

DIFFERENT TAKES



Climate Change Series

NO. 56
WINTER
2009

Why a Nuclear Renaissance Threatens Our Bodies, the Environment and Our Future

by **Meredith Crafton**

Editors' Note: In this first issue of our *Climate Change* series Meredith Crafton argues that we need to resist the nuclear industry's corporate marketing blitz to promote nuclear power as a solution to global warming. Now more than ever, she says, we must learn from the past for the sake of our future. Nuclear power threatens human and environmental health and poses a grave risk to international peace and security.

— *Co-editors Elizabeth Barajas-Roman & Betsy Hartmann*

The threat of a nuclear renaissance is upon us. Nuclear power is now being touted as a solution to global warming. After over 20 years without a new nuclear power plant going online in the United States, the government and multinational nuclear corporations are attempting to revive the industry by promoting new nuclear power projects and plutonium reprocessing, and updating the nuclear weapons arsenal - all in the name of global warming and national security. No new site permits have been approved, but there are 23 applications currently awaiting approval.¹ While addressing climate change is one of the greatest environmental priorities of our time, nuclear power is not the way to go.

In the face of this nuclear renaissance, we need to remember the legacies of the nuclear industry. Over the past two decades nuclear power plant projects have failed in the US due to fierce public opposition, safety concerns and cost overruns. The Hanford Nuclear Site exemplifies the serious, unresolved problems of nuclear waste, contamination, and the safety risks involved in the cleanup. Further development of the nuclear industry is one of the most dangerous prospects of our time.

From Bombs to Power Plants — A Historical Reminder

Built on decades of secrecy in the name of national security and energy independence, the US Nuclear Complex covers 20 federal sites and 104 commercial nuclear power plants in addition to numerous current and former uranium

A publication of the

Population and Development Program

CLPP • Hampshire College • Amherst, MA 01002
413.559.5506 • <http://popdev.hampshire.edu>

Opinions expressed in this publication are those of the individual authors unless otherwise specified.



mine sites.² During World War II, the Manhattan Project was launched at top-secret sites across the country to develop the atomic bomb. The nuclear power industry got its start with Eisenhower's Atoms for Peace Program in the early 1950s. The promotion of peaceful uses of atomic energy was a way to legitimize expensive public investments in nuclear research and obscure the destructive potential of nuclear weaponry. In truth, there is no real border between civilian and military nuclear applications. In one year's operation, a single nuclear power plant generates as much radioactive poison as 1000 Hiroshima-type atomic bombs.³ Plutonium, which is at the core of an atomic bomb, is a by-product of nuclear power production; any country that has nuclear power capacity also has access to fuel for an atomic bomb.

“ Plutonium, which is at the core of an atomic bomb, is a by-product of nuclear power production; any country that has nuclear power capacity also has access to fuel for an atomic bomb. ”

The most contaminated site in the US is the Hanford Nuclear Reservation. Built on tribal and farm land in southeastern Washington state, Hanford was established in 1943 as part of the Manhattan Project. Plutonium manufactured there was used in the Trinity test bomb, in the bomb detonated over Nagasaki, and in countless Cold War weapons.⁴ No longer a plutonium processing site, Hanford is now home to the world's largest and most expensive environmental cleanup project. With a current annual budget around \$2 billion, work at the site focuses on mitigating the risks from former nuclear weapons production.⁵

The Columbia River flows through Hanford and passes through Portland, Oregon before reaching the Pacific Ocean. Between 1943 and 1963, nine plutonium production reactors were built along the river.⁶ These facilities produced overwhelming amounts of radioactive and chemical waste and heavy metals, and pumped contaminated cooling water directly into the river for decades. Approximately 750,000 cubic meters of solid waste was dumped into 175 waste trenches around the site. More than 53 million gallons of liquid radioactive waste remain in

177 aging underground single-shell tanks, some of which are leaking.⁷ An estimated 200 square miles of contaminated groundwater underlies Hanford. Uranium, tritium, thorium, strontium-90 and various chemicals enter the Columbia on an increasing basis.⁸ What took just 20 years to build has left a legacy of contamination that will last millions of years.⁹

Unhealthy Effects

This legacy of contamination is fraught with secrecy. In the past, information and studies on risks to workers, neighboring communities, agriculture and the wider environment were routinely classified. It has taken years to declassify data on radioactive releases from Hanford and other nuclear sites. The estimated doses suffered by exposed populations are staggering.¹⁰ Thankfully, efforts to increase our medical understanding of radiation and chemical exposure and rework standards to protect those most at risk are expanding. Recently, much work has been done to assess the effects of radiation on children, women, fetuses and reproductive health in general. The results are startling. One major problem is that most radiation protection and even chemical standards in this country are based on *Reference Man*, a hypothetical adult male defined as a healthy 155-pound "Caucasian" male in his twenties.¹¹ These standards are used by government agencies, companies, and even health care professionals to assess risk and set exposure limits. *Reference Man* happens to be least susceptible to the harmful effects of chemical and radiation exposure.

The synergistic effects of toxic chemicals and radiation released by the nuclear industry are another grave concern.¹² The risks posed by chemical byproducts have been the least acknowledged. In addition to cancers, chemical and radiation exposure has been linked to genetic mutations, Down's syndrome, autism, chemical sensitivities, allergies, asthma and more. In the US there are no regulations or protections in the nuclear industry that address the increasing risk to women of early miscarriages and fetus malformations or that govern exposure for men who plan to become fathers. In addition, US radiation protections for workers who declare their pregnancies are far more lax than in the European Union.¹³ The culture within the nuclear industry is not a supportive atmosphere for declaring increased risk and potential inability to work.

“ **An element made by humans and named after the Greek Lord of Hell, plutonium is so toxic and carcinogenic that less than one millionth of a gram if inhaled will cause lung cancer.** ”

Plutonium is the nuclear industry's most potent creation. An element made by humans and named after the Greek Lord of Hell, plutonium is so toxic and carcinogenic that less than one millionth of a gram if inhaled will cause lung cancer. Plutonium is also teratogenic, crossing the placenta in the developing embryo. In men, plutonium is stored in the testicles. It can cause mutations in the reproductive genes, increased incidence of genetic disease in future generations, and testicular cancer. Every male in the northern hemisphere now has a tiny amount of plutonium in his testicles from nuclear weapons testing fallout. Glen Seaborg, the discoverer of plutonium, said it is "the most dangerous substance on earth," yet another reminder that nuclear power is far from safe.¹⁴

Nuclear production begins with mining uranium, found naturally throughout much of the country, but most concentrated in the West. The effects of uranium mining on Native American communities is tragic, as most mines in the US are on tribal lands. Mining severely pollutes soil and groundwater. Miners are exposed to high levels of radioactive radon gas and frequently develop cancer and exposure-related diseases. More than one fifth of the uranium workers in North America have died of lung cancer.¹⁵ Because radiation is tasteless and odorless, people in contaminated areas cannot tell if they are drinking contaminated water, breathing radioactive air or eating toxic fish. With an upsurge in nuclear power plants, uranium mining would increase again. In the past two years, the US government has received 20 new applications to expand or begin uranium mining operations.¹⁶ Tribes across the country are facing threats of mining, illicit land use and unpaid royalties for minerals taken. In 2005, the Navajo Nation banned uranium mining and reprocessing on their lands.¹⁷

In addition to being dangerous, mining, milling, extraction and transport of uranium are very energy-intensive. The Paducah enrichment facility in Kentucky

uses the electrical output of two 1,000 megawatt coal-fired plants for its operation. Once the uranium is mined, it must then be processed or enriched and put into nuclear fuel rods. Chlorofluorocarbon CFC 114, a potent cause of global warming and known destroyer of the ozone layer, leaks unabated from the hundreds of miles of cooling pipes used in the uranium enrichment operation at Paducah and its sister plant in Ohio.¹⁸ Nuclear power is hardly emissions free.

Challenging the Industry

Battling the nuclear industry (weapons or power) means taking on a well-funded, government and commercial establishment with a culture that has maintained the secrecy that surrounded its wartime inception. Workers within the industry have proven to be the most powerful allies of anti-nuclear activists over the years, as they are the most at risk and the most in need of protection. Regardless of their feelings about nuclear power or weapons, workers are the first to see wrongdoing and the first to be harmed by bad policies. Workers have died, and continue to die, from preventable exposures.¹⁹ There is a grave need to find ways to promote positive change and a safe cleanup at nuclear sites across the country. Workers willing to take a stand often have difficulty finding support. Whistleblowers are frequently harassed, threatened, or in the case of Karen Silkwood, killed.²⁰ It is through supporting and protecting these individuals that important alliances can form to shift the nuclear industry from production to a safe and responsible cleanup.

One prime example is the story of Hanford worker Casey Ruud. In 1988, Ruud made landmark disclosures about gross safety deficiencies at Hanford's PUREX facility, the last operating plutonium reprocessing plant in the US. Speaking out cost Casey his job.²¹ He received valuable support from the Government Accountability Project which helped create the opportunity for Casey to speak publicly at a congressional hearing. Within the year, plutonium production ended permanently in the US. Reforming such a powerful industry takes persistence. The current amount of nuclear waste and pollution is big enough to keep thousands of people working at sites around the country well beyond our lifetimes. As we face the potential expansion of nuclear power, we must awaken from our nuclear amnesia and remember the

nuclear legacy. There is still no viable disposition path for nuclear waste. Radioactive waste is not disposable or recyclable. It must be maintained and protected in isolation from the environment for thousands of years.²²

Past experience shows us that nuclear is neither safe nor reliable. Let us invest in a better future. A combination of renewable energy sources and conservation can make the need for nuclear power obsolete in the fight against global warming. We must protect current and future generations from the harmful effects of the nuclear industry and prevent a nuclear renaissance.

Meredith Crafton graduated from Hampshire College and now works on Investigations for Hanford Challenge, a new nonprofit, public interest group founded by Tom Carpenter, the former Program Director of the Nuclear Oversight Program at the Government Accountability Project (GAP). Hanford Challenge focuses on supporting workers and influencing public policy, social change and transformation in order to improve the cleanup activities at Hanford. Prior to working at Hanford Challenge, Meredith was the program assistant for the Nuclear Oversight Program at GAP.

The views expressed in this article are those solely of the author and do not represent Hanford Challenge.

Notes

1. The Nuclear Regulatory Commission, "New Reactors" (retrieved October 23, 2008), <http://www.nrc.gov/reactors/new-reactors/col/new-reactor-map.html>
2. The Nuclear Regulatory Commission, "Operating Nuclear Power Reactors" (retrieved October 23, 2008), <http://www.nrc.gov/info-finder/reactor/#AlphabeticalList>
3. John W. Gofman and Arthur R. Tamplin, *Poisoned Power* (Emmaus, PA: Rodale Press, 1979).
4. United States Department of Energy, "History of the B Reactor" (Retrieved May 30, 2008) <http://www.energy.gov/about/breactor.htm>.
5. Department of Energy Hanford Site, "Hanford Site Overview" (Retrieved May 30, 2008), <http://www.hanford.gov/?page=215>.
6. Ibid.
7. Ibid.
8. Hanford Challenge, "Overview of Hanford" (Retrieved June 6, 2008), www.hanfordchallenge.org.
9. Project for Participatory Democracy at the Tides Center, "Ending the Culture of Secrecy in the US Nuclear Weapons Complex," *Facing Reality* (July 1995).
10. Roy E. Gephart, *Hanford: A conversation about nuclear waste and cleanup* (Richland, WA: Battelle Press, 2003), 2.3.
11. Arjun Makhijani, Brice Smith and Michael C. Thorne, "Healthy from the Start: Building a Better Basis for Environmental Health Standards — Starting with Radiation," *Science for Democratic Action*, Vol. 14, No. 4 (February 2007), 2.
12. Mike Thorne, *Science for the Vulnerable: Setting Radiation Standards and Multiple Exposure Environmental Health Standards to Protect Those Most at Risk* (Takoma Park, MD: Institute for Energy and Environmental Research, 2006).
13. Arjun Makhijani, Brice Smith and Michael C. Thorne, op. cit., 7.
14. Helen Caldicott, *Nuclear Power is Not the Answer* (New York, NY: The New Press, 2006), 61.
15. Ibid., 48.
16. The Nuclear Regulatory Commission, "Uranium Projects" (retrieved October 23, 2008), <http://www.nrc.gov/info-finder/materials/uranium/2008-ur-projects-list-public.pdf>
17. Associated Press, *Navajo Nation bans uranium mining on its land*, (April 22, 2005), <http://www.minesandcommunities.org/article.php?a=1944>
18. Helen Caldicott, op. cit., 10.
19. Annette Cary, "Hanford worker dies day before ruling in lawsuit," *The Tri-City Herald*, June 13, 2008.
20. Union activist and chemical technician at the Kerr-McGee plutonium fuels production plant in Oklahoma, Karen Silkwood was killed in 1974 in a fatal one-car crash. Her story has achieved worldwide fame and the circumstances of her death have been the subject of much speculation. <http://www.pbs.org/wgbh/pages/frontline/shows/reaction/interact/silkwood.html>
21. Michael D'Antonio, *Atomic Harvest* (New York, NY: Crown Publishers, Inc., 1993).
22. John W. Gofman and Arthur R. Tamplin, *Poisoned Power* (Emmaus, PA: Rodale Press, 1979)