ The EPA agrees with the 25 millirem standard.⁵⁹ Yet, the *Cook* jury assessed half a billion dollars damages for a dose 10 times less.

Obviously, a severe conflict exists between the federal regulation of nuclear safety and the *Cook* jury verdict. Either the federal agency with expertise backed by complete federal preemption controls the extent of decontamination required, or a lay jury can assert control through the damages they assess. Both the judgment of the federal agency and the judgment of the jury cannot be right and they cannot co-exist. One must be subjugated to the other. Either the federal agency with expertise in nuclear safety regulates clean-up to acceptable levels or the latest lay jury award effectively regulates through monetary damages, and perhaps destroys⁶⁰ the nuclear industry.

THE POLICY CONSIDERATIONS

The public, and undoubtedly this lay jury, simplistically think any level of contamination is "too much." Yet, nothing in life need be absolutely pure, i.e. with no contamination whatsoever. Public drinking water need not be pure H₂O. The EPA, pursuant to the Safe Drinking Water Act,⁶¹ allows a certain minor amount of "contamination" at levels which do present a small statistical risk of harm to humans.⁶² Significantly, the Safe Drinking Water Act regulations allow a certain

⁵⁵ ENERGY INFORMATION ADMINISTRATION, U.S. NUCLEAR GENERATION OF ELECTRICITY, http://www.eia.doe.gov/cneaf/nuclear/page/nuc_generation/gensum.html (last visited Mar. 1, 2007).

⁵⁶ THE BROOKINGS INSTITUTION, U.S. NUCLEAR WEAPONS, RESEARCH, DEVELOPMENT, TESTING, PRODUCTION, AND NAVAL NUCLEAR PROPULSION FACILITIES (Aug. 16, 2002), <http://www.brook.edu/fp/projects/nucwcost/sites.htm>.

⁵⁷ The nuclear fuel cycle includes mining uranium ore, preparation of fuel for reactors, storage of used ("spent") fuel, and reprocessing of used fuel. URANIUM INFORMATION CENTER, LTD., THE NUCLEAR FUEL CYCLE (Oct. 2994), <http://www.uic.com/au/nfc.htm>.

⁵⁸ Nuclear Regulatory Comm'n, 10 CFR § 20.1402 (2006).

⁵⁹ Env'tl Prot. Agency, 40 C.F.R. § 190.10(a) and § 191.03(a) and (b).

⁶⁰ Interestingly, anti-nuclear advocates who have failed to stop nuclear power through the political process could utilize jury trials to destroy the cost effectiveness of nuclear operations. These advocates simply have to appear as expert witnesses and convince a lay jury that tiny amounts of radioactivity are deadly. While the federal regulator, who possesses great expertise in this area, has not been convinced by their arguments, a lay jury would be far easier to convince.

⁶¹ "Growing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act." U.S. ENV'TL PROT. AGENCY, Clean Water Act, <http://www.epa.gov/r5water/cwa.htm> (last visited Jan. 28, 2007).

⁶² The EPA establishes two different levels, The Maximum Contaminant Level Goal (MCLG) and the Maximum Contaminant Level (MCL), which serve different purposes. "MCLGs are non-enforceable public health goals." United States Environmental Protection Agency, *Setting Standards for Safe*

amount of radiation emitted from radioactive particles in a public water supply. A person residing on plaintiffs' land who is serviced by an EPA approved public water system could actually be receiving a much higher yearly radiation dose from the water they drink (up to 4 millirem/yr) than from the potentially "contaminated" land itself (up to 2 millirem/year).⁶³ "The current standards are: combined radium 226/228 of 5 pCi/L; a gross alpha standard for all alphas of 15 pCi/L (not including radon and uranium); a combined standard of 4 millirem/year for beta emitters."⁶⁴

Likewise, the air we breathe need not be absolutely pure pursuant to the 1990 Clean Air Act.⁶⁵ If water and air had to be pure we could not live in cities. Also, the food we eat and the drugs we take need not be absolutely pure.⁶⁶ Everything we eat, drink or breathe is "contaminated" to some extent. Even televisions emit a dose of radiation.⁶⁷

The real scientific and legal issue is not contamination versus no contamination. Rather, it is a safe level of contamination versus an unsafe level of contamination:

The total number of sites contaminated with radionuclides in the United States is in the thousands. Contaminated sites range in size from corners of laboratories to sprawling nuclear weapons facilities covering many square miles of land. The contamination extends to all environmental media, as well as to onsite buildings and

Drinking Water, available at <http://www.epa.gov/safewater/standard/setting.html> (last visited Mar. 11, 2007). "Once the MCLG is determined, EPA sets an enforceable standard. In most cases, the standard is a Maximum Contaminant Level (MCL), the maximum permissible level of a contaminant in water which is delivered to any user of a public water system." *Id.* "The MCL is set as close to the MCLG as feasible, which the Clean Water Act defines as the level that may be achieved with the use of the best available technology, treatment techniques, and other means which EPA finds are available (after examination for efficiency under field conditions and not solely under laboratory conditions) are available, taking cost into consideration." *Id.* For example, "if a chemical is carcinogenic and a safe dose can be determined, the MCLG is set at a level above zero that is safe." *Id.*

⁶³ This comparison illustrates the absurdity of the half a billion dollar verdict in *Cook*.

⁶⁴ U.S. ENV'T'L PROT. AGENCY, RADIONUCLIDES IN DRINKING WATER RULE, <http://www.epa.gov/ogwdw/radionuclides/regulation.html> (last visited Mar. 11, 2007).

⁶⁵ "Under this law, EPA sets limits [not eliminates] on how much of a pollutant can be in the air anywhere in the United States." U.S. ENV'T'L PROT. AGENCY, THE PLAIN ENGLISH GUIDE TO THE CLEAN AIR ACT, http://www.epa.gov/oar/oaqps/peg_caa/pegcaa02.html (last visited Mar. 11, 2007). "Long-term exposure to air pollution can cause cancer and long-term damage to the immune, neurological, reproductive, and respiratory systems. In extreme cases, it can even cause death." UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, AIR & RADIATION, <http://www.epa.gov/air/basic.html> (last visited Mar. 11, 2007).

⁶⁶ Starting with the Pure Food and Drug Act of 1906 and continuing with the Federal Food, Drug and Cosmetic Act of 1938, the federal Food and Drug Administration (FDA) regulates food, drugs and consumer products.

⁶⁷ "A Federal standard limiting x-ray emissions from TV receivers to 0.5 milliroentgen per hour (mR/hr) was issued on December 25, 1969. The standard is applicable to all TV sets manufactured after January 15, 1970." U.S. Food and Drug Administration, CDRH Consumer Information, *We Want You to Know About Television Radiation*, <http://www.fda.gov/cdrh/consumer/TVRad.html> (last updated July 14, 2006). Since TVs emit x-rays and for an X-ray one milliroentgen is equal to 1 millirem, the standard for TVs, in terms of human dose units, is 0.5 millirem per hour. A person watching TV for 2 hours can receive a dose of 1 millirem. In 4 hours a person can receive a dose of 2 millirem and in 6 hours a dose of 3 millirem. Thus, a person who resides on the *Cook* plaintiffs' land can actually receive a higher dose of radiation from watching TV for just 6 hours (3 millirem) a year than they will receive (less than 2 millirem) from the potentially "contaminated" soil.

equipment.⁶⁸

The cost of cleaning air, water and food to the level of zero contamination would be prohibitive, unnecessary, and a terrible waste of limited resources. The federal regulator, with scientific expertise in the item being regulated, is charged with determining the level of contamination adequately safe for humans. The courts must respect and defer to those determinations and not substitute the judgment of lay juries who wish to impose an irrational standard of zero contamination.

Similarly, federal regulations do not require radiological purity for nuclear power plants. An operating nuclear power plant may allow minor radiation doses to members of the public living nearby, as long as those doses do not exceed 100 millirem per year.⁶⁹ Persons who work in a nuclear facility (“nuclear workers”) may receive radiation exposure each and every year of employment so long as the dose does not exceed 5,000 millirem in any one year.⁷⁰ A former nuclear power plant can be transformed into an industrial site, a housing development or a shopping mall, so long as the dose to persons using those facilities would not exceed 25 millirem per year.⁷¹ While vast sums of money could be spent to remediate a former reactor site to the level of 2 millirem per year or lower, such action is not necessary.

By comparing actual radiation doses, one can easily see that the *Cook* jury imposed an improper standard and assessed exorbitant damages. Their actions illustrate one of the reasons for federal preemption: the issue is too complex to place in the hands of a lay jury applying state law concepts and state law causes of action.⁷² Sadly, taxpayers will pay for these damages since the federal government indemnifies contractors.⁷³ No good social policy reason is served by allowing a huge windfall to these private landowners at the expense of the taxpayers.

THE ATOMIC ENERGY AND PRICE-ANDERSON ACTS

At the very dawn of the nuclear age, Congress established a federal monopoly

⁶⁸ U.S. ENVTL. PROT. AGENCY, RADIATION TOPICS, CLEANING UP RADIOACTIVE SITES, <http://www.epa.gov/radiation/cleanup.htm> (last visited March 11, 2007).

⁶⁹ 10 C.F.R. § 20.1301(a)(1).

⁷⁰ 10 C.F.R. § 20.1201(a)(1)(i) (Requiring that the licensee control the occupational dose for adults per year to “[t]he total effective dose equivalent being equal to 5 rems”).

⁷¹ 10 C.F.R. § 20.1402 (“[A] site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 millirem (0.25 mSv) per year, including that from groundwater sources of drinking water, and the residual radioactivity has been reduced to levels that are as low as reasonable achievable”).

⁷² See *El Paso Natural Gas Co. v. Neztosie*, 526 U.S. 473, 484 (1999) (“Congress thus expressed an unmistakable preference for a federal forum”); see also *Duke Power Co. v. Carolina Env'tl. Study Group, Inc.*, 438 U.S. 59, 89, 98 S.Ct. 2620 (1978) (“The legislative history of the liability-limitation provisions and the accompanying compensation mechanism reflects Congress’ determination that reliance on state tort law remedies and state-court procedures was an unsatisfactory approach to assuring public compensation for nuclear accidents, while at the same time providing the necessary incentives for private development of nuclear-produced energy”).

⁷³ See *Cook*, 273 F.Supp.2d at 1211 (arguing that indemnification is codified in 42 U.S.C. § 2210(s), which states that “no court may award punitive damages in any action with respect to a nuclear incident . . . against a person on behalf of whom the United States is obligated to make payments under an agreement of indemnification covering such incident.”).

over nuclear power.⁷⁴ While that monopoly remains to this day for nuclear weapons, the Atomic Energy Act of 1946 relaxed it so public utilities could build and operate nuclear power plants to generate electricity. Still, utilities would not accept the attendant risk unless adequate insurance was available.⁷⁵ To address that concern, Congress provided for a system of financial responsibility in the Price-Anderson Act of 1957.⁷⁶ That system combined private insurance up to a certain level and then federal responsibility for any amounts over that level.⁷⁷ With the 1988 Amendments Act, Congress established a sole and exclusive federal cause of action, the Public Liability Action (“PLA”), for any property damage or personal injury from radiation exposure due to “source, special nuclear or byproduct material” (essentially the source of the fuel, the fuel itself or any byproducts produced by burning that fuel in a nuclear reactor).⁷⁸ The DOE production of nuclear weapons is covered by Price-Anderson since plutonium, the radioactive substance potentially contaminating the *Cook* plaintiffs’ lands, is a byproduct material.⁷⁹ According to Price-Anderson, any plutonium contamination on plaintiff’s lands would entitle them to one cause of action—the PLA.

For fifty years, the federal government has regulated nuclear power extensively.⁸⁰ Indeed, the federal regulation of nuclear power is one of the most comprehensive frameworks of federal regulation ever established.⁸¹ This federal framework precludes states from regulating the safety aspects of nuclear energy.⁸²

Congress first initiated its regulation of nuclear technology through the Atomic Energy Act of 1946.⁸³ The Act was designed to transform “atomic power into a source of energy.”⁸⁴ Although nuclear technology was originally a government

⁷⁴ See *Pac. Gas and Electric Co.*, 461 U.S. at 194 (describing how the federal government has regulated nuclear energy while safeguarding traditional state powers); see also *Duke Power*, 438 U.S. at 62 (“[W]hen Congress passed the Atomic Energy Act of 1946, it contemplated that the development of nuclear power would be a government monopoly”).

⁷⁵ See *Duke Power*, 438 U.S. at 64-65 (explaining that enormous liability is associated with potential nuclear accidents).

⁷⁶ 42 U.S.C. § 2210 (a)-(e) (2006).

⁷⁷ See *id.* (describing the elements of the system).

⁷⁸ See *In re TMI Litig. Cases Consol. II*, 940 F.2d 832, 854-855 (3d Cir. 1991) (quoting the statute that has created “constitutional debate”), *cert. denied*, 503 U.S. 906 (1992).

⁷⁹ *Cook*, 273 F.Supp.2d at 1179.

⁸⁰ See *In re TMI*, 67 F.3d 1103, 1107-08 (3d Cir. 1995) (“[I]t is clear that federal law governs the standard of care for tort claims arising from nuclear accidents”), *cert. denied*, 516 U.S. 1154 (1996). For a detailed discussion of the background and legislative history of Price-Anderson, see generally *Duke Power Co.*, 438 U.S. 59; *In re TMI Litig. Cases Consolidated II*, 940 F.2d 832; *O’Conner v. Commonwealth Edison Co.*, 13 F.3d 1090, 1095 (7th Cir. 1994).

⁸¹ See *N. States Power Co. v. Minn.*, 447 F.2d 1143, 1153-54 (8th Cir. 1971) (describing how the statute is comprehensive in order to “foster and encourage the development, use and control of atomic energy so as to make the maximum contribution to the general welfare and to increase the standard of living), *aff’d*, 405 U.S. 1035 (1972).

⁸² See *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 240-41 104 S.Ct. 615 (1984) (explaining how the federal government occupies the entire field of nuclear safety); *Pac. Gas & Elec. Co.*, 461 U.S. at 208 (“[T]he safety of nuclear technology [is] the exclusive business of the federal government”).

⁸³ Pub. L. No. 79-585, 60 Stat. 755; see *Pac. Gas & Elec. Co.*, 461 U.S. at 206 (describing the statute); see also *In re TMI Litig. Cases Consol. II*, 940 F.2d at 851-52 (explaining that the statute initially reflected Congress’ intention to federally monopolize the nuclear industry, but that Congress later concluded the industry should have private sector involvement).

⁸⁴ *Pac. Gas & Elec. Co.*, 461 U.S. at 193.

monopoly, within ten years of passing the Atomic Energy Act, Congress concluded “that the national interest would be best served if the Government encouraged the private sector to become involved in the development of atomic energy for peaceful purposes under a program of federal regulation and licensing.”⁸⁵ Thus, the Atomic Energy Act of 1954⁸⁶ ended the federal monopoly and permitted private sector involvement under a comprehensive system of federal licensing requirements and regulation.⁸⁷

The federal government “erected a complex scheme to promote the civilian development of nuclear energy, while seeking to safeguard the public and the environment from the unpredictable risks of a new technology.”⁸⁸ The Atomic Energy Commission (the predecessor of the NRC) “was given exclusive jurisdiction to license the transfer, delivery, receipt, acquisition, possession and use of nuclear materials.”⁸⁹ “Upon these subjects, no role was left for the states.”⁹⁰

As a result of private industry’s reluctance to participate in the nuclear field because of the potential risk of “vast liability,”⁹¹ Congress enacted the Price-Anderson Act of 1957,⁹² amending the Atomic Energy Act. The purpose of this Act is to protect the public by ensuring a reliable source of funds for public compensation in the event of a nuclear accident, and to encourage the development of the nuclear energy industry by setting limits on the liability of private industry.⁹³

In *Pacific Gas & Electric Co. v. State Energy Resources Conservation & Development Commission*,⁹⁴ the United States Supreme Court recognized the preemptive effect of forty years of congressional legislation and regulation of nuclear energy, and held that under the comprehensive federal framework, “the safety of nuclear technology [is] the exclusive business of the federal government,” and that states are precluded from regulating the safety aspects of nuclear energy.⁹⁵ The Court reasoned:

the federal government *maintains complete control of the safety and “nuclear” aspects of energy generation*

State safety regulation is not preempted only when it conflicts with

⁸⁵ *Id.* at 207.

⁸⁶ 42 U.S.C. § 2013 (d) (2006).

⁸⁷ See *In re TMI Litig. Cases Consol. II*, 940 F.2d at 852 (describing the Atomic Energy Act of 1946).

⁸⁸ *Pac. Gas & Elec. Co.*, 461 U.S. at 194.

⁸⁹ *Id.* at 207.

⁹⁰ *Id.*

⁹¹ *Duke Power Co.*, 438 U.S. at 64.

⁹² 42 U.S.C. § 2210.

⁹³ See 42 U.S.C. § 2012 (codifying the Atomic Energy provisions); *In re TMI Litig. Cases Consol. II*, 940 F.2d at 852 (explaining the enormous potential liability associated with operating nuclear power plants, which the private sector sought to have eliminated through legislation); *O’Conner*, 13 F.3d at 1096 (“The Amendments Act dictates the limitations period for a public liability cause of action, 42 U.S.C. § 2210(n)(1), provides for venue, 2210(n)(1), limits the availability of punitive damages in an action arising out of an ENO, § 2210(s), and mandates the normally available defenses be waived in the cases of ENOs, § 2210(n)(1)”).

⁹⁴ 461 U.S. 190, 208, 103 S.Ct. 1713 (1983).

⁹⁵ *Pac. Gas & Elec. Co.*, 461 U.S. at 208.

federal law. Rather, the *federal government has occupied the entire field of nuclear safety concerns*, except the limited powers expressly ceded to the states [A] *state judgment that nuclear power is not safe enough to be further developed would conflict directly with the countervailing judgment of the NRC*... A state prohibition on nuclear construction for safety reasons would also be in the teeth of the Atomic Energy Act's objective to insure that nuclear technology be safe enough for widespread development and use — and would be preempted for that reason.⁹⁶

Building on this preemption, in 1988 Congress enacted the Price-Anderson Amendments Act, dramatically transforming the “Price-Anderson landscape,” and resolved the “tension” between the exclusive federal regulation of nuclear safety and state law compensation for injuries.⁹⁷ Prior to the 1988 Amendments Act, there was no federal cause of action for a non-ENO⁹⁸ under the existing Price-Anderson Act, and there was no federal subject matter jurisdiction for ordinary nuclear accident cases.⁹⁹ Thus, prior to the Amendments Act, persons claiming injury from radiation emitted from source, special nuclear or byproduct material could file state law causes of action in state or federal courts, and could recover under any theory of liability available in any of the fifty states.¹⁰⁰

In the Amendments Act, however, Congress broadly defined “public liability action” to mean “*any* suit asserting public liability”¹⁰¹ and defined “public liability” to mean “*any* legal liability arising out of or resulting from a nuclear incident”¹⁰² Congress then broadly defined “nuclear incident” to include:

*[A]ny occurrence, including an extraordinary nuclear occurrence, . . . causing . . . bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material.*¹⁰³

⁹⁶ *Id.* at 212-13 (emphasis added).

⁹⁷ See *O’Conner*, 13 F.3d at 1105 n.13 (stating that any “tension” between federal standards and state liability standards must be resolved to avoid inconsistency with the Price Anderson Act); *In re TMI Litig. Cases Consol. II*, 940 F.2d at 857 (discussing the effect of the Price-Anderson Act on the law landscape, especially the consistency in law with regard to a single nuclear incident).

⁹⁸ An “ENO” is the acronym for “extraordinary nuclear occurrence.” An ENO is defined as a substantial offsite release of radiation which the NRC or DOE officially determines to be an ENO. The Price-Anderson Act, 42 U.S.C. §§ 2014(j), § 2210(n)(1) (2007); 10 C.F.R. § 140.83 (1968). No ENO has been declared by the NRC or DOE in the United States to date (not even the Three Mile Island accident in 1979 was an ENO). *El Paso Natural Gas Co. v. Neztosie*, 526 U.S. 473, 477 (1999). Technically the Rocky Flats situation is a non-ENO PLA, but such cases are normally referred to in the case law just as “PLAs.” See *Rainer v. Union Carbide Corp.*, 402 F.3d 608, 616-617 (6th Cir. 2005) (noting that by amending the Price-Anderson Act in 1988, Congress created a cause of action arising from nuclear incidents called “public liability actions” (PLAs)).

⁹⁹ *In re TMI*, 67 F.3d at 1105.

¹⁰⁰ *Id.*; *Bohrmann v. Maine Yankee Atomic Power Co.*, 926 F. Supp. 211, 216 (D. Me. 1996).

¹⁰¹ 42 U.S.C. § 2014(hh) (emphasis added).

¹⁰² § 2014(w) (emphasis added).

¹⁰³ § 2014(q) (emphasis added).

Further, Congress provided that a “public liability action shall be deemed to be an action arising under section 2210 of this title”¹⁰⁴

By defining public liability so broadly as to include “any legal liability,” Congress preempted all state causes of action¹⁰⁵ for damages arising from nuclear materials covered under the Act.¹⁰⁶ As the Third, Sixth, Seventh, Ninth, Tenth and Eleventh Circuits have held: “After the Amendments Act, *no state cause of action based upon public liability exists*. A claim growing out of any nuclear incident is compensable under the terms of the Amendments Act or *it is not compensable at all*.”¹⁰⁷

“[A]ny occurrence . . . causing . . . bodily injury, sickness, disease, or death . . . arising out of or resulting from the radioactive, toxic, explosive or other hazardous properties of . . . byproduct material” is a “nuclear incident.”¹⁰⁸ The sole cause of action for a nuclear incident is a PLA.¹⁰⁹ “Public liability” is defined to include “any legal liability,” eliminating any other cause of action.¹¹⁰

The public liability action is an exclusive federal cause of action for radiation injury.¹¹¹ There are two types of PLA causes of action: a PLA for personal injury and a PLA for property damage. An essential element of either PLA cause of action is a dose over the federal numerical dose limits.¹¹² Therefore, as virtually every federal court which has decided a PLA has previously held, to properly assert a public liability action, the plaintiff must plead a dose in excess of the federal permissible dose limits.¹¹³ The courts reason that imposing a standard of care based

¹⁰⁴ § 2014(hh).

¹⁰⁵ Of course, this includes the Colorado Nuisance and Trespass causes of action under which Cook was tried. *Cook*, 273 F. Supp. 2d at 1178.

¹⁰⁶ *In re TMI Litig. Cases Consol. II*, 940 F.2d at 854.

¹⁰⁷ *Id* (emphasis added). See also *Roberts v. Florida Power & Light Co.*, 146 F.3d 1305, 1306 (11th Cir. 1998) (“Congress passed the Price-Anderson Amendments Act of 1988 . . . , creating an exclusive federal cause of action for radiation injury.”), *cert. denied*, 525 U. S. 1139 (1999); *O’Conner*, 13 F.3d at 1100 (“a new federal cause of action supplants the prior state cause of action.”); *Nieman v. NLO, Inc.*, 108 F.3d 1546, 1553 (6th Cir. 1997) (“[S]tate law claims cannot stand as separate causes of action. [Plaintiff] can sue under the Price-Anderson Act, as amended, or not at all.”); *Kerr-McGee Corp. v. Farley*, 115 F.3d 1498, 1504 (10th Cir. 1997) (“[The Act’s] provisions [are] broad enough to create a federal forum for any tort claim even remotely involving atomic energy production. The PAA on its face provides the sole remedy for the torts alleged”), *cert. denied*, 522 U.S. 1090 (1998); *In re Berg Litig.*, 293 F.3d 1127, 1131 (9th Cir. 2002) (“A ‘nuclear incident’ is defined in the Act as ‘any occurrence’”); *Corcoran v. New York Power Authority*, 935 F. Supp. 376, 383-85 (S.D.N.Y. 1996) (PLA is the “sole means by which a plaintiff could recover for damages sustained in a nuclear incident”); 141 CONG. REC. S10,185-01, 141 CONG. REC. S10,185-86 (daily ed. July 18, 1995).

¹⁰⁸ 42 U.S.C. § 2014(q)

¹⁰⁹ 42 U.S.C. § 2014(hh) (“[A]ny suit asserting public liability”).

¹¹⁰ 42 U.S.C. § 2014(w).

¹¹¹ *Corcoran*, 935 F. Supp. at 383-85; *O’Conner*, 13 F.3d at 1099.

¹¹² See *O’Conner v. Commonwealth Edison Co.*, 807 F. Supp. 1376, 1378 (C.D.Ill., 1992) (holding that one of the relevant issues in a PLA is “whether the duty owed was breached,” as determined by federal dose limits); *Lokos v. Detroit Edison*, 67 F. Supp. 2d 740, 743 (E.D. Mich. 1999) (maintaining that one of the two elements plaintiffs must prove is that “exposure exceeded the federal numerical dose limits”); see also *Roberts*, 146 F.3d at 1308 (determining that plaintiffs failed to state a PLA claim where they failed to allege a dose in excess of the federal dose limits); *Bohrmann*, 926 F. Supp. at 220 (holding that plaintiff must “establish a breach” of the federal dose limits); *Corcoran*, 935 F. Supp. at 387 (holding that plaintiff must establish a breach of the federal dose limits).

¹¹³ See *Good v. Fluor Daniel Corp.*, 222 F. Supp. 2d 1236, 1247 (E.D. Wash.2002) (“In order to prevail

on the federal regulations achieves coherence and consistency between the Atomic Energy Act, the Price-Anderson Act and the federal preemption of nuclear safety effectuated through the federal regulations governing permissible doses.¹¹⁴

In addition to preempting all state law causes of action, Congress also preempted any state law rules for decision that are “*inconsistent*” with the Price-Anderson Act.¹¹⁵ After creating the exclusive PLA, Congress did not go on to provide a “complete and self-sufficient body of federal law” to be applied in a PLA.¹¹⁶ Rather, the “Price-Anderson system, by design, alters state tort law to forward the goals of that act.”¹¹⁷ In amending the Price-Anderson Act,¹¹⁸ Congress was well aware that the Price-Anderson compensation system must operate as a consistent part of a larger federal framework governing the safe use of nuclear energy.¹¹⁹ Congress knew that “[n]umerous federal questions will necessarily arise in the course of litigation under this Act, which questions must be resolved consistently with the pervasive federal scheme.”¹²⁰

By directing federal courts to “*derive*” federal rules for decision only from state law that is consistent with existing federal regulatory and statutory law, Congress

on a PLA claim, these plaintiffs must demonstrate . . . that they were exposed to radiation in excess of the maximums established by the federal safety regulations.”); Roberts, 146 F.3d at 1308 (“[V]irtually every federal court . . . [has] held that ‘federal regulations must provide the sole measure of the defendants’ duty in a public liability cause of action.’”); TNS, 296 F.3d at 398 (“[T]he Sixth Circuit has joined with almost every other circuit in holding that NRC safety regulations conclusively establish the duty of care owed by defendants in radiation safety personal injury cases governed by the 1998 amendments to the Price-Anderson Act.”); *In re TMI*, 67 F.3d at 1113 (holding that federal law trumps state law and that the Act was constitutional); *O’Conner*, 13 F.3d at 1105 (finding that federal law preempts state law, whether created by legislation or common law); *Nieman*, 108 F.3d at 1553 (finding that Price-Anderson act specifically dictates that that state law only applies to the extent that it coincides with federal law); Roberts v. Florida Power & Light, 1997 WL 382035 (S.D. Fla. June 9, 1997) (finding that federal law provides the sole measure of a defendant’s liability), *aff’d*, 146 F.3d 1305 (11th Cir. 1998), *cert. denied*, 525 U.S. 1139 (1999); McLandrich v. Southern California Edison Co., 942 F. Supp. 457, 467 (S.D. Cal. 1996) (stating that the state law only applies if it is not inconsistent with federal law); Smith v. General Elec. Co., 938 F. Supp. 70 (D. Mass. 1996) (holding that the 1988 Amendments preserve state law as long as it is not “inconsistent with federal law”); *Bohrmann*, 926 F. Supp. at 220 (holding that in order to prevail in a PLA, plaintiff must “establish a breach” of the federal numerical dose limits); *Corcoran*, 935 F. Supp. 376 (finding that in order to make a PLA consistent with the federal interest in regulating nuclear safety, plaintiffs must plead a violation of the federal numerical dose limits); *Coley v. Commonwealth Edison Co.*, 768 F. Supp. 625 (N.D. Ill. 1991) (holding that state law is invalid if it contradicts federal law); *Hennessy v. Commonwealth Edison Co.*, 764 F. Supp. 495 (N.D. Ill. 1991) (finding that the standard of care is predicated on federal law); *O’Conner*, 748 F. Supp. at 674 (holding that state law shall be followed, unless it is inconsistent with federal law).

¹¹⁴ See *O’Conner*, 13 F.3d at 1105 (holding that the numerical dose limits “are part of this statutory scheme. Imposing a standard of care other than the federal regulations . . . is inconsistent with the Price-Anderson scheme and consequently cannot be applied in a public liability action.”).

¹¹⁵ See 42 U.S.C. § 2014(hh) (stating that the state law is to be followed “unless such law is inconsistent with the provisions of such section”) (emphasis added).

¹¹⁶ *In re TMI Litig. Cases Consol. II*, 940 F.2d at 854.

¹¹⁷ *Nieman*, 108 F.3d at 1552 (quoting *O’Conner*, 13 F.3d at 1100).

¹¹⁸ Approximately every ten years since enacting Price-Anderson Act, Congress has amended it, continually building a comprehensive federal structure that has governed and regulated the nuclear industry. *In re TMI Litig. Cases Consol. II*, 940 F.2d at 852-53.

¹¹⁹ *O’Conner*, 13 F.3d at 1100, 1105 (“Congress recognized that state law would operate in the context of a complex federal scheme which would mold and shape any cause of action grounded in state law and that Price-Anderson operates within “a stringent regulatory background.”).

¹²⁰ *O’Conner v. Commonwealth Edison Co.*, 770 F. Supp. 448, 454 (C.D. Ill. 1991), *aff’d*, 13 F.3d 1090 (7th Cir. 1994).

delineated the scope of field preemption, and set the entire preexisting federal framework *it had already erected* as the polestar by which the federal judiciary should be guided as it establishes this new body of federal law interpreting the PLA.¹²¹ In *O'Conner v. Commonwealth Edison Co.*,¹²² the Seventh Circuit confirmed that the existing federal framework was the standard by which the consistency of state rules for decision must be measured:

[W]e must look at the Amendments Act *in the context of the entire federal statutory scheme* on nuclear power. The Amendments Act is simply the *last addition* to the federal law of nuclear energy *that has been evolving* since 1946 when Congress enacted the Atomic Energy Act. . . .

* * * *

Thus, the Amendments Act is the *latest installment in nearly fifty years of congressional work*. During that time, Congress has attempted to encourage the development of domestic nuclear power to the fullest extent through licensing, indemnification, limitation of liability, and consolidation of litigation. Nevertheless, Congress has balanced this encouragement of private sector activity with an acute concern for public safety by authorizing extensive regulation . . . by the Nuclear Regulatory Commission, and by imposing a carefully constructed measure of liability should nuclear accidents occur.¹²³

Thus, the phrase "unless inconsistent with" explicitly defers to federal statutory language or federal regulation, and makes federal law supreme.

In summary, after the 1988 Amendments Act there are three different components of a PLA. First, there is the *PLA cause of action*. This can either be a PLA for personal injury or a PLA for property damage. Second, there are the *elements of the PLA cause of action*. The duty owed is one element of the PLA cause of action, i.e. compliance with the federal dose limits is the duty owed in either type of PLA. In certain circumstances the Secretary of the Department of Energy or the Commissioner of the Nuclear Regulatory Commission may order defendants to waive the defense of fault.¹²⁴ The default situation then (i.e. a normal PLA) must necessarily enable the defendant to raise the defense of not being at fault. Fault implies that a standard of care (i.e. a duty owed) must exist unless the special circumstances have occurred in which the Secretary or Commissioner have taken this defense away from the defendant. Thus, the elements of a PLA cause of action are those of negligence: duty owed, breach of duty owed, proximate causation and damages. Third, there are *rules for decision* in a PLA, such as the statute of limitations, which are to be derived from state law unless that state law would be inconsistent with the Price-Anderson Act and its incorporation of the complete federal preemption of nuclear safety. Judge Kane's *Cook* Opinion errs when it

¹²¹ *In re TMI Litig. Cases Consol. II*, 940 F.2d at 854; *O'Conner*, 13 F.3d at 1105; *Nieman*, 108 F.3d at 1552; *In re Berg Litig.*, 293 F.3d at 1131.

¹²² 13 F.3d 1090, 1095 (7th Cir. 1994).

¹²³ *O'Conner*, 13 F.3d at 1095-97 (emphasis added).

¹²⁴ 42 U.S.C. § 2210(n)(1)(I).

conflates rules for decision with the cause of action and when it fails to recognize the defense of no fault, i.e. compliance with the federal dose limit of 25 millirem per year for contaminated land.¹²⁵

The *Cook* decision, if affirmed on appeal, has implications far beyond negating the complete federal preemption of nuclear safety. If a nuclear utility cannot rely upon the federal safety standards as a defense against suits for trivial doses, they may well revert to the position they took prior to the passage of the Price-Anderson Act: no nuclear power plants.¹²⁶ They may elect to shut down the 104 nuclear power plants producing 20% of this nation's electricity and thereby plague the country with blackouts: "[S]pokesmen for the private sector informed Congress that they would be forced to withdraw from the field if their liability were not limited by appropriate legislation."¹²⁷ If the *Cook* rationale were to be adopted in cases of allegedly "contaminated" water or air, compliance with the federal safety standards would not provide any protection for a municipal water district.¹²⁸ They could be subject to millions of dollars in damages, as assessed by a lay jury, even though the contaminants in question constituted less than 1/100th of the amounts the EPA deems to be adequately safe. Likewise, municipalities could be liable for failure to reduce man-made air contaminants to zero. Allowing juries to award damages for any levels of contamination above zero would essentially destroy our civilization since no municipality could accept the potential liability attendant in providing a public water supply or in allowing internal combustion engines or furnaces within the municipal limits. Americans would have to revert to a horse and buggy rural lifestyle that existed two hundred and fifty years ago. Allowing lay juries to regulate potentially harmful substances and adopt a contamination standard of zero opens Pandora's Box.

THE *COOK* DECISION

Judge Kane commenced this train wreck with his 2003 *Cook* decision rejecting the then existing uniform federal case law applying federal regulatory safety standards as the duty owed in a PLA.¹²⁹ Astonishingly, Judge Kane effectively held that when Congress totally changed the landscape of Price-Anderson with the 1988 Amendments by creating a new and exclusive federal cause of action, the PLA, Congress adopted all the old pre-existing state law causes of action as the new federal cause of action and these plaintiffs could proceed under Colorado state law causes of action for Trespass and Nuisance.¹³⁰ Obviously, if Congress intended to retain the pre-1988 Amendments Act status quo (state law causes of action), it would not have created a new and exclusive federal cause of action, the PLA.

Judge Kane's reasoning is flawed. Congress intended to effectuate a change in

¹²⁵ See *Cook v. Rockwell Int'l Corp. and Dow Chem. Co.*, 273 F. Supp. 2d 1175 (D. Colo. 2003) (failing to recognize that compliance with federal dose limits is an absolute defense).

¹²⁶ See *Duke Power*, 438 U.S. at 64 (finding that the risk of potentially vast liability discouraged the growth of a private nuclear power industry).

¹²⁷ *Id.*

¹²⁸ See *Cook*, 273 F. Supp. 2d at 1199 (holding that Congress did not intend for federal regulatory standards to preempt state law standards of care in Price-Anderson actions).

¹²⁹ *Cook*, 273 F. Supp. 2d at 1199.

¹³⁰ *Id.* at 1199-1209.

the cause of action under which these cases would be litigated. Unfortunately, following Judge Kane's *Cook* rationale has led at least one other court into error: allowing strict liability in a non-ENO PLA directly contrary to congressional intent and statutory text.¹³¹ *Cook* not only derailed the developed Price-Anderson case law, its erroneous logic has also led other courts into errors of law and holdings directly contrary to Price-Anderson statutory text.¹³² With *Cook* in the Tenth Circuit and *In re Hanford* in the Ninth Circuit, if either circuit affirms its district court decisions there will be a split in the federal circuits on an issue of federal statutory interpretation requiring resolution by the United States Supreme Court.

THE ERRORS OF *COOK*

Judge Kane's fatally flawed analysis commences with his reliance on *Silkwood v. Kerr McGee*¹³³ and determination that it is still "good law today."¹³⁴ Obviously, *Silkwood* was decided in 1984, four years before the 1988 Amendments to Price-Anderson which established the PLA as the new and sole federal cause of action.¹³⁵ *Silkwood* was not a Price-Anderson PLA case and could not possibly be a Supreme Court interpretation of legislation passed four years later. In fact, Justice White's *Silkwood* opinion clearly places great weight on the fact that Congress could have, and had not at that time, created a federal cause of action to provide guidance and limitations for these types of cases.¹³⁶ Four years later, that is exactly what Congress did, effectively limiting *Silkwood* to its own facts and ameliorating the concerns of the dissenting justices.¹³⁷ Congress created the federal PLA as the sole cause of action and thereby agreed with the dissenting opinions and resolved the "tension" created by the majority.¹³⁸ No longer could a jury operating under a state law cause

¹³¹ See *In re Hanford Nuclear Reservation Litig.*, 350 F.Supp.2d 871, 887-88 (E.D. Wash. 2004). Congress established a Price-Anderson system which included possible strict liability only in the event of an ENO and, even then, only if the NRC or DOE directed the defendants to waive the defense of no negligence. 42 U.S.C. § 2210(n)(1)(i). The default PLA cause of action therefore assumed and intended by Congress necessarily must be: 1. a non-ENO PLA could always be defended by asserting no fault (i.e. the PLA cause of action must be the tort of negligence) and 2. an ENO PLA could be defended by asserting no fault unless the NRC or DOE instructed otherwise. Thus, strict liability would only exist under Price-Anderson if two preconditions were met: 1. an ENO was declared and 2. either the NRC or the DOE instructed the defendants to waive the defense of no fault. Neither of these two events occurred in *In re Hanford* making that court's holding an error of law in which the court has created liability beyond its congressional authority under Price-Anderson.

¹³² See *Cook*, 273 F. Supp. 2d at 1199 (holding that state law standards of care preempt federal regulatory standards in Price-Anderson public liability actions; *Hanford*, 350 F. Supp. 2d at 887-88 (confirming *Cook*).

¹³³ 464 U.S. 238 (1984).

¹³⁴ *Cook*, F. Supp. 2d at 1191.

¹³⁵ Compare *Silkwood*, 464 U.S. 238 (decided in 1984), with Price-Anderson Amendments Act of 1988, 42 U.S.C. §§ 2014, 2210 (enacted in 1988).

¹³⁶ *Silkwood*, 464 U.S. at 251. Justice White found no indication that Congress intended to preclude the use of state law remedies for injuries resulting from a nuclear plant, especially in light of Congress' failure to provide any federal remedies for such injuries. *Id.*

¹³⁷ 42 U.S.C. §§ 2014, 2210.

¹³⁸ See *Silkwood*, 464 U.S. at 258 (Acknowledging that there is "tension between the conclusion that safety regulation is the exclusive concern of the federal law and the conclusion that a state may nevertheless award damages based on its own law of liability," but finding that "Congress intended to stand by both concepts and to tolerate whatever tension there was between them").

of action assess damages based upon the jury's own standard of care.¹³⁹ The rationale of the majority opinion is no longer valid because the factual basis, upon which it relied, has changed.

Judge Kane's flawed analysis continues by ignoring the clear language of two different phrases in the 1988 Amendments Act.¹⁴⁰ Torturing, or failing to comprehend, the distinct different phrases "cause of action" and "rules of decision," Judge Kane reasoned that the "rules for decision" in the new PLA "cause of action" were, in fact, the same old state law causes of action which existed before Congress established the new and exclusive federal PLA cause of action!¹⁴¹ When Congress used two different phrases in the same act, it must have intended to refer to two different things and not to the same thing. Here the only cause of action is the PLA. All prior existing state law causes of action are extinguished.¹⁴² The old state law causes of action are not adopted as the new PLA cause of action in a circular fashion which destroys all meaningful change.

While it is true Congress intended to derive "rules for decision" in the new PLA cause of action from the law of the state in which the nuclear incident occurred, Congress did not thereby intend to totally gut the new PLA by adopting state law causes of action in place of the new federal PLA cause of action. The rules for decision to which Congress refers are not different causes of action. They are rules for deciding cases which are not specifically set forth in the 1988 Amendments Act. The state rules for decision are to fill interstitial spaces left in the Price-Anderson PLA statutory text.¹⁴³ For example, the statute of limitation for an ordinary nuclear incident is not specified in the Price-Anderson Act. The federal judiciary is directed to look to the law of the state in which the event occurred to derive a fair statute of limitations for that particular PLA. State law causes of action for nuisance and trespass cannot fill an interstitial gap because none exists once Congress created the federal PLA cause of action. Confusing "rules for decision" with "cause of action," Judge Kane held that the congressional direction to derive "rules for decision" from state law required him to substitute the old state law causes of action for the new PLA cause of action.¹⁴⁴

One error of law led to another. Judge Kane did not recognize compliance with the federal dose limits as the PLA duty owed and instead substituted the Colorado

¹³⁹ *Id.* at 259 ("The Court concludes that Congress intended to allow a jury to impose substantial penalties upon a nuclear licensee for failure to follow what the jury regards as adequate safety procedures.") (Blackmun, J., dissenting); "The Court's decision, in effect, authorizes lay juries and judges in each of the states to make regulatory judgments as to whether a federally licensed nuclear facility is being operated safely," *id.* at 274 (Powell, J., dissenting); "This case is a disquieting example of how the jury system can function as an unauthorized regulatory medium." *id.* at 283 (Justice Powell's dissenting); "No longer can the operators of nuclear facilities rely on the regulations and oversight of the NRC." *id.* at 285 (Powell, J., dissenting).

¹⁴⁰ 42 U.S.C. §§ 2014, 2210.

¹⁴¹ *Cook*, F. Supp. 2d at 1188-1209.

¹⁴² *In re TMI*, 940 F2d, at 854.

¹⁴³ *Id.* at 855 ("filling interstitial statutory gaps"). See also Linda R. Hirshman, *Whose Law Is It, Anyway? A Reconsideration of Federal Question Jurisdiction Over Cases of Mixed State and Federal Law*, 60 Ind.L.J. 17, 17 n.2 (1984) ("Congress rarely enacts a complete and self-sufficient body of federal law. The federal statutes are full of references, both explicit and implicit, to the law of some state.").

¹⁴⁴ *Cook*, F. Supp. 2d at 1188-89.

elements for trespass and nuisance since he was now mistakenly handling the case under those state law causes of action.¹⁴⁵ The *Cook* plaintiffs' *cause of action* is a PLA for "*loss of or damage to or loss of use of property*."¹⁴⁶ Since the Secretary did not order the waiver of the defense of no fault, there must be a fault standard of care applicable to this PLA. A *duty owed must be an element in this PLA* cause of action. That duty is compliance with the federal dose limits through which the federal government effectuates its complete preemption of nuclear safety. Thus, compliance with the federal dose limits must be an allowable defense.

Continuing to misread and misunderstand the 1988 Amendments to the Price-Anderson Act, Judge Kane reasoned that "Congress . . . limited preemption of state law only to instances in which it conflicted with section 2210 [of the Price Anderson Act]."¹⁴⁷ He then disagreed with the Seventh Circuit's "finding that federal nuclear safety regulations are part of Price-Anderson's 'statutory scheme.'"¹⁴⁸ Therefore, he reasoned the "unless inconsistent with" phrase was not intended to refer to the federal regulatory system establishing nuclear safety standards. In fact, Judge Kane either did not read Section 2210 or did not understand it because it explicitly refers to, and demands deference to, the NRC regulatory system 57 times.¹⁴⁹ Obviously, Congress did intend to incorporate the NRC federal regulatory scheme into the Price-Anderson system (or vice versa) and to have the NRC administer the Price-Anderson system in part. The United States Department of Energy is also charged with partial administration of Price-Anderson.¹⁵⁰ In fact, the NRC ("Commission") and DOE ("Secretary") are so intimately involved with the Price-Anderson PLA cause of action that they are allowed to make legal and quasi-judicial decisions such as being able to require PLA defendants to waive certain defenses in certain circumstances.¹⁵¹ Also, they have some power superior to a federal judge since only the NRC or the DOE can deem a nuclear incident to rise to the level of an ENO and a federal judge is bound by that agency determination.¹⁵² Price-Anderson's involvement with the federal regulatory system for nuclear safety is exactly the opposite of Judge Kane's claim.

Judge Kane turned the 1988 Amendments Act on its head. Congress clearly intended to extinguish all state law causes of action and replace them with the new federal PLA cause of action.¹⁵³ Instead, Judge Kane reasoned the 1988 Amendments Act required the application of Colorado trespass and nuisance causes of action and tried the case under those old state law causes of action as if the 1988 Amendments Act had never been enacted. Additionally, although Section 2210 of the Act clearly

¹⁴⁵ *Id.* at 1212.

¹⁴⁶ 42 U.S.C. § 2014(q) (2007) (emphasis added).

¹⁴⁷ *Cook*, F. Supp. 2d at 1189.

¹⁴⁸ *Id.* at 1195.

¹⁴⁹ 42 U.S.C. § 2210; *see* § 2210(a) ("[T]he Nuclear Regulatory Commission (in this section [Section 2210] referred to as the 'Commission'").

¹⁵⁰ 42 U.S.C. § 2210(d); *see* § 2210(d)(1)(A) ("[T]he Secretary of Energy (in this section [section 2210] referred to as the 'Secretary'").

¹⁵¹ 42 U.S.C. § 2210(n)(1)(i) - (iii).

¹⁵² 42 U.S.C. § 2014(j).

¹⁵³ *In re TMI*, 67 F.3d 1119, 1125 (3rd Cir. 1995) ("Congress clearly intended to preempt state regulation of nuclear safety standards when it enacted Price-Anderson . . .").

brings the NRC and DOE regulatory system into Price-Anderson and requires deference to the federal preemption of nuclear safety effectuated by those regulatory schemes, Judge Kane illogically reasoned the new PLA cause of action was not bound by the complete federal preemption of nuclear safety or its explicit standard of care and allowed a lay jury to award astronomical damages based upon their own scientifically irrational safety standard.

Judge Kane's version of Price-Anderson, upon which the *Cook* verdict depends, makes the 1988 Amendments Act unconstitutional because he interprets the Act as a mere grant of federal jurisdiction over state law causes of action.¹⁵⁴ When courts can interpret a statute in one way which would make it unconstitutional or in another way which would make it constitutional, their duty is to opt for the interpretation making the act constitutional.¹⁵⁵

THE SOLUTION

The correct function of the jury in a PLA is to determine issues of fact, not to set radiation safety standards. The amount of radioactive material on the land and therefore the dose a resident would receive from it are issues of fact which the jury can properly determine. Yet, those basic facts were not disputed by the parties. Plaintiffs Exhibit Number 1469 establishes the fact that any conceivable dose from the "contamination" was trivial and would not violate the federal dose limits.

The cause of action and its elements such as the duty owed are issues of law. Prior to *Cook*, federal courts uniformly held that the cause of action is the PLA. The duty of care owed, established by reference to federal safety standards, is the essential element of the PLA. In the context of this case, the most relevant such federal radiological safety standard would be the NRC and EPA 25 millirem per year standard for the remediation and release of contaminated land. Adopting this federal safety standard as the PLA standard of care harmonizes federal preemption with jury trials. The defendant's duty is to comply with the federal radiological safety standards through which the complete federal preemption of nuclear safety is effectuated. The judge and jury are not allowed to adopt other causes of action or other standards of care. Rather, they enforce and support the federal preemption of nuclear safety by assessing damages for doses exceeding the federal safety standards. Any disagreement with the existing federal safety standards is a matter for resolution through the regulatory agency and not by lay juries through PLA lawsuits. Otherwise, the uniform federal preemption of nuclear safety would be abandoned and delegated to lay juries, which could be irrational and inconsistent as evidenced by the *Cook* verdict.

In the 1988 Amendments Act, Congress harmonized the complete federal preemption of nuclear safety with a federal cause of action for personal injury or property damage due to radiation. When each party plays their proper part very complex radiological issues can be fairly adjudicated by judges and lay juries, even where neither has expertise in radiological science. Once the dose fact is

¹⁵⁴ *Verlindin v. Cent. Bank of Nig.*, 461 U.S. 480, 495-96, 103 S.Ct. 1962, 1972 (1983).

¹⁵⁵ *See Edward J. DeBartolo Corp. v. Fla. Gulf Coast Bldg. and Const. Trades Council*, 485 U.S. 568, 575, 108 S.Ct. 1392, 1397 (1988)("[W]here an otherwise acceptable construction of a statute would raise serious constitutional problems, the Court will construe the statute to avoid such problems unless such construction is plainly contrary to the intent of Congress.")

established, that dose must then be compared to the federal allowable limits. A federal regulatory consensus exists that 5,000 millirem a year is safe for a nuclear worker, 100 millirem per year is safe for a member of the general public, and 25 millirem a year is safe for contaminated land. Those judgments are reserved to the federal regulator. If the dose is less than these limits, judgment must be entered for the defendant because defendant did not violate the PLA standard of care. If the dose exceeds the federal allowable limit, the jury may proceed to determine damages. Congress created a simple and workable system when it created the PLA in the 1988 Amendments to Price-Anderson. Congress instructed the federal judiciary to create a body of PLA case law which would be consistent with the federal regulatory scheme through which the complete preemption of nuclear safety is effectuated.

CONCLUSION

Complexity, effort and good intent are not absolute guarantees of correctness. At first glance Judge Kane's *Cook* opinion appears complex and reasoned, reflecting a good deal of effort. He, as all judges, is presumed to have the good intention of achieving a just and fair resolution of the dispute before him. However, his extensive errors of law and logic effectively negated the complete federal preemption of nuclear safety by placing this complex issue into the hands of a lay jury unequipped to handle it. His errors of law undid sixty years of carefully constructed federal legislation and well-reasoned federal case law. He took Price-Anderson back in time to where it was before the 1988 Amendments Act when non-ENO Price-Anderson cases were litigated under state law causes of action rather than under the federal PLA cause of action.

Whether or not lay juries could use state law causes of action and their own standard of care to regulate nuclear safety though huge monetary awards was the underlying policy issue addressed by the Supreme Court in *Silkwood*. That was the "tension" the majority opinion found Congress allowed when it did not create a federal cause of action. The *Cook* verdict is exactly the evil feared by the *Silkwood* dissents. Four years later Congress agreed with the policy concerns of the two dissenting opinions and acted to invalidate the majority opinion by changing the Price-Anderson law with the 1988 Amendments Act creating the federal PLA cause of action. The majority opinion is no longer good law. The dissenting opinions are now the law. Juries can no longer use state law causes of action to levy huge awards for levels of radiation the federal regulatory agency has determined to be adequately safe as it effectuated the complete federal preemption of nuclear safety through regulations published in the Code of Federal Regulations (CFR). Federal judges and juries are constrained by the sole federal cause of action and its great deference to the federal regulatory scheme, including its published dose limits thereby established as being adequately safe doses. A judge or jury cannot attempt to make lesser doses unacceptable by awarding monetary damages for them.

The federal preemption of nuclear safety is complete and is effectuated by published federal regulations, not by the judgment of federal juries applying state law causes of action. Any nuclear licensee can determine what level of radiation is allowable by reference to those regulations and not be subject to the whim of unknown future jury standards of care. Operators of nuclear facilities need to know

numerical dose standards in advance just as automobile drivers need to know in advance how limit speed against some published speed limit.¹⁵⁶ A standard of whatever some future jury may feel is excessive speed would wreak havoc on automobile transport and be unfair to drivers. Imagine driving down the highway and looking for a posted speed limit sign so you could know how to constrain your speed and seeing a sign that read “Proceed at whatever speed a jury may later decide was slow enough.” No useful guidance would be supplied to the driver by such a sign. Obviously, such a situation would be unworkable. Yet, that is exactly the effect of *Cook*.

¹⁵⁶ *O'Connor*, 748 F.Supp. at 678 (“In a highly technical field such as this, . . . a defendant . . . should also be provided with some clear statement regarding how it may limit . . . dose without exposing . . . itself to liability.”).