

## *Working Paper Series*

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Villanova University Charles Widger School of Law

*Year 2010*

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# Stopping Nuclear Power Plants: A Memoir

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2009]

## STOPPING NUCLEAR POWER PLANTS: A MEMOIR

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### I. INTRODUCTION

In the 1970s, I worked for Ralph Nader. Among my projects was helping to stop utilities from building and operating nuclear power plants. From our viewpoint, the plants were dangerous and held the potential for destroying lives, injuring people, and ruining vast swaths of American land. The risks they posed led to massive citizen protests wherever utilities were investing in nuclear energy.

Despite the highly visible nature of the controversy, very little literature chronicles this antinuclear movement.<sup>1</sup> Although I played only a small role in it, I have wanted to offer my memories of that time, a time when citizen action contributed to a major societal shift.

In the early 1950s, the promise of nuclear power seemed all but dead. Utility companies feared the possibility of an atomic catastrophe and the inability to gain adequate insurance coverage for a major accident. Yet, they continued to receive boundless encouragement to build from the federal government. The bombing of Hiroshima and Nagasaki at the end of World War II, fear of nuclear power's destructive power and perhaps guilt among those who had developed it led to the "Atoms for Peace" initiative during the Eisenhower years.<sup>2</sup> One part of

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1. For the history of nuclear power during this time, see JOSEPH A. CAMILLERI, *THE STATE OF NUCLEAR POWER: CONFLICT & CONTROL IN THE WESTERN WORLD* (1984); STEVEN MARK COHN, *TOO CHEAP TO METER: AN ECONOMIC AND PHILOSOPHICAL ANALYSIS OF THE NUCLEAR DREAM* (1997); GEORGE T. MAZUZAN & J. SAMUEL WALKER, *CONTROLLING THE ATOM: THE BEGINNINGS OF NUCLEAR REGULATION 1946-1962* (1984); JOSEPH P. TOMAIN, *NUCLEAR POWER TRANSFORMATION* (1987). For economic and technical analyses of nuclear power during that era, see RALPH NADER & JOHN ABBOTTS, *THE MENACE OF ATOMIC ENERGY* (1977); RON LANOUE, *NUCLEAR PLANTS: THE MORE THEY BUILD, THE MORE YOU PAY* (Center for the Study of Responsive Law 1977); WILLIAM C. WOOD, *NUCLEAR SAFETY: RISKS AND REGULATION* (1983). For accounts of two specific controversies, see John G. FULLER, *WE ALMOST LOST DETROIT* (1975) (recounting the 1966 partial meltdown at the Enrico Fermi plant near Toledo and Detroit); DONALD W. STEVER, JR., *SEABROOK AND THE NUCLEAR REGULATORY COMMISSION: THE LICENSING OF A NUCLEAR POWER PLANT* (1980) (recounting the controversial licensing of the Seabrook plant in New Hampshire). For a practical manual for citizens opposing nuclear plants, see SKIP LAITER, *CITIZENS' GUIDE TO NUCLEAR POWER* (CENTER FOR THE STUDY OF RESPONSIVE LAW 1975).

2. See IRA CHERNUS, *EISENHOWER'S ATOMS FOR PEACE* (2002) (examining the

the promise of nuclear power was the claim by Lewis Strauss, the Chair of the Atomic Energy Commission that it would be very inexpensive, in fact, “too cheap to meter.”<sup>3</sup>

In 1957, the Duquesne Light Company began operating the nation’s first nuclear plant in Shippingsport, Pennsylvania, near Pittsburgh.<sup>4</sup> By 1976, 60 nuclear plants were licensed to operate.<sup>5</sup> Meanwhile, a popular antinuclear movement was growing.

I became a participant in the movement when stopping nuclear power became one of my projects at work. I drafted motions and rulemakings submitted to the Nuclear Regulatory Commission, edited extensive materials, wrote news releases, and spoke at conferences. I found the experience exciting. I was just a few years out of law school and able to play on the national level in a cause that pitted us against a clearly evil opponent.

Moreover, I worked for the nation’s most prominent consumer advocate. Ralph Nader dominated the public interest world. He was disciplined, knowledgeable, and most of all, charismatic like no one else. He could speak to an audience, talk way past his allotted time, and still hold the rapt attention of his listeners. One could disagree with Ralph, but after talking with him, one could understand the merits of his position and leave inspired. Because other advocates lacked his presence, they could not gain the visibility that he enjoyed. As a result, his advocacy on this issue was invaluable.

I particularly remember Ralph’s 1976 debate with MIT professor Norman Rasmussen at the National Press Club.<sup>6</sup> Rasmussen had headed a \$3 million government study concluding that nuclear power was safe.<sup>7</sup> Although Ralph certainly lacked Rasmussen’s technical expertise, he possessed detailed knowledge of the subject and also could persuasively emphasize his big theme: the Rasmussen study was defective, because it failed to consider such hazardous items as the aging of a plant, serious earthquakes, sabotage, terrorism, and human error.<sup>8</sup> Ralph could hold his own.

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rhetoric and ideology of this policy agenda).

3. See NADER & ABBOTTS, *supra* note 1, at 28-29.

4. See Nuclear Regulatory Comm’n, History, <http://www.nrc.gov/about-nrc/emerg-preparedness/history.html> (last visited Nov. 20, 2009) (outlining history of Nuclear Regulatory Commission’s work on emergency response and preparedness).

5. See BUPP & DERIAN, *supra* note 1, at 7.

6. Ralph Nader & Norman Rasmussen, Addresses before the National Press Club (NPR radio broadcast June 1, 1976) (debating nation’s nuclear policy).

7. See NADER & ABBOTTS, *supra* note 1, at 119-22 (criticizing Rasmussen report); WOOD, *supra* note 1, at 41-43 (describing and critiquing Rasmussen’s Reactor Safety Study).

8. See *id.* at 119-22 (outlining shortcomings of Rasmussen Report).

## II. A CITIZENS MOVEMENT

The antinuclear movement was truly a citizens movement. Although many of the members participated because they lived near a nuclear plant or near the site where a utility company had chosen to build one, other members also joined because they distrusted atomic energy. A rally in Washington, D.C., could draw thousands as could national conferences. Our monthly newspaper, "Critical Mass," enjoyed a wide circulation. In seven states, citizens placed initiatives on the ballot to stop or slow down the construction of nuclear plants. Although the campaigns proved unsuccessful, they strengthened the grass roots efforts to challenge nuclear energy. I admit to having misgivings about the initiatives; to my mind, some of the leaders lacked any political sophistication and were capable of doing more harm than good.

Environmental causes can cross traditional political lines. Many conservatives care deeply about the environment. In those days, we often used the word "conservation" as opposed to "environmental," for fear that the latter word could conjure up radical stereotypes and scare off potential supporters.

Washington groups gave local citizens a stronger voice. At home, they could do little more than protest at public hearings, hold small gatherings, and write letters to the local newspaper. Few had the local counsel necessary to lodge legal challenges. Yet, in Washington, we could address the powers that be with administrative filings, mass rallies, media coverage, and an occasional lawsuit. Thus national and local groups worked hand in hand.

For me, the intensity of citizen action was impressive. Sometimes national groups are charged with claiming to represent a massive group of supporters, but really representing no one but themselves and a few financial contributors. In this movement, however, massive support did exist. It included people from all walks of life. Many of them had schooled themselves in utility economics and became avid readers of "Public Utilities Fortnightly," the leading trade magazine. Their numbers also included serious scientists, members of the Union of Concerned Scientists, environmentalist Barry Commoner, and most prominently Harvard professors and Nobel Prize winners George Wald and Henry Kendall. Members also included Australian-born pediatrician Helen Caldicott and the owner of a Florida supermarket. The many entertainers who contributed included Jackson Browne and Joni Mitchell.

### III. THE ISSUES

Although the questionable safety of nuclear plants held center stage, a number of related issues generated serious discussion, including waste disposal, the lack of sufficient insurance coverage, worker safety, inadequate evacuation plans, the presence of alternative energy sources, and the questionable financial wisdom of investing in nuclear power.<sup>9</sup>

**Waste disposal.** Even today, nuclear plants produce radioactive waste with long-term hazardous consequences. For example, plutonium-239 has a half-life of 24,000 years; that is, half of the radioactivity of a quantity will decay in 24,000 years.<sup>10</sup> As of this writing, the government has yet to establish facilities for permanent disposal of high-level waste. Since the 1970s, the primary proposal has been for “geologic disposal,” that is, storing waste in a geologic formation so stable that the waste could not escape into the environment.

An early candidate for a permanent disposal site was the salt domes near Lyons, Kansas.<sup>11</sup> The presence of salt indicates a lack of groundwater that the waste could contaminate. Salt also provides a radiation shield. However, the government abandoned the proposal when it learned that the owners of a nearby salt mine had pumped water into their mine. As a result, the high heat of the waste canisters would vaporize any water they contacted and expel steam water, salt, and radioactive waste. The government later sought other suitable salt sites, but without success. Most recently, the Department of Energy had proposed a site at Yucca Mountain, near Las Vegas, Nevada, as a permanent repository; however, political opposition and potential geological dangers have doomed the proposal.<sup>12</sup>

**Liability insurance.** Because the private insurance industry has been unwilling to write adequate liability policies for nuclear plants, Congress enacted the Price-Anderson Act,<sup>13</sup> which continues to partially indemnify the industry. This free insurance serves as a subsidy to the utility companies. According to the Congressional Budget Office, it amounts to an annual subsidy of \$600,000 to each reactor.<sup>14</sup> Moreover

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9. *See id.* at 59-68 (providing overview issues arising in nuclear debate).

10. *See id.* at 149 (providing background on environmental effects of nuclear waste).

11. *See id.* at 153-54 (discussing the failure of this proposed solution).

12. *See* David M. Herszenhorn, *Yucca Mountain Plan for Nuclear Waste Dies*, N.Y. TIMES, Mar. 31, 2009.

13. *See* 42 U.S.C. § 2210; *see also* UNITED STATES NUCLEAR REGULATORY COMMISSION, FACT SHEET ON NUCLEAR INSURANCE AND DISASTER RELIEF FUNDS, <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/funds-fs.html> (last visited Nov. 18, 2009) (explaining Price-Anderson Act).

14. CONG. BUDGET OFFICE, Pub. No. 2986, NUCLEAR POWER'S ROLE IN GENERATING ELECTRICITY 29, Box 3-1 (2008) (assessing future viability of nuclear technology as domestic

it raises persistent questions: If nuclear power poses only the slightest risk of catastrophe, why will private insurance companies refuse to provide adequate coverage, and why does the industry need this insurance in the first place?

**Worker safety.** Worker safety has always been an issue. Perhaps the story of Karen Silkwood, as portrayed in the 1983 motion picture “Silkwood,” has been the most dramatic.<sup>15</sup> Silkwood worked as a lab technician at the Kerr-McGee nuclear facility near Crescent, Oklahoma where she made plutonium pellets for fuel rods. A union activist, she publicly complained about lax safety procedures at the plant and was one of the many workers contaminated by plutonium. On November 13, 1974, she drove to Oklahoma City to meet with a union leader and a New York Times reporter to give them a folder of documents that would support her claim that Kerr-McGee had falsified records on quality controls. Later that night, Silkwood was found dead in what appeared to be a single-car accident. However, her folder was never found. Controversy arose over whether she fell asleep at the wheel or was forced off the road by another car. After considerable litigation, Kerr-McGee settled with the Silkwood family for \$1.38 million, but admitted no liability.

I had some involvement in an incident concerning worker safety. In 1975, a New Mexico state official telephoned the Freedom of Information Clearinghouse, a part of Nader’s Center for the Study of Responsive Law, to seek information on how to conceal information about contaminated water at uranium mines in the western part of that state. When the Clearinghouse attorney explained that his group was concerned about making information public and not suppressing it, the official hung up. Further investigation disclosed that the drinking water for the miners and their families was dangerously contaminated and not even acceptable as treated waste water. I handled media coverage of the story and helped it become the subject of an article on page 2 of the *Washington Post* (no mean feat). I must have played a larger role in investigating the incident, but cannot recall what it might have been.

**Emergency planning.** Under current regulations of the Nuclear Regulatory Commission, utilities must give “reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.”<sup>16</sup> These regulations require defining emergency planning zones. The first zone includes the area within a ten mile radius of the plant, the “plume exposure pathway,” in which

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energy source).

15. SILKWOOD (MGM 1983).

16. 10 C.F.R. pt. 50.47(a)(1)(i).

individuals could encounter direct radiation exposure.<sup>17</sup> The second zone includes the “ingestion pathway,” the area within a fifty mile radius in which radioactivity could contaminate water, food crops, and livestock.<sup>18</sup>

Even with these arguably conservative estimates, evacuating people from these areas would seem highly impractical. According to Dr. Samuel Epstein, professor emeritus at the University of Chicago School of Public Health, “About 80 million Americans in 37 states live within 40 miles of a nuclear reactor, including residents of New York City, Chicago, Philadelphia, Detroit, Miami, Phoenix, Cleveland, and Boston.”<sup>19</sup> He states, “If a meltdown were to occur, safe evacuation would be impossible and many thousands would suffer from radiation poisoning or cancer.”<sup>20</sup>

The futility of evacuation plans has long been a concern in the anti-nuclear movement. I remember it first arising when Maine Public Interest Research Group, a student organization, criticized the problematic emergency plan put forth by the Maine Yankee Atomic Power Company with respect to its Maine Yankee plant in the early 1970s.

**Alternative energy.** In the 1970s, “alternative energy” meant solar energy. Wind power barely received a mention as did obtaining energy from biomass. Certainly environmental groups were advocating these methods; however, their viability seemed problematic to many.<sup>21</sup> Utility companies had no interest in promoting these alternatives. While the companies could convert to nuclear generated power by modifying their existing technology for generating energy out of fossil fuel, they could not employ this technology to harness solar power. Solar power permitted individual users to generate their own electricity. Thus, solar power was an economic threat to the utility industry.

Because alternative energy sources seemed so futuristic, environmental groups sometimes were forced to argue that clean coal plants were eminently feasible; desulfurization equipment (scrubbers) would satisfy air quality standards, and the true cost of nuclear energy would not be much greater than coal energy. As part of its public relations strategy in opposition to these arguments, the nuclear industry

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17. *Id.* pt. 50.47(c)(1)(iii)(B)(2).

18. *Id.*

19. *Push for New Nuclear Power Sputters, But Old Reactors Still Pose Cancer Risks* (July 27, 2009), available at <http://world-wire.com/news/0907270001.html> (discussing effort to block legislation permitting further development of nuclear power plants).

20. *Id.* (discussing health risks of living near nuclear reactors)

21. See NADER & ABBOTTS, *supra* note 1, at 30 (describing solar energy as an “ugly duckling,” as far as the energy industry perceived it).

created a simple electronic game for school children that let them calculate how to produce enough energy for society. In choosing among different amounts of coal, oil, and nuclear energy, the students would conclude that the future required a considerable amount of nuclear power.

**Financing nuclear power.** Antinuclear groups have always found a strong argument in emphasizing the enormous expense of constructing, running and decommissioning nuclear plants. The plants cost more to build than fossil fuel plants, the cost of uranium rose, and the plants often encountered problems that forced them out of service and compelled the utilities to purchase energy elsewhere. Moreover, at the end of the plant's life, the plant must be decommissioned by mothballing the plant, entombing it in concrete, or dismantling it. The Fort St. Vrain plant in Colorado was the first commercial nuclear plant to undergo decommissioning; the process was completed after six years in 1996 at an expenditure of \$188 million.<sup>22</sup>

In the 1960s and 1970s, cost analyses were the products of utility companies, vendors of reactors, and government agencies, and therefore tended to be quite optimistic.<sup>23</sup> As a result gigantic cost overruns became common. By the 1980s, even an article in business-oriented *Forbes* was pointing a finger of blame:

The failure of the U.S. nuclear power program ranks as the largest managerial disaster in business history, a disaster on a monumental scale. The utility industry has already invested \$125 billion in nuclear power, with an additional \$140 billion to come before the decade is out, and only the blind, or the biased, can now think that most of the money has been well spent. It is a defeat for the U.S. consumer and for the competitiveness of U.S. industry, for the utilities that undertook the program and for the private enterprise system that made it possible.<sup>24</sup>

All these arguments were easy for the public to grasp and thus fueled the fires of discontent. Moreover, they were easy enough for us

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22. See ROGER DUNSTAN, BENEFITS AND RISKS OF NUCLEAR POWER IN CALIFORNIA 39 (California Research Bureau, April 2002), available at <http://www.library.ca.gov/crb/02/08/02-008.pdf> (outlining risks and benefits of nuclear energy production in California)

23. See MARK COOPER, THE ECONOMICS OF NUCLEAR REACTORS: RENAISSANCE OR RELAPSE? 2 (2009), available at [http://www.nirs.org/neconomics/cooperreport\\_neconomics062009.pdf](http://www.nirs.org/neconomics/cooperreport_neconomics062009.pdf) (wading into nuclear policy debate).

24. James Cook, *Nuclear Follies*, FORBES, Feb. 11, 1985, at cover, quoted in COOPER, *supra* note 23, at 13 (presenting misgivings over level of expenditures made by nuclear industry).

to master. With access to a few experts, we quickly became capable of speaking, writing, and lobbying effectively. I think some utility executives understood that the arguments had considerable truth to them and generated at least some misgivings about the industry position. Yet, when an executive makes a commitment to a dubious endeavor and effectively ties his or her future to its success, admitting a mistake becomes exceedingly difficult and may amount to professional suicide. This conflict may explain some angry outbursts by executives who attended our conferences.

I have also wondered about a particular energy lobbyist who sometimes attended our events. He sported very long hair and a beard, probably so that we would think he was a child of the 1960s and trustworthy. His sole task seemed to be to talk before the television cameras and state that he had worked for the Nuclear Regulatory Commission and that nuclear power was safe. I never saw him look anything but grimly serious. I am willing to bet that he hated his job.

#### IV. THE DEMISE OF NUCLEAR POWER

By 1976, 60 reactors stood completed with 146 more either under construction or on order.<sup>25</sup> During the late 1960s and early 1970s, utilities ordered 240 nuclear reactors.<sup>26</sup> However, they eventually canceled half these orders and in building the rest, encountered dramatic cost overruns.<sup>27</sup> The demand for new reactors stopped abruptly with the last order occurring in 1976.

Reflecting on the end of the nuclear decade, economist Charles Komanoff identified “ten blows that stopped nuclear power”: (1) the 1973 Arab Oil Embargo, which weakened the economy, reduced the use of electricity, destroyed the financial ability of utilities to order new plants, and made the public suspicious of corporate America; (2) India’s detonation of its first atomic bomb, which raised fears that nuclear power opened the path to manufacturing nuclear weapons, led the government to slow the development of plutonium fields, thus increasing the cost of uranium; (3) in 1975, the replacing of the Atomic Energy Commission with the Nuclear Regulatory Commission, which moved nuclear regulation to a more safety-conscious agency whose regulations increased the costs of producing nuclear power; (4) the 1975 fire at the

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25. See BUPP & DERIAN, *supra* note 1, at 7.

26. See COOPER, *supra* note 23, at 33 (outlining history of nuclear power in United States).

27. *Id.* (providing historical overview of development of domestic nuclear development).

Browns Ferry plant in Alabama where workers used candles to find leaks in insulation, which almost caused a meltdown and did cause the shutdown of two generators for nineteen months; (5) the resignation of three managers in General Electric's nuclear engineering division who then became experts for the anti-nuclear movement; (6) the writings of physicist-environmentalist Amory Lovins which distinguished between "hard energy paths" and "soft energy paths," with the latter employing decentralized energy sources, renewable sources, and conservation technologies; (7) the 1977 Seabrook, New Hampshire protest in which 18,000 non-violent protestors occupied the proposed site of a plant and encouraged grassroots activism across the country; (8) the 1979 partial meltdown at the Three Mile Island plant in Pennsylvania, which exposed shocking lapses in regulation and challenged any public trust in the safety of nuclear plants as well as demonstrating the impracticality of plant evacuation plans; (9) the tightening of the money supply in 1979, followed by back-to-back recessions, which diminished the growth of energy demand and led to the cancellation of dozens of plants; and (10) the admission by Pacific Gas & Electric that it had inadvertently disabled the earthquake protection systems at the California Diablo Canyon reactors which were near seismic fault lines, thus embarrassing the industry and ended efforts to streamline the process of licensing reactors.<sup>28</sup>

Komanoff omits the Chernobyl disaster in the former Soviet Union and other later events, because he believes that the growth of nuclear power had ceased before they occurred.<sup>29</sup> According to Komanoff, "the mark of activists is evident in all ten blows, and, indeed, in the entire quarter-century withering of nuclear power."<sup>30</sup> He writes,

Only a mass movement could engender a social fabric and a political context in which the dangers of nuclear power could be made manifest, in which necessary and costly reactor safeguards could be made mandatory, in which protest and resistance could be nurtured, and in which alternatives could be legitimized.<sup>31</sup>

At the end of the 1933 movie "King Kong," impresario Carl Denham proclaims, "It was beauty killed the beast."<sup>32</sup> As for nuclear

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28. See Charles Komanoff, *10 Blows That Stopped Nuclear Power*, [http://www.komanoff.net/nuclear\\_power/10\\_blows.php](http://www.komanoff.net/nuclear_power/10_blows.php) (setting forth prominent events contributing to waning public support for nuclear energy).

29. *Id.* (stating why Chernobyl disaster does not appear on list).

30. *Id.* (discussing success of anti-nuclear movement).

31. *Id.* (outlining effectiveness of anti-nuclear movement).

32. KING KONG (RKO Radio Pictures 1933).

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power, it succumbed because it fell for the false beauty of the promise of profitable, yet inexpensive energy that concealed hazards and financial costs. In the end, nuclear power proved a financial disaster. Yet, it took the action of concerned citizens to unmask this failure and hasten demise of the nuclear era. I am glad that I had the chance to be part of that effort.