

The Nuclear Policy Research Institute  
with the Nuclear Information and Resource Service (NIRS)  
and Physicians for Social Responsibility-Chicago (PSR),  
presented a landmark symposium:

# Nuclear Power and Children's Health

## WHAT YOU CAN DO

Chicago, Illinois • October 15-16, 2004

Symposium Proceedings

Co-sponsored by the North Suburban Peace Initiative (NSPI) and the Nuclear Energy Information Service (NEIS).



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Dear Friends,

Thank you so much for your interest in the landmark symposium on Nuclear Power and Children's Health that the Nuclear Policy Research Institute (NPRI) convened in October 2004 in Chicago.

We are grateful to our partners, the Nuclear Information and Resource Service (NIRS) and Physicians for Social Responsibility—Chicago (PSR), as well as our co-sponsors, the North Suburban Peace Initiative (NSPI) and the Nuclear Energy Information Service (NEIS).

More than 250 participants came together to address one of the most pressing issues of our day: the dangers of nuclear power. The lineup of dynamic, engaging speakers included leading nuclear scientists, biologists, physicists, engineers, activists, and whistle blowers.



As discussed at this conference, children are among the most vulnerable members of society to the carcinogenic effects of radiation, because their rapidly dividing cells and replicating genes are very sensitive to the damaging effects of radiation. Children also display a relatively short incubation time for the development of cancer. Other vulnerable members of society include the aged population, immuno-depressed patients, and some people born with severe congenital anomalies.

A normally developing fetus can also be damaged when exposed to radiation within the first trimester of pregnancy, causing profound congenital effects.

Further, when the sperm and eggs in a child or an adult of reproductive age are exposed to radiation, their offspring may develop genetic diseases or congenital deformities.

Nuclear power plants constantly emit radioactive elements into the air and water. These materials,

such as strontium 90, iodine 129, and cesium 137, are taken up by plants and animals and incorporated into the food chain, where they are concentrated thousands of times at each ascending level.

These radioactive elements then enter human bodies, where they are then concentrated in specific organs. Small volumes of cells can be subjected to a relatively large dose of radiation over many years. These damaged cells are prone to developing malignant changes, causing cancer in the affected individuals.

Because of these basic facts about radiation biology, and because of the ongoing environmental contamination by nuclear power plants and nuclear waste, the rates of childhood cancer reflected in this and all future generations will inevitably increase, as will the incidence of some of the more than three thousand inherited genetic and chromosomal diseases.

There are currently 103 nuclear power plants operating in the United States. They are inherently dangerous and are vulnerable to the human errors and mechanical failures that caused major meltdowns at Three Mile Island and Chernobyl. However, this danger is considerably increased when the potential ramifications of a meltdown induced by a terrorist attack are taken into consideration.

The intimate relationship between nuclear power generation and the production of nuclear weapons was also addressed at this conference. These facts are summarized in these proceedings.

To end each day's gloomy predictions, the facts about wind and solar power were presented to an enthusiastic audience who were relieved to be told that viable and cheap alternatives to the generation of nuclear energy were already in existence.

It is our wish that these proceedings will educate you and inspire you to become involved in our impassioned fight for the right of our children and descendants to live healthy lives, free from the dangers of nuclear power.

In partnership,

**Helen Caldicott, M.D.**  
*NPRI President*

**Julie R. Enszer**  
*NPRI Executive Director*

# Keynote Address: DR. PATCH ADAMS



Photo courtesy of James Lerager

*“The half-life is too long, and our lives are too short.”*

—Dr. Patch Adams

You only know me from the film with Robin Williams. What I’m about is social change in medicine.

Helen looked at nuclear war and atomic power and couldn’t get it off her mind. If you read her autobiography, you weep. You sit there in your chair going, “Whoa, what does it matter about cancer, heart disease, or vaccinations? We’re going to annihilate our species because we’re making weapons, and a fraction of them can create a nuclear winter and wipe out all of the higher life forms!”

What do we have? All we really have then is the intelligence to say this is true. It is true we will have nuclear accidents. We don’t know when. It is true that these nuclear accidents will cause a level of destruction that we who study them cannot even tell you. It is true that our bodies cannot withstand the radioactive climate for very long. The half-life is too long, and our lives are too short.

So the important thing is to get the information to the town criers, where they go, “Golly, I saw this conference, and we’ve got to talk about it.” Information can spark social activism, and activism can spark change, and change can end these worries. A gun at the head will not stop nuclear power. We must overthrow it through intelligence. Where will we find that intelligence? The modern way we seem to learn things is through experience. We need to have nuclear explosions or nuclear power plant accidents and then we’ll go, “Oh, well, gee, maybe we should have closed these others down and looked for alternatives.” But why do we need that? With nuclear radiation we may not have a second chance to clean up and start over.

The half-life of plutonium is longer than we have been in existence.

**Dr. Hunter (Patch) Adams** is a physician, professional clown, author, former director of the Gesundheit! Institute, and one of the most revered activists of our time. Living by the motto that “healing should be a loving human interchange, not a business transaction”, he is the founder and director of the Gesundheit! Institute, a holistic medical community that has provided free medical care to thousands of patients since it began in 1971. Dr. Adams has received numerous distinctions, ranging from the American Association for Therapeutic Humor Award for Heroes in Health Care to the Institute of Noetic Sciences Award for Creative Altruism. He is also the author of *Gesundheit!* and *House Calls*.



The Core Planning team for the Nuclear Power and Children’s Health Conference (from left to right): Dr. Andy Kanter, Emerald Young, Julie R. Enszer, Dr. Helen Caldicott, Olga Delgado, Dave Kraft, Corey Conn, and Mary Buntin.

# Keynote Address: DR. HELEN CALDICOTT

Radiation, the particles and waves emitted by unstable elements, has saved the lives of thousands of people when used to diagnose and treat disease, but it can kill as well as cure. Excessive exposure to X-rays, gamma, alpha, and beta radiation causes disease. Each damages the body and can cause cancer within five to sixty years after exposure.

It takes a single alpha particle to hit a single gene in a single cell to kill you. Radiation can cause chromosomal or genetic damage in a sperm or egg cell, leading to possible deformity and conditions such as Down's syndrome. Over three thousand diseases result from genetic mutations.

Children are also ten times more sensitive than adults to the cancer-causing effects of radiation.

Most importantly, nuclear power plants produce the greatest threat to human health by producing radioactive plutonium as a normal part of the nuclear fission process. Plutonium is one of the most carcinogenic substances known, causing cancer of the liver, blood, and bone, among others. Exposure to as little as one-millionth of a gram of the element can cause such cancers. Each year, four hundred to five hundred pounds of plutonium are produced in nuclear reactors. Only ten pounds of plutonium is necessary to fuel a nuclear bomb.

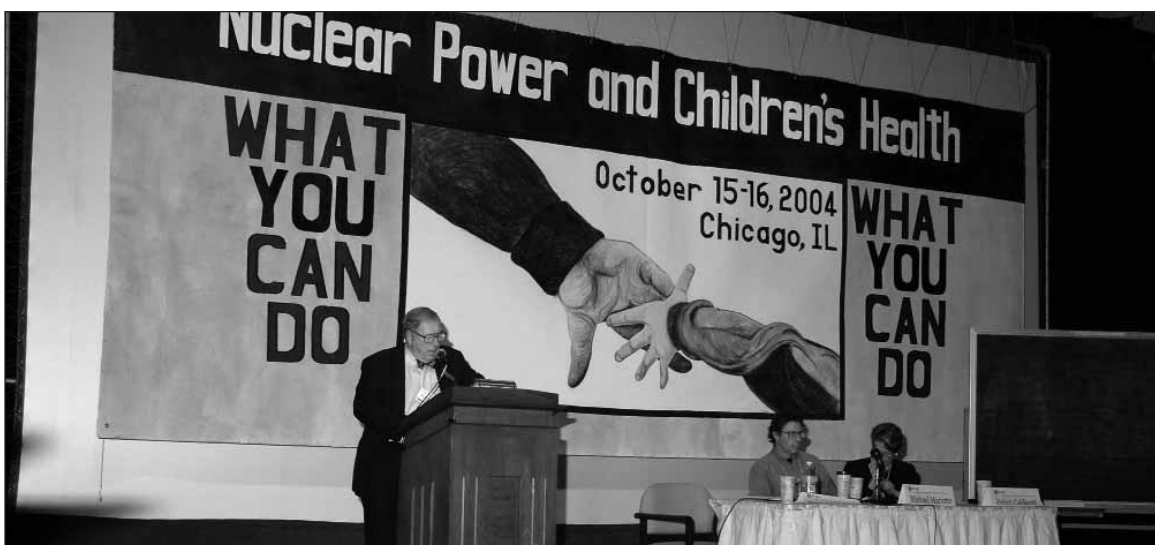
This is an evil industry. It is time now to close every reactor in the area within five years.

**Dr. Helen Caldicott**, President of the Nuclear Policy Research Institute, is the Founding President of Physicians for Social Responsibility (PSR). PSR was the co-winner of the 1985 Nobel Peace Prize, and Dr. Linus Pauling individually nominated Dr. Caldicott for the Prize. Dr. Caldicott also founded Women's Action for Nuclear Disarmament (WAND) and is the author of numerous books exploring nuclear and environmental issues, including *Nuclear Madness* and *The New Nuclear Danger: George W. Bush's Military-Industrial Complex*.



*“How dare we  
fission atoms to turn  
on our lights.”*

—Dr. Helen Caldicott



# Nuclear Power: JUST THE FACTS



The nuclear power industry threatens the health of the nation and represents no solution to global warming. In the world today:

- 428 nuclear reactors (103 in the United States) dot the planet;
- Nuclear power plants release an alphabet soup of toxins invisible to the eye and undetected by the nose;
- Radiation from nuclear power plants can cause disease and death, with children as the most susceptible to radiation poisoning.

**Michael Mariotte** is Executive Director of the Nuclear Information and Resource Service.

*“Nuclear power is attempting a comeback, or relapse, and is no solution to global warming.”*

—Michael Mariotte

## Nuclear Power and Nuclear Weapons: A SINGLE FABRIC



With knowledge gained from building and operating a nuclear power plant, only a few complicated steps remain to manufacture a nuclear bomb. The year that charter members of the nuclear club produced weapons versus power plants reveals the interplay between the two.

	Nuclear Bomb	Nuclear Power
United States	1945	~ 1956
Great Britain	1952	1950
Soviet Union	1953	1954
France	1960	1965
China	1964	1991

Newer nuclear powers Israel, North Korea, India, and Pakistan each built nuclear power plants that led to a nuclear weapons program.

*“When we’re talking about nuclear power, we are talking about making plutonium.”*

—Mary Olson

Beginning in the 1950s, the U.S. government first touted the “peaceful” atom as a solution to growing energy needs. In 1955 Atomic Energy Commissioner Lewis Strauss stated that nuclear power-generated electricity would be too cheap to meter. While the United States built a new industry in nuclear power plants, it also exported the plants to other countries. Signers of the Nuclear Non-Proliferation Treaty who promised not to build nuclear weapons were welcome to import nuclear power technology. With 428 nuclear reactors worldwide in thirty countries, the potential for new members to enter the nuclear weapons club grows.

While the number of new nuclear power plants being built in the world has declined and there have been no new orders in the United States in the past twenty-five years, there is a new nuclear “relapse”, with plants proposed in Virginia, Illinois, and Mississippi. While publicly stating a desire to eliminate nuclear weapons globally, the U.S. government contracts plants such as Tennessee’s Watts-Bar reactor to produce nuclear weapons material. The interdependence of nuclear power and nuclear weapons continues.

**Mary Olson** is Director of the Southeast Office of the Nuclear Information and Resource Service and works with its Radioactive Waste Project. She is also a columnist for the *Blue Ridge Press*.



# Nuclear Power and Nuclear Weapons: THE URANIUM CONNECTION



*“Nuclear power’s expansion will bring nuclear weapons proliferation. When you talk about one, you have to talk about them both. There can be no more serious threat to the life and the health of this planet than a large number of nuclear-armed states in the future.”*

—Brice Smith

Uranium enrichment is the process integral to generating nuclear power and making nuclear weapons. Uranium found in nature consists largely of three isotopes, U-238, U-235, and U-234. Nuclear reactions depend on the fission of U-235 atoms, the main fissile isotope of uranium. Only trace amounts of U-234 exist in nature.

The fuel for nuclear reactions requires a higher concentration of U-235 than exists in natural uranium ore. As the key ingredient that starts and sustains a nuclear reaction, the amount of the U-235 isotope is enriched from 0.7 percent of the uranium mass up to approximately 3 to 5 percent to fuel light water reactors. Further enrichment produces uranium suitable for nuclear weapons.

Depleted uranium, the leftover waste from the enrichment process, is both chemically toxic and radioactive and remains a concurrent problem of the enrichment process. The resulting heavy metal waste product maintains toxic properties that kill. In recent years, the U.S. military has employed depleted uranium to produce stronger armor and tank-penetrating shells for conventional weapons. The government exhibits little interest in studying the long-term medical implications of the heavy metal uranium 238’s use in weapons production.

**Brice Smith** is a researcher with the Institute for Energy and Environmental Research.

“The development of atomic energy for peaceful purposes and the development of atomic energy for bombs are in much of their course interchangeable and interdependent. From this it follows that although nations may agree not to use in bombs the atomic energy developed within their borders, the only assurance that a conversion to destructive purposes would not be made would be the pledged word and the good faith of the nation itself.”

—Acheson-Lilienthal Report (March 16, 1946)

# The Economics of NUCLEAR POWER



Fifty years of federal government subsidies of \$73 billion have maintained the nuclear power industry. Moreover, from 1948 to 1998, 57 percent of all government subsidies for energy research and development was directed to the nuclear power industry at the expense of all other types of energy generation and conservation.

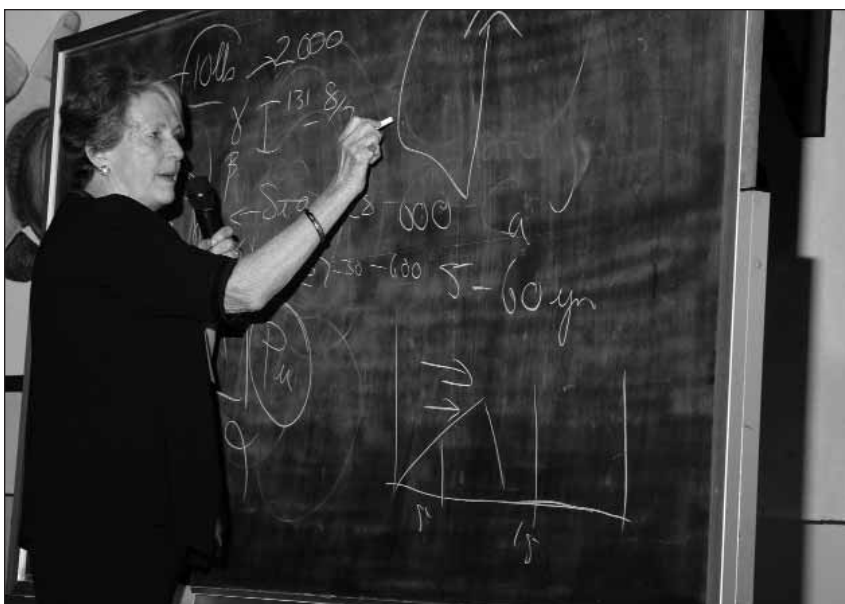
The 1957 Price-Anderson Act provides an additional subsidy to the industry with a taxpayer-backed insurance program that limits the liability of nuclear power plant owners in the case of an accident. The act not only protects the industry from legal liability, but also provides a fraction of the funds needed to finance disaster-related cleanup. Currently, \$10 billion is available for costs estimated to range from \$110 to \$560 billion in the case of a disaster. In this industry-favorable scheme, homeowners are not compensated for property losses, and medical bills are the responsibility of the injured.

Although the act expired last year, current plants remain covered by the law. The wealthy nuclear power industry continues to benefit from the federal dole. Nuclear power carries serious financial costs that citizens are inadequately protected against. At the same time, taxpayers should not carry the industry's burden. Without reauthorization of the act, new plants are unlikely to be built.

*“Fifty years of federal government subsidies of \$73 billion have maintained the nuclear power industry.”*

—Navin Nayak

**Navin Nayak** is an environmental advocate for the United States Public Interest Research Group, a watchdog organization for public policy. He specializes in anti-environmental government subsidies, corporate taxes, federal transportation policy, and nuclear power issues.



Dr. Caldicott sketches the process of how radioactive isotopes make their way into the food chain and affect individual genes and the human genome.



# Nuclear Power Plants: ENVIRONMENTAL IMPACT

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In the face of growing energy-related environmental problems, the nuclear power industry and government officials promote it as a clean source of energy.

This proposition is based on the myth of nuclear power's safety as:

- Economically viable;
- Safe;
- Sustainable;
- A vital contributor to the national energy supply;
- Climate-friendly.

Nothing could be further from the truth.

Currently, the primary causes of climate change consist of the emissions of major "greenhouse" gases, such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), through human activities. Emissions of other greenhouse gases, such as hydrofluorocarbons, also contribute to global warming. The prime villain in the climate change problem remains carbon dioxide, a constant byproduct of nuclear power from ground extraction to manufactured reactor fuel. Throughout the process that produces nuclear power, carbon dioxide is emitted at every stage of the seven phases of the nuclear fuel cycle.

In comparison to renewable energy sources, power generated from nuclear reactors releases four to five times more CO<sub>2</sub> per unit of energy produced, when taking into account the entire nuclear fuel cycle. Among conventional power generation methods, nuclear power produces more CO<sub>2</sub> than oil-fired power plants (but less than gas-fired power plants).

Reducing the rate of climate change can be accomplished by conserving electricity and opting to purchase electricity from renewable sources. Ultimately, citizens should support state and federal legislation to expand renewable energy sources.

**Bill Dougherty** is a senior scientist at the Stockholm Environmental Institute. He is a professional engineer with broad experience in engineering analysis and regional planning. He has worked on projects in Morocco, Sudan, Pakistan, Thailand, and South Africa. His work in the United States has focused on power plant emissions and impacts, emission control technologies and costs, greenhouse gas emissions, fuel cycles, and nuclear power plant aging.



# Nuclear Power Plant Safety: DISASTERS WAITING TO HAPPEN

Nuclear safety depends on important factors such as the quality of the plant's construction, the expertise of the plant operators, and the environmental conditions that surround the plant. Even the most capable owner cannot properly operate a failing and decrepit plant. In the same vein, a less scrupulous operator can render a well-maintained reactor dangerous. Examples of both abound:

- Sixty-eight of the sixty-nine pressurized water reactors operating (two-thirds of those in the country) have a design flaw that impairs the backup safety system. More than half would be unable to cool the core if a pipe breaks, according to a study by the Los Alamos National Laboratory. These problems have never been adequately addressed;
- The Quad Cities reactor, after increasing power output by 20 percent, damaged monitoring equipment and produced cracked pipes because of the added stress of the output increases. Plant managers failed to fully investigate the causes of the problem. Increasing power output decreases safety in similarly constructed boiling water reactors;
- At the Davis-Besse plant in Ohio, closed for three years to investigate various problems, cracks were found in the reactor lid liner due to corrosion from boric acid.

Through the past twenty years, twenty-six reactors were closed for over a year to fix safety problems. To address these problems, the Nuclear Regulatory Commission should not allow decrepit nuclear plants to operate.

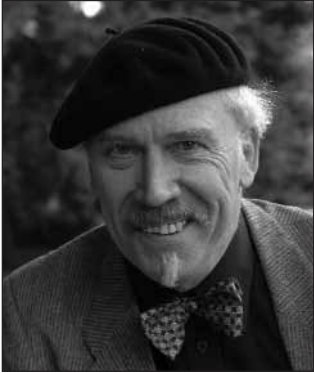
**David Lochbaum** is a nuclear engineer by training and worked in nuclear power plants for seventeen years. In 1992, he and a colleague identified a safety problem in a plant where they were working but were ignored when they raised the issue with the plant manager, the utility, and the Nuclear Regulatory Commission. They decided to go to Congress, and the problem was eventually corrected at the original plant and at plants across the country. Lochbaum joined the Union of Concerned Scientists in 1996. He has written numerous reports, including *The Good, the Bad, and the Ugly: A Report on Safety in America's Nuclear Power Industry*; *Three Mile Island's Puzzling Legacy*; and the book *Nuclear Waste Disposal Crisis*. He is widely quoted in the media and a frequent guest on network news programs.



Symposium attendees learn about what they can do from organizations that address nuclear power and its hazards.

## Case Study: NORTH WALES, UNITED KINGDOM

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A twenty-year culture of nuclear cover-up obscured knowledge of a childhood cancer level ten times the United Kingdom's average along the North Wales coast. High levels of radioactivity are attributed to waste dumped into the Irish Sea from Sellafield, the largest nuclear reprocessing plant in the world. When scientists studied the tidal mud flats in Kirkcudbright Bay in Scotland, they discovered cesium isotopes in the soil, which also pointed to the presence of plutonium. Subsequent tests revealed radiation levels twice that expected.

Researchers have since uncovered forty-three separate cases of childhood cancer in North Wales near Sellafield. The findings reveal a "massive excess" of childhood leukemia and brain tumors clustered around the radioactively contaminated Menai Strait off the coast of Wales. Studies reveal a tenfold excess of childhood leukemia and non-Hodgkin's lymphoma in children from birth to four years old living near the plant. These studies have been confirmed by independent epidemiological analysis. Nevertheless, the authorities continue to refuse to accept that there is causality. No other plausible explanation is available.

**Chris Busby** is a faculty member in the Department of Human Anatomy and Cell Biology at the University of Liverpool.

## Case Study: CHERNOBYL

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**Natalia Kilic** was born and raised in Belarus, about forty miles from Chernobyl, Ukraine. Ten-year-old Natalia survived the initial April 26, 1986, disaster, a tragedy that residents learned about fully a week after the fact. No public official had commented on the accident and no information was available in the media until then.

By mid-May, government officials instructed families to evacuate their children to summer camps in Russia. Accompanied by one teacher, the thirty-five classmates remained in the evacuation camp for three months. Upon returning, "We were told to live our normal lives as before. We drank the same water. We ate the same food. We played in the same sand." Although the school provided monthly medical checkups for each child, many of the children—and their children—developed medical problems.

## Case Study: TURKEY

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Fifteen years ago, Turkey's government unfolded a plan to build the country's first nuclear power plants. American, Canadian, and Turkish partners developed a public relations campaign to convince the populace of the need for the plants. To counter the propaganda campaign, I connected with Greenpeace and some local nongovernmental organizations to see if they had any plans or programs to oppose the project. A coalition formed to stop the plant building. A ten-year education program ultimately convinced the Turkish government to abandon plans to introduce nuclear power to the country. While that victory points to the success of citizens organizing to ensure the continued health and safety of its families, Turkey remains threatened by Chernobyl-style nuclear power plants in Armenia and Bulgaria.

**Hayrettin Kilic**, PhD is with the Green Think Tank of Turunch.

# Case Study: THREE MILE ISLAND (TMI)



*“Despite convincing evidence of increased cancer rates, the state and federal officials continue to maintain that no one was hurt by the TMI accident.”*

—Steven Wing

On March 28, 1979, at the Three Mile Island nuclear power plant near Middletown, Pennsylvania, equipment malfunctions, design-related problems, and worker errors led to a partial meltdown of the reactor core, releasing radioactivity into the atmosphere.

Situated adjacent to farmland, residents near the plant evacuated on the third day of the accident while government officials continued to ensure evacuees that no health risks existed. Citizens around the plant quickly reported problems from hair loss and vomiting to a metallic taste in their mouths. Pets and farm animals died.

Subsequent analysis of lung cancer rates in a ten-mile radius of TMI by Columbia University researchers after the accident revealed increased cancer rates for those living closest to the accident site.

**Steven Wing** is Associate Professor of Epidemiology at the University of North Carolina, Chapel Hill. He is the author of numerous scientific studies on the negative impact of nuclear reactors, including a survey that showed an increased risk of cancer, including leukemia, for people living near Three Mile Island. He has also testified to the United States Congress about the environment’s impact on public health.

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The lessons learned during the accident remain valuable today, as do the questions unanswered. To begin, because monitoring equipment did not register real-time exposures at the time of the accident, the exact amount of ground level radiation released is not known, making it simple for the NRC to minimize the health effects of the accident.

**Judith H. Johnsrad**, Ph.D., is Director of the Environmental Coalition on Nuclear Power. Currently, she is chairing the Sierra Club Committee on Nuclear Waste. Her doctorate is in the geography of nuclear power, and she is one of the world’s experts on radiation and health.

“That night when I took a shower, my face, neck, and hands looked like I was at the seashore and got burned real bad. I felt nauseous. My eyes were red and burning . . . Friday morning when I got out of bed, my lips and nose were blistered, and my throat and inside my chest felt like fire . . . During [the next week] I experienced severe diarrhea, which caused rectal bleeding . . . When we returned home [after being evacuated to] . . . we went to the garage first and found our male German shepherd had died.”

—Man who lived six kilometers from Three Mile Island, speaking about Thursday, March 29, 1979

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The Three Mile Island accident affected all those who lived near the disabled reactor. The fear of not knowing the true nature of the disaster and the inability to trust government officials' pronouncements left its mark. For reasons not fully understood, the reports of a metallic taste left in one's mouth, burning skin, nausea, vomiting, and hair loss and the death of pets and farm animals did not trigger investigations by the government.

According to the Nuclear Regulatory Commission (NRC), not enough radiation was released to cause any of the reported symptoms. Despite that response, many residents living in the immediate vicinity of TMI developed various forms of cancer after the accident and died. The largest settlement as a result of the accident was payment for the birth of a child with Down's syndrome attributed to the disaster. Livestock and other farm animals born with significant abnormalities, such as missing limbs and a newborn sheep with two heads, and the area's flora remain a constant reminder of the radiation damage caused by the meltdown.

**Mary Osborn Ouassiai** is a longtime resident of Harrisburg, Pennsylvania, which is near the Three Mile Island nuclear power plant. Members of her family worked at the Three Mile Island facility. Since the meltdown, she has been monitoring the power plant and has been an antinuclear activist.

*“The fear of not knowing the true nature of the disaster and the inability to trust government officials’ pronouncements left its mark.”*

—Mary Osborn Ouassiai

*“Three Mile Island seems like ancient history, but it is not.”*

—Judith H. Johnsrud



At the Symposium, Mary Osborn Ouassiai shared photographs of genetic mutations that she observed in the flora and fauna of the area surrounding the Three Mile Island nuclear power plant. Above on the left, a daisy with mutations. In the center, a rose with another bud emerging from the flower. On the right, a zinnia with two colors.

# One American City: CHICAGO

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With the greatest concentration of nuclear power plants in the country, the residents of Illinois remain at risk from possible nuclear accidents. In addition, nuclear waste transported through Illinois daily poses an additional threat to the health of the State's children. While the Bush administration calls for an expansion of the nuclear industry, no viable waste disposal plan exists. Concurrently, the administration refuses to invest in alternative sources of environmentally safe power. In terms of national security, the volume of nuclear waste in the world is a constant threat, particularly in the former Soviet Union. Efforts to address this problem have been rebuffed by the Bush administration. While there is a consensus on the threat, there has been no work on the issue at the highest levels of government.

**Jan Schakowsky** has represented Illinois' Ninth Congressional District since 1998 after serving for eight years in the Illinois State Assembly. She serves on the House Democratic Leadership Team as Chief Deputy Whip and is a member of the Energy and Commerce Committee. Previously, as Program Director for Illinois Public Action (1976–1985), the state's largest public interest organization, she fought for energy reform and stronger protection from toxic chemicals.

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The worst-case scenario in the event of a nuclear meltdown in the Chicago area, which includes fourteen nuclear reactors (eleven currently operational, but all housing nuclear waste on site), might include an accident at the Dresden Reactor, located southwest of Chicago. An airplane flown into its poorly sheltered cooling ponds would:

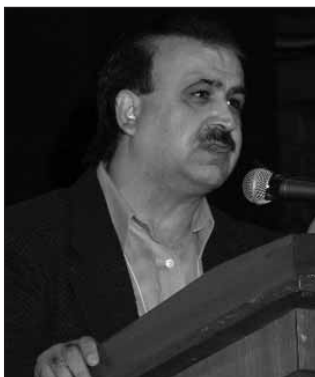
- Kill several thousand people instantly with high-level radiation exposure;
- Sicken 30,000 people with acute radiation exposure and overwhelm the health care system;
- Necessitate the permanent evacuation and relocation of 2.5 million people;
- Contaminate water and food supplies, such as Lake Michigan.

**Andy Kanter**, M.D., is a member of Physicians for Social Responsibility.

*“This is a true threat to millions of people in the Chicago area.”*

—Andy Kanter

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Whistle-blower **Oscar Shirani**, a longtime engineer and later a quality assurance expert for Exelon, questioned various design aspects of the company's nuclear power plants in Illinois. In the course of assurance investigations, Shirani uncovered defective valves and later poorly constructed dry cask containers used to store nuclear waste at General Electric–designed plants. Exelon was installing the casks at its Dresden nuclear power plant, located fifty miles outside of Chicago, when Shirani raised concerns about the casks' construction. According to the engineer, welds on the casks were performed by unqualified welders and materials control was inadequate for the casks. He maintains that the casks' manufacturer also failed to report holes in the neutron shielding material. Exelon rewrote the quality assurance reports for the Nuclear Regulatory Commission, removing any mention of defects at any of Exelon's plants. Because of his efforts to alert his employer to possible safety hazards, Shirani was fired from his position.

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The Chicago area is ringed with nuclear power stations. It is the heaviest concentration of nuclear power plants in the United States. The eleven units include boiling water reactors, pressurized water reactors, and closed but contaminated nuclear power stations.

In a historical context, since the first detonations of nuclear weapons, governments have systematically withheld information on the effects and risks of the release of fission products from nuclear weapons testing from public view.

There is now ample evidence that conscious decisions were made to accept harm to people's lives and the environment in the pursuit of nuclear weapons development. For example, by selecting the Nevada Weapons Test Site, the government and military planners knew that it would create atomic fallout across the United States.

A concerted campaign was engineered to "correct" and "re-educate" the "hysterical" or "alarmist" views on the dangers of radiation. Public relations replaced public health education, where, as one weapons test propagandist put it, "The idea of making the public feel at home with neutrons trotting around is the most important angle to get across."

The eventual move to test nuclear weapons underground to reduce harmful exposure to people did not occur without unanticipated venting, seepage, and deliberate operational releases of radioactive gases.

Radioactive releases into the air and water routinely occur with nuclear power station operation. They occur as continuous emissions and batch releases. While a large portion of these radioactive releases are radioactive for intervals of seconds, minutes, or days, other radioactive isotopes can deliver harmful exposure for months, years, or even millions of years.

As released radioactive gases decay, some form particulate matter and join other persistent radioactive isotopes as fallout deposited on land and water. These long-lived isotopes persist and accumulate in the environment and then "bio-magnify" up through the food chain.

The real and present danger is clear when reviewing Nuclear Regulatory Commission documents on the safety of the Quad Cities reactors. For example, the government has allowed the following to occur:

- Quad Cities 2 (Q2) operated with fuel rod leaks on July 14, 1997, which were "suppressed" after two weeks and replaced on September 27, 1997;
- Quad Cities 1 (Q1) fuel rods leaked on December 18, 2001, were suppressed on December 23, 2001, and replaced in January 2002;
- A Q1 fuel rod began leaking radioactivity on May 20, 2002, and wasn't replaced until May 2003;
- Q1 developed several more fuel rod leaks between January and April 2003. Increased radiation was released until fuel bundles were replaced in May 2003;
- Q2 had fuel rod leaks beginning on April 23, 2003, that were not suppressed until June 10, 2003.

With no known "safe" threshold for radiation exposure, the prohibition of radiation releases is not unreasonable to demand, particularly considering that the developing fetus and children are the most vulnerable to radiation exposures. It is more practical and economical to shut down the reactors.

**Paul Gunter** has served as Director of the Reactor Watchdog Project for the Nuclear Information and Resource Service (NIRS) since 1991. Mr. Gunter is an environmental activist, energy policy analyst, and watchdog over the U.S. Nuclear Regulatory Commission and the nuclear power industry. He is a community organizer by training and has been an ardent critic of atomic power development for more than twenty-five years.



*“The economics of nuclear power operation must be subordinated to public health concerns in considering operational radioactive releases.”*

—Paul Gunter

# The Dangers of Terrorism at NUCLEAR POWER PLANTS



*“A terrorist with low-level technological capabilities can unleash the enormous power housed in a nuclear plant against large population centers by triggering a meltdown.”*

—Dan Hirsch

On December 2, 1942, the human race first tapped the power of the atom beneath the stadium seats of Stagg Field at the University of Chicago, ushering in the atomic age with the first controlled nuclear chain reaction. To understand the immense power of atomic reactions, consider:

- One pound of fissioned plutonium released the energy equivalent of 30 million pounds of TNT over Nagasaki, Japan in August 1945, destroying the city;
- Current nuclear power plants fission more than one thousand pounds of uranium to generate power;
- An operational power plant contains more than 15 billion curies of radioactivity;
- Spent fuel pools contain ten times the amount of long-lived radioactivity than a reactor core.

Nuclear power plants generate immense heat to boil water to power steam-driven turbines for electricity production. The systems require constant cooling to maintain safety. Terrorists understand that disruption of the cooling process at a plant can turn a nuclear power reactor into an immensely destructive weapon. Over one hundred potential nuclear weapons in the form of nuclear power plants exist in the United States today.

A terrorist with low-level technological capabilities can unleash the enormous power housed in a nuclear plant against large population centers by triggering a meltdown. Disrupting the cooling apparatus of a nuclear power plant would create a disaster capable of making an area the size of Pennsylvania uninhabitable.

Current safety standards set by the Nuclear Regulatory Commission to guard against potential attacks remain inadequate. Until recently, counterterrorism exercises gave plant managers six months advanced warning before a test was performed. Even with this prior notice, over half the nuclear reactor plants failed the test. Increased standards followed the September 11, 2001, terrorist attacks, but no regulations require plants to protect themselves against air attacks. The twelve research reactors in the United States remain virtually unguarded.

**Dan Hirsch** is President of Committee to Bridge the Gap, a nuclear watchdog group that provides technical, legal, and organizing assistance to communities near existing or proposed nuclear projects. He is also the former director of the Program on Nuclear Policy at the University of California at Santa Cruz. He has testified before Congress about the terrorist threat to nuclear reactors.



# Reclassification of NUCLEAR WASTE



*“The Department of Energy has attempted to reclassify high-level radioactive waste as ‘waste incidental to reprocessing.’”*

—Diane D'Arrigo

The Department of Energy argues that federal law exempts the agency from the requirements of the Nuclear Waste Policy Act and that it is under no obligation to dispose of defense-related high-level waste in a repository. Under the proposed regulations, materials that are contaminated at a military site, such as concrete, asphalt, soil, and metals, could find their way into local landfills, which often leak. Contaminated plastics could find their way into consumer products through recycling plants.

When rebuffed by Congress in these attempts in early 1990s, the government worked with the International Atomic Energy Agency to develop less stringent international standards for releasing radioactivity into the environment. The regulations are in the process of being adopted by some European countries. Under international agreements, these relaxed regulations could be imposed on the United States. Several countries have fought the changes. Congress will revisit the proposed changes to U.S. regulations in 2005.

**Diane D'Arrigo** is Director of the Radioactive Waste Project for the Nuclear Information and Resource Service, which for twenty-five years has provided the public with information about the dangers of nuclear waste. Ms. D'Arrigo is a specialist in the area of radioactive waste and materials deregulation.



Symposium attendees learn about what they can do from organizations that address nuclear power and its hazards.

# The Trouble With NUCLEAR WASTE STORAGE

High-level radioactive waste, once created, must be secured, safeguarded, monitored, and repackaged for perhaps millions of years to isolate its hazard from the living environment. Irradiated fuel leaves reactors a million times more radioactive than when the fuel goes in and can deliver lethal doses of radiation in just a few minutes, even after decades of decay and cooling down. Few government officials or industry executives mention the costs of monitoring the waste in perpetuity as an added expense of nuclear power generation.

To date, the accumulated nuclear waste from sixty-two years of experimentation and power generation remains. For example, the nuclear waste from the early University of Chicago experiments is stored on campus. High-level radioactive waste is placed almost entirely in so-called interim, temporary facilities at the reactors where it is generated.

The first “permanent” nuclear waste disposal facility at Carlsbad, New Mexico, which was operated from 1971 to 1999 by the military to store transuranic waste in salt formations, experienced transportation accidents early. Dry cask storage has been equally problematic. Despite promises to unload casks if problems developed, the Palisades plant in Michigan left irradiated fuel in a defective cask for ten years. An explosion occurred inside a cask at Point Beach, Wisconsin, in 1996. In Surry, Virginia, the first place in the country to use dry casks, inner seals failed.

Given the problem already associated with waste storage, the sheer volume of waste poses an additional long term problem in need of a solution. As of 2003, 49,000 metric tons (more than 54,000 U.S. tons) of irradiated fuel sits at commercial reactors across the United States, growing by about two thousand metric tons per year.

**Kevin Kamps** is a member of the Nuclear Information and Resource Service staff, specializing in the Yucca Mountain nuclear waste facility. Kamps was featured in the *Las Vegas Sun* for his cross-country exploits with the “Stop Mobile Chernobyl” rig that traveled the path by which nuclear waste will soon be shipped cross-country to Nevada.



*“The only viable solution to the manifold problems of nuclear waste storage and transportation is to stop generating the waste.”*

—Kevin Kamps

*“Electricity is but the fleeting byproduct from nuclear power. The actual product is forever deadly radioactive waste. The product is poison.”*

—Michael Keegan,  
Coalition for a Nuclear-Free Great Lakes

# Yucca Mountain: THE PROBLEMS OF TRANSPORT AND STORAGE

Given the problem already associated with waste storage, the sheer volume of waste poses an additional long-term problem in need of a solution. As of 2003, 49,000 metric tons (more than 54,000 U.S. tons) of irradiated fuel sits at commercial reactors across the United States, growing by about two thousand metric tons per year. Currently, 63,000 metric tons is the legal limit for commercial high-level radioactive waste (HLRW) that could be buried at Yucca Mountain. The limit will be reached soon after the 2010 opening of the facility.

Nuclear waste transportation across the country to Yucca Mountain increases the potential for irradiation releases in transit. Up to 38,549 truck shipments are expected when transport of waste is at full scale. That represents three to four shipments per day across Illinois, each and every day, for thirty years. Each truck cask contains up to forty times the long-lasting radioactivity of the Hiroshima bomb. Since September 11, 2001, transportation details of waste transfers have become classified information.

Yucca Mountain itself is a dangerous site for waste storage. It is ninety miles from Las Vegas and only two hundred miles from Los Angeles. Moreover, Yucca Mountain has experienced well over six hundred quakes over 2.5 on the Richter scale during the past twenty-five years. The site is also above a drinking water aquifer used by a vibrant farming community downstream. As such, the Environmental Protection Agency is undermining the Safe Drinking Water Act.

In addition, Yucca Mountain is Western Shoshone Indian land, affirmed by the Treaty of Ruby Valley of 1863, signed by the U.S. government. As Winona LaDuke put it, "The greatest minds in nuclear science have been hard at work for over fifty years to solve the radioactive waste problem, and they've finally found a solution: Drive it down a dirt road and dump it on an Indian reservation." Altogether, dozens of tribes have been actively targeted by the federal government and nuclear power industry for HLRW dumps.

The only viable solution to the manifold problems of nuclear waste storage and transportation is to stop generating the waste.

*"The greatest minds in nuclear science have been hard at work for over fifty years to solve the radioactive waste problem, and they've finally found a solution: Drive it down a dirt road and dump it on an Indian reservation."*

—Winona LaDuke



Symposium attendees line up to ask questions of distinguished panelists.



The ability of the world's oil producers to meet growing demand for crude oil has reached its peak. With increased pressure on the extraction industry to satisfy the growing needs of China, India, and Pacific rim countries, the era of cheap, plentiful oil will soon pass. While in 1985 there were an estimated four barrels of oil available per person globally, by 2050 that number will approach 0.684 barrels for each individual. We are in the transition to a post-petroleum world. It is indeed upon us to find out how to re-power the planet. We do have a small but tangible window of opportunity to define what type of transition we will have. Coupled with the acceleration of climate change attributed to excessive greenhouse gas emissions by burning fossil fuels, solar power offers a viable alternative to increasingly expensive oil.

Ordinary beach sand reformulated to silica and later used in solar panels can fuel the planet. Solar Design Associates (SDA), a pioneer in the industry, has designed some of the most important sun-fueled projects in the world:

- In 1976, SDA completed the Whitney residence in Maine that burns no fossil fuel and has no conventional heating system. A roof-integrated array of solar thermal collectors fuels the house;
- In 1984, working with New England Electric, it completed the world's first photovoltaic-powered neighborhood in central Massachusetts;
- In 1996, SDA worked with Olympic village architects in Atlanta to power the Natatorium Complex at the 1996 Summer Games with solar electricity using the world's largest rooftop photovoltaic power system.

Designers in Europe have overtaken the United States in utilizing solar power to its best advantage. Towns across the continent exploit the sun to power homes and office buildings. For example, an entire town in the Netherlands is powered by solar energy.

The transition to a post-petroleum world will be the biggest challenge the world has faced. Political will and innovation will fuel that change.

**Steven Strong** is a pioneer in renewable energy in the United States. Drawing on a background of engineering and architecture, Mr. Strong's firm consults for architects on the integration of solar electric power. He is the author of the book *The Solar Electric House: A Design Manual for Home-Scale Photovoltaic Power Systems*. Articles about him and his work have appeared in over one hundred publications including, *Time*, *Architecture*, *Business Week*, *Popular Science*, and *Wired*. In the spring of 1999, *Time* magazine named Mr. Strong an environmental "Hero for the Planet".

*"It is indeed upon us to find out how to re-power the planet."*

—Steven Strong

# Safer Alternatives: WIND POWER

In the 1970s and 1980s, the United States led the world with 90 to 95 percent of the wind-generated electricity in the world. At the time wind power was marginally cost-effective. Although the country has lost the lead in wind power generation, its time has more than arrived. Today wind power costs four cents per kilowatt hour and is a more cost-effective method of power generation than oil-, coal-, or gas-fired plants.

There is no cheaper way to produce additional electrical generating capacity in the United States today than building wind power. The western states have the capacity to generate three times the current electrical needs of the country today. The wind capacity of North Dakota, Kansas, and Texas could generate all the electricity currently used by each residential and business customer in the United States.

Commercial-size windmills represent the technology to challenge nuclear power. Technological breakthroughs in windmill design perfected by the Danish in the 1990s allow for a competitive edge over more traditional generation methods. Currently, ten companies in Denmark, Germany, Spain, Japan, and India build large windmills. In Ohio, for example, the city of Bowling Green and its municipal power company installed two 1.85-megawatt wind mills two years ago. After a year of operation, wind power generation is profitable. Today, wind power is big business.

General Electric (GE) recently purchased the wind power unit of the much-diminished Houston-based Enron Corporation. Offshore and power generation in the Great Lakes looks very promising. GE is currently the largest supplier of windmill generators in the United States. Currently, the industry is growing at a rate of 25 to 30 percent per year. Annually, it is a \$5 to \$10 billion business.

If municipal utilities and private owners adopt wind technology on a large scale, nuclear power generation will be obsolete.

**Harvey Wasserman** is an antinuclear and environmental activist. He is a senior editor for *Free* and is also a senior advisor to Greenpeace USA and the Nuclear Information and Resource Service. He is author or co-author of six books, including four on nuclear power and renewable energy, and two histories of the United States.



*“There is no cheaper way to produce additional electrical generating capacity in the United States today than building wind power.”*

—Harvey Wasserman



Symposium attendees mingle with other attendees during a break.

# Food Irradiation: DO WE REALLY NEED IT, DO WE REALLY WANT IT? .....

There is a concerted effort to approve the use of food irradiation. The argument that proponents of the practice use is that food irradiation is basically the same as pasteurization. It is not.

There are two techniques utilized for food irradiation. You can bombard the food with gamma rays or use an electron beam. Spices are bombarded with 100 thousand rads; meats, poultry, fruits are bombarded with anywhere from 300 to 600 thousand rads; fish are bombarded with 600 to 800 thousand rads. If you want to eliminate spores or viruses, it requires up to a million or 5 million rad. The lethal dosage for a man or woman is 400 to 500 rad.

So there are enormous amounts of radiation being applied to our foods and foods don't become radioactive but there are still plenty of problems. They are talking about zapping our food with huge amounts of radiation with no information, no knowledge, as to whether we may be damaging the healthful aspects of our food.

I am particularly concerned with irradiated foods for two reasons. Genetic damage is one. There are only two studies, one is on malnourished Indian children that showed that fresh irradiated wheat produces chromosomal abnormalities. The other study was in China, where healthy middle aged adults were given a variety of irradiated foods for a considerable amount of time. They said there was no damage.

I think we have to test every single food that we irradiate at any dose to see if it causes chromosomal abnormalities. The other issue is nutrition loss; this has been downplayed. The fact of the matter is that irradiation of food does cause some nutrient loss. It is dose related, and the most radiation sensitive are Vitamin A and thiamin.

I am a staunch opponent of food irradiation until these recommendations are accepted. One, no use until we resolve the issue of genetic damage by properly conducted studies in the United States with different age groups and diversity of populations. Two, no use until we test properly for nutritional loss, and every time they change the irradiating dosage significantly or change the technique, then that food should be tested for its nutritional status pre-irradiation, post-irradiation, and post conventional processing, whether that's refrigeration, or freezing, or cooking. Three, there must be prominent labeling, and the public should always be able to tell if food has been irradiated. Finally, the public must always, if we accept food irradiation, be given an alternative, so that they may buy irradiated or non-irradiated foods.

Do we really need it, do we really want it? Right now my answer is no.



**Donald Louria** is Professor and Chairman Emeritus of the Department of Preventive Medicine and Community Health at the University of Medicine and Dentistry of New Jersey Medical School. He was Associate Professor in Medicine at Cornell University Medical College. Recipient of the Dennis J. Sullivan Award of the New Jersey Public Health Association and the New Jersey Governor's Award, Dr. Louria has conducted research into the consequences of extraordinary life extension and reform of the current healthcare system. He is the author of five books and over three hundred articles in peer-reviewed medical journals.

# Perceptions OF THE FUTURE

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***We distributed a 'perceptions of the future' survey to Nuclear Power and Children's Health symposium attendees to ascertain how the audience felt about the future of the world. Dr. Donald Louria analyzed the results, which are summarized here.***

There were two questions which elicited startling results. The first asked "do you think nuclear or biological warfare is at least somewhat likely in the next few years?" Between 88 and 96 percent of respondents believed that at least some type of nuclear or biological warfare will occur in the near future.

The second question asked about the ability to solve major problems. Approximately 50 to 75 percent believed we can't solve the major problems facing society.

What are the implications of these perceptions?

We are focused on young people in particular, because they are bombarded, day after day, week after week, month after month, with persistently depressing news. And that has the capability of affecting their perceptions of the future, and their perceptions of their future can affect the entire society.

If young people in the society began to feel that we are no longer a melioristic society, that is a society that can improve itself based on human behavior, if young people lose faith in the future, this could be as devastating to a society as a nuclear or biological war.

What would those consequences be? Well for one, there would be a massive increase in hedonism. After all, if there is no future, you may as well enjoy the pleasures of the day, no matter what the consequences are. There would be a lot of negative consequences all interrelated with hedonism.

Second, there would likely be a withdrawal by young people from involvement in politics or in constructive activities that are needed to maintain and improve the society.

Third, there would be an extenuation of already what are unfortunately already important values in our society, namely greed and wealth.

What actions should we take to correct these perceptions?

One, we have to get young people to think like futurists. If young people in our schools are taught to think about the future, they have to have a modicum of faith that there is going to be a future.

Second, we have to teach students starting in junior high school when it is appropriate to think in linear fashion and when they ought to be approaching problems with a systems approach. An example of a linear approach to terrorism is the following: once terrorists are identified or terrorists act, find the terrorists, kill them or inactivate them to minimize future attacks. It's simplistic, it doesn't work. If you're really going to prevent terrorism, you've got to put it in a systems context.

Third, above all, we have to do a better job of solving or at least attempt to ameliorate our major problems. And we have to get young people involved in those efforts. If not, young people, even though we are still meliorist, will get the perception that we are unable to solve our major problems and those beliefs, together with resulting behaviors, will have a huge adverse societal consequence. A second possibility is that we really will have major problems such as nuclear catastrophe that we cannot solve and we will indeed be non-meliorist in which case we will not have a world or a future. Fortunately we still have viable choices. Procrastination cannot be one of those choices.

In regard to the overall tone of the questionnaires, I'm disturbed by the percentages of the number of people in every age group who said they were less optimistic now than a few years ago. And equally disturbed, maybe even more disturbed, by the surprisingly large percentage of at least this audience who said that we are not capable of solving at least some of the major problems that face our society. Basically, we have to keep young people with faith in the future, and we have to give them the tools so that they can do something about these problems that we have handled so badly and we're presenting to them.



*“We shouldn’t get discouraged by current events. We Americans have a real history of organizing for social change.”*

—Wenonah Hauter

The nuclear industry wants activists on the sidelines. The antinuclear community must organize people to counter the moneyed interests in Washington. The antinuclear protests of past decades brought the industry to its feet through organizing individuals and creating coalitions of citizens on the local, state, and national level to protest the construction of nuclear power facilities in their communities.

Organizers used the simple message that nuclear power is too expensive and dangerous in order to sway public sentiment. The protests halted the industry’s desire to build additional plants for thirty years. While the country faces the unholy alliance of the government and nuclear executives to create the so-called nuclear renaissance, dozens of groups are organizing across the country to counter the nuclear relapse. The task is daunting, but examples of effective protesting abound from California Mothers for Peace and the Snake River Alliance in Idaho to the Citizens Awareness Network in New England.

Effective grassroots organization will prevent the building of fifty new nuclear power plants in this country.

**Wenonah Hauter** is Director of the Critical Mass Energy and Environment Program at Public Citizen. She has worked extensively on energy, food, water, and environmental issues at the national, state, and local level. Wenonah is experienced in developing policy positions and legislative strategies, and has lobbied and developed grassroots field strategy and action plans.



*“Polite people get polluted.”*

—Dave Kraft

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In twenty-three years of opposition to nuclear power in Illinois, keen lessons have been learned:

- The federal government and its organizations, such as the Nuclear Regulatory Commission, continue to fail the American public on nuclear power, nuclear weapons, and nuclear waste issues;
- Mainstream media outlets have failed the public on nuclear power by choosing to focus on unimportant stories at the expense of thoughtful reporting on the private and public nuclear industry;
- Foundations continue to avoid funding nuclear issues;
- The U.S. healthcare industry ignores examples of increased cancer rates around nuclear power facilities.

Immediate action is necessary:

- Send letters to the editor to protest nuclear power;
- Investigate health hazards when they appear to challenge the government health officials who continue to turn a blind eye to the health risks of nuclear power;
- Join as many antinuclear organizations as possible and get involved;
- Bear witness to the threat of nuclear power.

You no longer have the option to say, “I didn’t know.”

**Dave Kraft** is Director of the Nuclear Energy Information Service (NEIS). He founded NEIS in 1981 with seven other activists to provide the public with reliable information about nuclear power and radiation hazards, and energy alternatives to nuclear power. For five years Dave was of the lead organizers for the Nuclear Free Great Lakes Action Camps, training anti-nuclear activists.



# Resources

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The Nuclear Policy Research Institute was established to educate the American public about the greatest single threat to the world's public health, namely the profound medical and environmental consequences of perpetuating nuclear weapons, power and waste.

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**NPRI**  
1925 K Street NW, Suite 210  
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202-822-9800 • [www.nuclearpolicy.org](http://www.nuclearpolicy.org)



NIRS was founded to be the national information and networking center for citizens and environmental activists concerned about nuclear power, radioactive waste, radiation and sustainable energy issues.

NIRS also initiates large-scale organizing and public education campaigns on specific issues. NIRS' Eastern Europe/ Commonwealth of Independent States Project is a massive effort to bring technical expertise and strategic sense to grassroots environmental groups facing the most dangerous nuclear programs of all.

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**NIRS**  
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"Illinois' nuclear power watchdog for 23 years" says,

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## CHICAGO CHAPTER OF PHYSICIANS FOR SOCIAL RESPONSIBILITY

PSR is a community of physicians, health care professionals and community members committed to nuclear disarmament, environmental health and the reduction of violence and its causes.

PSR is the U.S. affiliate of International Physicians for the Prevention of Nuclear War, which won the Nobel Peace Prize in 1985 for its pioneering disarmament initiatives.

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**PSR-Chicago**  
4750 N. Sheridan Road, Suite 439  
Chicago, IL 60640  
773-989-4655 • [www.psrchicago.org](http://www.psrchicago.org)



The North Suburban Peace Initiative (NSPI) is an interfaith coalition of concerned citizens and religious leaders who share a commitment to peace in the world and to security for America. For the past twenty-five years NSPI has worked throughout the northern suburbs of Chicago.

NSPI is a source of peace advocacy and peace education by working closely with individuals, peace and justice committees of many congregations, and national peace and justice organizations.

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**NSPI**  
2214 Ridge Ave.  
Evanston, IL 60201  
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# Partnership for a Nuclear-Free Future

The Nuclear Policy Research Institute invites you to partner with us in securing a nuclear-free future. By becoming our partner, you can take a step toward educating the public, media and policy-makers on the grave public health threat posed by nuclear power and weapons. We hope you will choose to join us in making the world a safer place for ourselves, our families and our children.

The Partnership for a Nuclear-Free Future provides a number of ways you can join NPRI to make the world a better place. At whatever level you choose, your contribution becomes a critical part of our success. As we work together to make a world free of the devastating risks of nuclear power and weapons, you can become a vital part of the NPRI team.

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NPRI is led by Dr. Helen Caldicott, Founding President of Physicians for Social Responsibility (1978–1983) and Women's Action for Nuclear Disarmament (WAND, 1980–1987). NPRI seeks to create a national consensus to end the nuclear age by mounting public education campaigns, establishing a pervasive presence in the mainstream media, and sponsoring high-profile symposia.

NPRI's Board of Advisors includes medical, scientific, political, military, and media experts well-versed in the risks and consequences of accidental or planned nuclear war and the many medical, economic, and environmental costs of nuclear power.

NPRI believes that there is no task more urgent than informing and encouraging the American public and policymakers to react to the clear and urgent dangers implicit in current U.S. nuclear policies with knowledge, compassion, dedication, and resolve.



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