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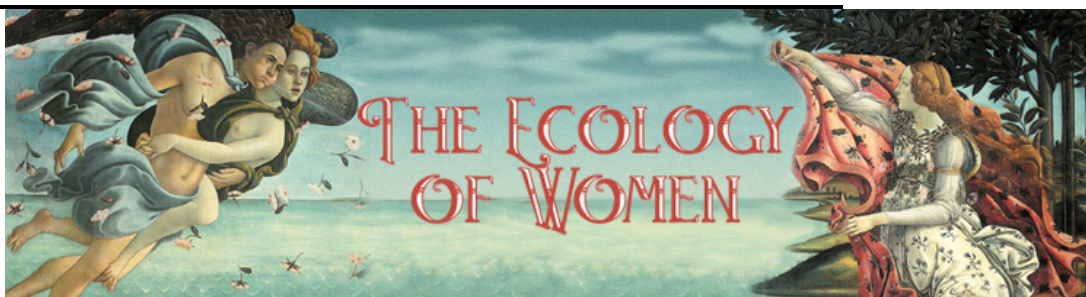
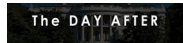


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## Nuclear Revival? Lessons for Women from the Three Mile Island Accident

by Karen Charman

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For the first time in several decades, serious attempts are underway to build new nuclear power reactors. The public is told that nuclear power is a clean energy source needed to combat global warming, which is caused by burning coal and other fossil fuels. But as the nuclear disasters unfolding in Japan in the wake of the devastating 9.0 earthquake and tsunami are showing, nuclear power can be deadly. These events may well alter the worldwide debate over nuclear power. Whether they do or not, it's important to look carefully at what happened at Three Mile Island, to date the most serious accident at a commercial nuclear power plant in the United States.

Three Mile Island is about 15 miles south of Harrisburg, Pennsylvania's state capitol. The first reactor, Unit 1, began operation in September 1974, and a second reactor, Unit 2, started up in December 1978. Before dawn on March 28, 1979, a combination of mechanical malfunctions and human errors resulted in a partial meltdown at Unit 2, which destroyed the reactor, terrorized the community, and led to decades-long legal battles and still unresolved death and injury claims of more than 2,000 people in surrounding communities.



The day of the accident, before the public was alerted, hundreds of residents living near Three Mile Island reported having had symptoms of radiation poisoning identical to those described by U.S. service members and down winders of atomic bomb blasts. These symptoms included a metallic taste in their mouths; skin rashes and instant sunburn of exposed skin; vomiting and/or diarrhea, which in some cases continued for months; hair loss; and intense weakness and flu-like symptoms.

Some also reported an eerie blue density in the air that lasted for days; a grayish-white ash that fell to the ground (also reported in the Marshall Islands immediately following atomic bomb tests in the Pacific, where the U.S. exploded 106 atomic bombs between 1946 and 1962); an unnatural orange glow above the reactor site; and rust-colored residue in their sinks and tubs, indicating radioactive contamination of the water supply. Several area residents reported the metallic taste and other physical symptoms over the next few years at times they later learned happened to coincide with the venting of radioactive krypton gas during the cleanup.

Over time, unusually high numbers of both strange and common cancers began showing up among residents, particularly those living in the path of the radiation plumes that crept over nearby communities during the first few days following the accident. Myriad other health problems appeared -- miscarriages, stillbirths, infant deaths, thyroid diseases, various autoimmune disorders, heart problems and the sudden onset of allergies.

### Strange Diseases

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Becky Mease, a nurse in her late twenties at the time, fled with her husband, eight-month-old daughter Pam, and two other adults two days after the accident, when then Pennsylvania Governor Dick Thornburgh suggested that pregnant women and preschool children within five miles of Three Mile Island evacuate. They drove more than 250 miles to Ocean City, Maryland, where they stayed for about three weeks.

## A significant rise in pregnancy complications, miscarriages, still births, birth defects

Recounting her experience to citizen researchers Katagiri Mitsuru and Aileen Smith in October 1982, Mease said Pam, who had been outside playing in the grass the day of the accident, had gotten violently ill with diarrhea and projectile vomiting about two days after they left. A full battery of tests at a local hospital failed to find any bacteria or foreign organism, which could cause such symptoms, so the hospital staff told them to go to a civil defense station. Mease knew radiation sickness can cause vomiting and diarrhea, so she asked the people at the civil defense office to check their car and belongings with a Geiger counter. "It just went completely crazy... It went like nuts when it went over my pocketbook, too," she said. "They told us to go wash everything down."

Pam's severe diarrhea lasted the entire three weeks they were away. "Her behind was so raw that we just left it lay on diapers. Didn't even put them on after a couple of days," said Mease.

In the summer of 1981, when Pam was two years old, she was diagnosed with severe cataracts in both of her eyes, which her doctor attributed to juvenile rheumatoid arthritis.

The Meases' ordeal was one of thousands area residents suffered in the aftermath of the accident. But the radiation effects weren't confined to humans. The evidence was visible across the landscape, too, with unprecedented numbers of sick and dying farm animals and strangely mutated plants.

### Residents Struggle On Their Own

The residents were left to deal with these problems on their own. Nearly four years after the Three Mile Island disaster, citizens frustrated over the lack of help from public health authorities and other government officials went door-to-door to gather health data themselves. Mary Osborne, a longtime Harrisburg resident, was one of the survey takers. "Our door-to-door studies showed horrendous problems everywhere," she said. "At almost every household or every other household we found cancer or some kind of emergency problem, and in some cases, different family members had different cancers." Osborne also noted significant numbers of women who had pregnancy problems, babies with low birth weights, neonatal and newborn deaths, and Downs syndrome.

Despite the fact that the citizens had consulted [Dr. Carl J. Johnson, an expert from Colorado](#), on the effects of radiation and public health, to help design their survey, the government and the nuclear industry dismissed their results as "unscientific." The government and the nuclear industry insisted then and now that nobody outside Three Mile Island was killed or injured as a result of the accident, because very little radiation escaped into the surrounding community, and therefore no injuries or deaths could have resulted from the accident.

But David Lochbaum, a nuclear engineer-turned-whistleblower who monitors the U.S. nuclear reactor fleet for the [Union of Concerned Scientists](#), says radiation monitors on the vent stacks at Three Mile Island went off scale during the accident. The exact amount of radiation released will never be known, he says, because crucial records from the first two days following the accident somehow never surfaced, and not enough radiation dosimeters were deployed in surrounding communities to give a true reading. What is known is that the partial meltdown damaged at least 70 percent of the reactor core and caused more than one-third of its highly radioactive fuel to melt.

Three Mile Island plant owner Metropolitan Edison and the Nuclear Regulatory Commission (NRC) maintained that ten million curies of radioactive gases were released into the atmosphere from the accident, resulting in an average dose to area residents equal to a chest X-ray.

Lochbaum says that figure is grossly underestimated, because it is based on a measurement of radiation levels on the Three Mile Island site a year after the fact and does not account for shorter-lived radionuclides like iodine-131, which would not have been measurable by that time. Nor, he says, does the official figure include any leakage from the containment building, the concrete dome surrounding the core of the reactor, which is meant to prevent deadly radiation from escaping into the environment in the event of an accident. Lochbaum estimates that at least 40 million curies were released during the accident. Other more recent estimates by former nuclear industry executive [Arnold Gundersen](#) calculated the radiation releases at 100 to 1,000 times higher than NRC estimates.

### Radiation and Women's Health

*He takes apart even the form of matter itself, he strips energy from mass, he splits what is whole, he takes this force for his own, he says. But what he has split does not stop coming apart. Fractures live in the air, invisible fractures come into his body, split his chromosomes, unravel the secrets in him. -- --*  
[Susan Griffin](#)

Health problems from radiation exposure reported from the Three Mile Island accident and specific to women include a significant rise in pregnancy complications, miscarriages, still births, birth defects, low birth weights of babies born after the accident, and cases of Downs syndrome. Though radioactive elements do have chemical components that determine what organ in the body they affect, it's important to understand the

Health studies conducted by the Pennsylvania Department of Health, various federal government agencies, and Columbia University supported the nuclear industry claims. The affected citizens contend these studies were sloppy and included people who should not have been counted, excluded many who should have been, or the researchers did not do the necessary follow-up on people who left the area after the accident. The citizens also say study authors uncritically accepted the premise that not enough radiation was released to cause the illnesses people were experiencing, so that

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danger of the radioactivity itself.

Radioactive elements, also known as radioisotopes or radionuclides, are unstable atoms that over time—sometimes as long as several billion years, depending on the radionuclide—become stable. Nuclear **radiation expert Rosalie Bertell** describes ionizing radiation, the release of energy that radionuclides give off, as “an explosion on the microscopic level.”

The physics and chemistry of radiation is complicated and involves scores of different elements that behave in different ways depending on what they encounter in the outside environment or where they lodge inside our bodies. All of these “microscopic explosions” are able to break chemical bonds, which enables them to damage or destroy living cells.

The chemical properties of various radioactive elements determine where in the body they will concentrate. Below is a description of some of the organs and tissues most at risk from radioactivity.

**Ovaries:** Ionizing radiation damage to ovaries can cause birth defects, mutations, and miscarriages in the first and subsequent generations of women exposed. Some of the radionuclides involved are iodine-131, cobalt-60, krypton-85, ruthenium-106, zinc-65, barium-140, potassium-42, cesium-137, and plutonium-239.

**Thyroid:** The thyroid, the master gland in metabolism, requires iodine in order to function. If the radionuclide iodine-131 is inhaled or ingested, the thyroid gland will take it up. Thyroid cancer is a particular risk for radiation exposure.

**Bones:** The bones are damaged by strontium-90, which mimics calcium, radium-226, zinc-65, yttrium-90, promethium-147, barium-140, thorium-234, phosphorus-32, and carbon-14.

**Skin:** sulfur-35.

**Liver:** cobalt-60.

**Muscle:** potassium-42 and cesium-137.

**Lungs:** radon-222, uranium 233, plutonium-239, and krypton-85.

**Spleen:** polonium-210.

**Kidneys:** ruthenium-106.

**-Karen Charman**

even when higher disease rates were found, they were attributed to other factors such as stress or “lifestyle factors” like smoking, drinking, poor diet, or taking too much anti-anxiety medication.

### **Nuclear Critics Drowned Out**

Some scientists have attempted to find out what really happened to the community after the accident. Dr. Ernest J. Sternglass, **a tenured professor of radiation physics** at the University of Pittsburgh, immediately sought every relevant health statistic he could find. According to Sternglass, a student of Albert Einstein's who holds several patents on X-ray technology, the health impacts from the accident were unquestionable, significant, and included a sharp spike in infant deaths and hypothyroidism. Dr. Gordon MacLeod, Pennsylvania's Secretary of Health at the time, tried to ensure all health impacts from the accident were fully disclosed. He was fired by then Governor Dick Thornburgh for his efforts. More recently, University of North Carolina epidemiologist Steve Wing reanalyzed the data from the Columbia University study and concluded that people living closer to the path of the radiation cloud **developed all types of cancers** more frequently. In the areas of greatest fallout, lung cancer rates jumped 400 percent, and leukemia rates climbed 700 percent. These scientists -- and others who question the nuclear orthodoxy -- have all been either drowned out or viciously attacked as biased,

unprofessional purveyors of panic with an anti-nuclear axe to grind.

More than 2,000 people participated in a class-action lawsuit claiming injuries against Three Mile Island. Although an unknown number of cases settled out of court with terms that must be kept confidential, in June 1996 the class-action lawsuit was dismissed on the grounds that the plaintiffs failed to prove that the Three Mile Island accident had caused their health problems.

### **Downwind Across the Nation**

Mary Osborne is deeply disillusioned by what she characterizes as a gross miscarriage of justice. “Not a day goes by that I don't think about the accident.”

Nearly 32 years later, the Three Mile Island disaster and its aftermath continue to shape the lives of many who were exposed to the radioactive fallout. Three Mile Island serves as a model of what American citizens can expect if another nuclear disaster were to occur. With 104 mostly aging nuclear reactors not only still running but virtually all being granted 20-year license extensions, and, in some cases, permits to generate more power than they were designed to do, David Lochbaum believes that sheer luck rather than good management or serious concern for safety has so far prevented another nuclear disaster. Considering that approximately 190 million citizens live within 100 miles of at least one nuclear reactor, let's hope that luck holds.

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**Karen Charman** is managing editor of the journal *Capitalism Nature Socialism*. She is also an award-winning independent investigative environmental journalist with a special interest in nuclear issues. Aside from CNS, her work has appeared in *World Watch*, *Sierra*, *OnEarth*, *The Nation*, FAIR's journal *Extra!*, *In These Times*, *The Progressive* and other publications.

Also see: **[Swamped: Trying to Save Fragile Bodies by Molly M. Ginty](#)** in this edition of On The Issues Magazine

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**Karen Ethelsdattar** posted: 2011-04-04 16:52:32

I would like to send you the poem I wrote on Three Mile Island, which was published by International Quarterly, Vol.II, No.2, 1995, "Middletown, Pennsylvania (Nuclear Accident, 1979)"

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**TOÑI** posted: 2012-03-28 10:02:57

me llamo toñi torres y vivo en cordoba y tengo 18 años .

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**Mike** posted: 2012-03-29 17:04:34

I believe it is likely that the radiation released was much higher than officially estimated. However, it is easy for the gov't to stick to there story because of so many people that exaggerate or fabricate information when they recount there story. Eerie blue density, orange glow... I am a former Naval Nuclear Operator. I have been in reactor compartments. I have been exposed to high levels of radiation (in closely measured doses). I can attest with 100% certainty that you cannot see, hear, smell, taste, or feel radiation. It does not glow. You will not know you are being exposed until later (sickness), or if you have a detector. I do not know why some people are given to exaggeration on this subject, but it detracts from those that have fully credible stories, such as radiation sickness. We will probably never know the full truth, and that is a shame. My heart goes out to those that were really effected by this disaster.

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