

Back to the Bad Old Days

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During the Cold War, the U.S. nuclear weapons establishment generally put production ahead of human and environmental health. Nuclear weapons plant officials deceived workers and assured them that factory conditions were safe and within regulatory limits even though the officials knew they weren't. Immediately following nuclear weapons tests, soldiers were told to march into ground zero without adequate radiation protection or even measurement of doses. The nuclear weapons establishment located a test site in Nevada knowing that it would blow fallout over essentially the entire continental United States. In 1997, the National Cancer Institute estimated that 50,000 people would get thyroid cancer due to exposure to radioactive iodine in fallout from weapons testing in Nevada.

Much of the harm was often done in secret, as illuminated by the statement of then Deputy Secretary of Energy W. Henson Moore in 1989, during the administration of President George H.W. Bush, on his visit to Rocky Flats in June of that year. Nuclear weapons production, he told the press, has been "a secret operation not subject to laws . . . no one was to know what was going on." He added that "the way the government and its contractors operated these plants was: This is our business, it's national security, everybody else butt out."¹ The "everybody else" he was referring to was not a foreign power, but the people of the United States.

In the 1990s it seemed the nuclear establishment might turn over a new leaf. Many nuclear weapons plants were shut during the administration of Bush I, who also signed a 9-month nuclear test moratorium into law in 1992, which was extended by Congress the following year. In 1995, the Clinton administration agreed that the nuclear weapons states parties to the Nuclear Non-Proliferation Treaty were obliged to actually achieve complete nuclear disarmament. In 1996, the United States signed the Comprehensive Test Ban Treaty. An historic step was taken in 1993 by then Secretary of Energy Hazel O'Leary when she announced an unprecedented openness initiative. In early 2000, the Energy department acknowledged for the first time that half a million nuclear weapons workers had been put in harm's way because of their occupational radiation exposures.

However, evidence is increasing that the nuclear establishment is back to its bad old days. Plans for building a plant to manufacture plutonium pits for nuclear weapons are marching ahead. Nuclear weapons designers are eager to resume design of new nuclear weapons. There is more and more serious talk of abrogating the Comprehensive Test Ban Treaty, which the U.S. Senate failed to ratify in 1999. Environmental and health considerations are once more being shoved into second place, if that. Secrecy is back, too. The one difference today is that the government is, in some cases, openly estimating that people will be a risk and some will die as a result of building new nukes.

The bad old days

IEER has long documented the poor environmental and health track record of the DOE.² The DOE is responsible for developing and maintaining U.S. nuclear weapons and for managing the massive environmental messes created by past weapons production. A great deal has, in the past, been swept under the rug of national security, only later to be revealed to be gratuitously damaging to people's health and the environment. Examples abound:

- During the 1950s it was well known that exposure to radon and its decay products in unventilated mines was a health hazard and increased the risk of lung cancer, but the Atomic Energy Commission (AEC), DOE's predecessor, did not require that the mines be ventilated, choosing instead to emphasize production. From the 1940s into the 1970s, more than 23,000 people were subjected to radiation experiments, many without their informed consent. They were administered by the AEC, DOE, Department of Defense, NASA and Department of Veterans Affairs for purposes including radiation weapon development and determining radiation's effects on military personnel performance in the battlefield. One experiment involved feeding oatmeal with radioactive trace elements to more than 100 boys at a Massachusetts school. Others were testicular irradiation experiments on prisoners to determine what doses induce sterility, and experiments on pregnant women. In 1993, upon learning of a particularly troubling series of experiments involving the injection of plutonium into unknowing subjects, then Secretary O'Leary remarked, "The only thing I could think of was Nazi Germany."³
- In the 1950s and early 1960s, most workers at the Fernald nuclear weapons plant near Cincinnati were overexposed to uranium without their knowledge or consent. Because of the toxicity of uranium as a heavy metal, many workers probably also suffered kidney damage. Yet they were reassured that they were not being harmed.⁴
- In other nuclear weapons plants, AEC and plant managers were aware that workers were being overexposed over prolonged periods of time, yet there was no indication they shared this information with the workers. In fact, there are documents showing that they deliberately deceived workers about the levels of radiation to which they were being exposed.⁵

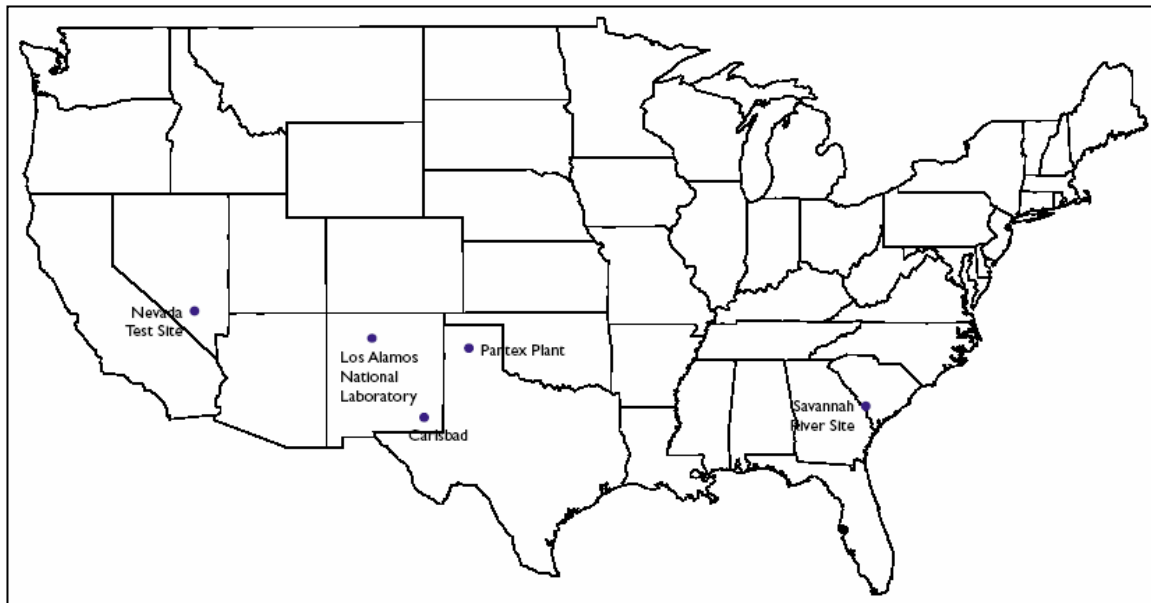
- During the 1950s and early 1960s, the era of atmospheric nuclear testing, the U.S. government was secretly informing photographic film producers of expected fallout patterns so they could protect their film supply. This practice started after the National Association of Photographic Manufacturers threatened to sue for damages caused by exposure of their film products to radioactive fallout. While warning Eastman Kodak and its ilk about tests dates and wind directions, the U.S. government did nothing to inform downwinders so they could take precautions, nor did they inform milk producers so that they could protect a vital component of the food supply.
- Poor radioactive waste disposal practices throughout the Cold War—like dumping high-level liquid radioactive wastes from reprocessing into tanks that are now leaking into the ground near the Columbia River and injecting radioactive wastes directly into the sole-source Snake River Plain Aquifer—endanger some of the most important water resources in the United States and threaten human and ecological health.

Back to the bad old days

There are three ways in which the U.S. government is sliding back to the bad old days. The first involves nuclear weapons plans and activities that are harmful to national and global security (see accompanying article on page 1). The second relates to renegeing on promises and plans to clean up the nuclear complex in a manner that would prevent radioactive and toxic wastes of past weapons production from posing severe threats to water, soil, and future generations. The third relates to creating new health and environmental problems and risks from new nuclear weapons production. In one of the most alarming and telling moves, the DOE has asked Congress to allow it to reclassify wastes currently designated as “high-level” and hence requiring deep geologic disposal as “incidental waste” that could be disposed of in shallow burial sites. If it is actually permitted to leave vast amounts of radioactivity in place in shallow dumps, capped or grouted, the DOE would be putting some of the most precious water resources of the United States at risk, including:

- The Columbia River in Washington and Oregon, which is the largest river in the West.
- The Snake River Plain Aquifer in Idaho, which is a sole source aquifer for much of southern Idaho, where 75 percent of the country’s commercial rainbow trout are grown.
- The Savannah River in South Carolina and Georgia, and possibly the Tuscaloosa aquifer.
- The Rio Grande, downstream of Los Alamos.

The Nuclear Regulatory Commission is considering allowing the wholesale release of radioactively contaminated materials from the nuclear weapons complex into the civilian economy, while leasing contaminated buildings in the complex to non-nuclear workers. These two policies have the effect of dispersing some of the radioactive wastes among the people and concentrating people close to some of the radioactive contamination.



Sites under consideration for the DOE's Modern Pit Facility: Los Alamos National Laboratory and Carlsbad, both in New Mexico; the Savannah River Site near Aiken, South Carolina; the Nevada Test Site, 60 miles from Las Vegas; and the Pantex Plant in Amarillo, Texas.

Finally, and perhaps most tellingly, the government is now actually estimating that new weapons programs would cause cancer deaths among workers and expose the public to significant risks. We have analyzed two proposed facilities.

Modern Pit Facility

The DOE's National Nuclear Security Administration (NNSA) recently revealed data indicating that roughly 9 workers will die from radiation-induced cancer over a 40 year operating period of the proposed Modern Pit Facility (MPF), assuming normal operations and a 450 pit per year production level.⁶ The NNSA wants to build the facility in order to manufacture more plutonium "pits" for the U.S. nuclear arsenal. Pits are the triggers that initiate the explosion in modern thermonuclear warheads.

The MPF would violate DOE's own guidelines. Normal operation of a 450 pit per year facility would lead to average worker exposures in excess of the internal DOE recommended administrative standard at nuclear facilities. Exposure and death estimates increase as the number of pits per year increases and if accidents were accounted for. If the facility is run on double shifts, the Draft Environmental Impact Statement (EIS) for the MPF notes that all "adverse health impacts to MPF workers would be approximately double," and therefore expected worker deaths would jump to 18.⁷

More than one in four of the potential accidents analyzed for the proposed facility would violate the DOE's own guideline for radiation exposure to the public, some by as much as 400%. In addition, the accidents analyzed by the government represent only a fraction of possible scenarios, masking the full truth about the overall risk posed to the public.

At three of the MPF candidate sites (Los Alamos National Laboratory, Carlsbad, and the Pantex Plant), one-third to one-half of the accidents analyzed for a plant capable of producing 450 pits per year would lead to exposures in excess of the DOE guidelines for a member of the public.⁸ The Draft EIS claims that once a specific site is chosen, the agency will then determine how to bring it into compliance with the regulations.

A specific example of the deficient analysis of potential accidents regards wildfires at one of the candidate sites, Los Alamos National Laboratory (LANL). In the immediate wake of the Cerro Grande Fire in 2000, LANL meteorologist Jeff Baars performed a detailed analysis of historical data to determine the joint probability of strong winds and High to Very High fire danger. His analysis concluded that "a major fire moving up to the edge of the laboratory is not only credible but likely," and that such a fire could be expected to occur approximately once every 10 years. The Draft EIS acknowledges that wildfires may initiate accidents at the proposed facility, however the DOE restricted the analysis of natural disasters to only a single case, namely a serious earthquake. While the consequences of such an earthquake are indeed very serious, its probability of occurring is very small. The Draft EIS estimates the likelihood of such a disaster is just 1 in 100,000 years. Thus, the probability that a wild fire will occur that could threaten a pit production facility and associated supporting structures located at Los Alamos could be between one and ten thousand times greater than that associated with the earthquake considered in the Draft EIS.

The DOE argues that making new plutonium pits is necessary because the pits might get old and not explode destructively enough. However, there is no scientific basis for a decision to build an MPF for the purpose of replacing pits in the current arsenal. DOE historical data show that there have never been aging related safety problems in the primaries, or pits, of nuclear weapons. Reliability related aging problems in primaries have been inconsequential. Even the MPF Draft EIS states that "To date, only minor age induced changes have been observed and there is no direct evidence that these affect pit performance, reliability, and safety."⁹ While the DOE/NNSA has a capacity to make certified pits at LANL that is expected to reach 20 pits per year by 2007, there is no serious evidence that even a 20 pit per year capacity is needed.

The reliance on "classified analyses" in the Draft EIS¹⁰, a document designed for the purpose of inviting comments from the public on proposed MPF plans, raises many questions as to the ability of the public to accurately gauge for itself the need for pit production. Nearly this identical argument was used in the wake of the closure of Rocky Flats following a Federal Bureau of Investigation raid that shut the facility down for pervasive violations of health, safety, and environmental laws. According to the *New York Times*, when asked about the Energy Department's stated urgency to reopen pit production at Rocky Flats, then Secretary of Energy Watkins "used an argument that his department had not used since the mid-1980's: National security requires a prompt reopening of the plant but the reasons cannot be publicly discussed because they are classified." In fact, Rocky Flats was never restarted and the country did quite well without it.

So if plutonium pit aging is not the main reason for building an MPF, what is? The principal motivation appears to be the creation of a capability to mass manufacture entirely new nuclear weapons that require pits of new designs. The overview of the Draft EIS states:

While a small interim capacity is currently being established at Los Alamos National Laboratory (LANL), classified analyses indicate projected capacity requirements (number of pits to be produced over a period of time), and agility (ability to rapidly change production of one pit type to another, ability to simultaneously produce multiple pit types, **or the flexibility to produce pits of a new design in a timely manner**) necessary for long-term support of the stockpile will require a long-term pit production capability.¹¹ (emphasis added)

IEER has analyzed the deleterious effects of the Modern Pit Facility the Nuclear Non-Proliferation and Comprehensive Test Ban treaties in its comments on the MPF Draft EIS, which can be found on the web at www.ieer.org/comments/mpf.html.

Chemical and Metallurgical Research Building Replacement Project

Another proposed facility that harks back to the days when the nuclear establishment in effect sacrificed human health based on a warped view of national security is the Chemical and Metallurgical Research Building Replacement Project at the Los Alamos National Laboratory.¹²

The Draft Environmental Impact Statement for the Chemical and Metallurgical Research Replacement building (CMRR Draft EIS) is perhaps the most unusual EIS to have been issued by the DOE. The new facility has been proposed to replace one that

is half-a-century old, yet the consequences of severe accident estimates of cancer fatalities have gone up dramatically. The most severe consequences estimated for an accident at the existing CMR projects two cancer deaths in the fifty mile radius. The corresponding estimate for the new facility is more than 80 cancer deaths.

The CMR Replacement Facility is proposed primarily to create advanced capabilities for analytical chemistry and for materials characterization related to nuclear materials, non-radioactive analogs, and other aspects of nuclear weapons programs that are part of the DOE "Stockpile Stewardship" Program.¹³

Like the MPF, the need for the CMRR building has not been justified. The facility also will create significant risks to human health and the environment. The CMRR Draft EIS shows that emissions to the air from routine operations would increase greatly. Actinide releases, including plutonium, would increase by more than 25 times and there would be significant releases of fission product noble gases, including krypton-85, xenon-131m, and xenon-133. The new facility would also release 1,000 curies of tritium, mostly in the more hazardous form of radioactive water vapor.

The "facility wide spill" caused by an earthquake, one of the accident scenarios evaluated in the CMRR Draft EIS, would violate the DOE's own guideline for the mostexposed offsite individual. The dose to that hypothetical person would be 4 to 10 times the guideline. The DOE does not acknowledge this potential violation in the Draft EIS.¹⁴

Like the MPF, the accident analysis in the CMRR Draft EIS suffers from a number of technical deficiencies. The analysis provides no sound and sufficient scientific basis for the Draft EIS's conclusion of low overall risk, given the conclusion of high accident consequences for several of the postulated events. It also appears therefore to misstate the risks arising from the various events that are postulated.

Appendix C of the CMRR Draft EIS lists five different accidents estimated to result in cancer deaths in the offsite population within 50 miles of the facility. For instance, in case of a fire that "engulfs the entire contents of plutonium" in the main vault, amounting to 5.7 million grams, the total estimated amount of respirable plutonium released would be only about one four-thousandth of that. The event probability is assumed as one in a million. And voilà, the risk to the public become minuscule - a chance of about 7 in a million of a fatal cancer per year in the entire population in a fifty mile radius.

However, given the reality of intense fires in the region, this does not appear to be a credible estimate. This kind of result may be credible in Cheerapunji, which is the wettest place on Earth, or something resembling it, but not in semi-arid New Mexico. Astonishingly, the CMRR Draft EIS makes no mention of the immense Cerro Grande Fire in May-June 2000 that almost engulfed LANL and destroyed more than 200 homes in the Los Alamos townsite. The fire's smoke plume was visible from orbit and crossed a fourstate area into western Kansas.¹⁵ New Mexico has been suffering from an extended drought and is at risk of large forest fires. To assume that the risk of a fire in the main vault without an analysis of fires that have occurred historically, and the probability that they might reach the main vault of the proposed facility, is unscientific and renders the Draft EIS risk estimates invalid.

The possibility that the Rio Grande near Los Alamos and a considerable downstream area would be severely contaminated with plutonium in the aftermath of the more severe accidents is also not discussed in the CMRR Draft EIS. This could be among the most damaging consequences of, for instance, a main vault fire or a facility wide spill.

The root of the problem is that the inventory of plutonium-239 and other radionuclides that the DOE/ NNSA proposed to store in the proposed CMR replacement facility is about 30 times the inventory currently at risk in the CMR building. The amount currently at risk is stated to be 200 kilograms. In the aftermath of the Cerro Grande fire, a good case can be made that large inventories of plutonium do not belong in the Los Alamos area precisely because the entire facility as well as the towns of Los Alamos and White Rock, as well as the nearby San Ildefonso pueblo could be seriously affected. Other pueblos and towns farther away such as Española and Santa Fe could be at serious risk. The possibility that LANL, which is now at the center of the nuclear weapons establishment, would have to be abandoned along with its namesake town in the event of three or four of the events described is not even mentioned in the CMRR Draft EIS. What any of these events would do to the economy and society of New Mexico is, of course, not broached at all.

Also problematic is the omission of frank discussion of the impact of a severe accident on Native Americans. Given that one of the severe incidents postulated might result in high levels of plutonium contamination that could raise the possibility of one of more pueblos becoming too polluted to live and farm on, and given the fact that Native American identity is closely tied to specific lands, the statement by the DOE/NNSA that operation of the new CMR facility "would not pose disproportionately high or adverse environmental risks to low-income or minority populations living in the potentially affected areas"¹⁶ without an accompanying analysis of how much plutonium would be deposited on pueblo lands is cavalier at best.

Radioactive material "recycling"

The DOE is not the only nuclear agency that is regressing headlong to a polluting past. The U.S. Nuclear Regulatory Commission is proposing to release radioactively contaminated materials into the marketplace.¹⁷ A formal proposal to put contaminated radioactive materials into circulation in the commercial economy, either in restricted or unrestricted form, has been reincarnated several times, starting from the mid-1980s. It is still a bad idea. It is still the old proposal of putting radioactive materials into circulation because they are deemed "below regulatory concern" (BRC).

IEER has long objected to any circulation of radioactively contaminated materials in the commercial economy in any guise, restricted or not. The models for calculating estimated doses to the public from such materials have been shown to be inadequate, flawed, and incomplete. There can be no realistic modeling of behaviors of materials that have not been sampled volumetrically and whose contamination is subject to vast uncertainties. Alternatively, testing for surface contamination before release is grossly inadequate and cannot provide a scientific basis for individual or population dose estimation.

Additionally, once deregulated, the process will be open to fraud and abuse. Given the large expenditures now being made to dispose of low-level radioactive waste in controlled facilities, the temptations to mix in such waste with BRC materials would be

considerable. Regulators would have little control over such dilution and cheating because they would already have deregulated a vast stream of materials and exempted it from meaningful oversight. Such cheating and fraud could create large-scale economic disruption.

It is astonishing that BRC-type proposals keep coming back without any sound technical answers to the substantive objections along the lines above that have long been raised. Passing liabilities from within the nuclear establishment onto the public encourages lax and polluting behavior and is damaging for public health and the environment. The proposal should be buried for good.

Concluding query

New nuclear weapons plants and plans are being put in place at a very high price – in terms of reduced security, increased proliferation risks, and greater health and environmental damage. It is a central tenet of radiation protection that health risks imposed must be accompanied by some benefits to the parties being exposed. In this case, there appear to be only costs for the vast majority. Could it be that the “benefits” of these programs are mainly to a nuclear weapons technocracy trying to perpetuate itself and at great cost to the public and to future generations, as it did back in the bad old days?

Endnotes

1. As quoted in *The Washington Post*, 17 June 1989.
2. See the IEER reports: Arjun Makhijani and Michele Boyd, *Poison in the Vadose Zone: An examination of the threats to the Snake River Plain aquifer from the Idaho National Engineering and Environmental Laboratory*, 2001; and Marc Fioravanti and Arjun Makhijani, *Containing the Cold War Mess: Restructuring the Environmental Management of the U.S. Nuclear Weapons Complex*, 1997. Also see Arjun Makhijani, Howard Hu, and Katherine Yih, eds., *Nuclear Wastelands: A Global Guide to Nuclear Weapons Production and Its Health and Environmental Effects* (MIT Press, 2000).
3. Arjun Makhijani and Ellen Kennedy, “Human Radiation Experiments in the United States,” *Science for Democratic Action*, vol. 3 no. 1, Winter 1994, online at www.ieer.org/sdfiles/vol_3/3-1/humanex.html.
4. Arjun Makhijani, “Fernald Workers’ Radiation Exposure,” *Science for Democratic Action*, vol. 5 no. 3, October 1996, online at www.ieer.org/sdfiles/vol_5/5-3/fernwork.html.
5. Arjun Makhijani, Bernd Franke, and Hisham Zerriffi, *Preliminary Partial Dose Estimates from the Processing of Nuclear Materials at Three Plants during the 1940s and 1950s*, an IEER study commissioned by USA TODAY newspaper, 2000. Online at www.usatoday.com/news/poison/uranium.htm.
6. See IEER’s *Comments on the U.S. Department of Energy Draft Supplemental Programmatic Environmental Impact Statement on Stockpile Stewardship and Management for a Modern Pit Facility*, July 16, 2003, by Brice Smith and Arjun Makhijani, online at www.ieer.org/comments/mpf.html.
7. U.S. DOE National Nuclear Security Administration, *Draft Supplemental Programmatic Environmental Impact Statement on Stockpile Stewardship and Management for a Modern Pit Facility*, May 2003, DOE/EIS-236-S2 (hereafter called MPF Draft EIS), Table 3.5.1-1, p. 5-49. The risk to the entire worker population is given as 0.22 per year for the 450 pit per year option (p. 3-39). The MPF Draft EIS is online at www.mpfis.com/DEISTOC.htm.
8. The accident scenarios include a “Beyond Evaluation Basis Earthquake with Fire,” “Fire in a Single Building,” and “Explosion in a Feed Casting Furnace” (MPF Draft EIS, 2003, p. C-7).
9. MPF Draft EIS, 2003, p. G-58.
10. MPF Draft EIS, 2003, p. 1-1.
11. *ibid.*
12. This section borrows from IEER’s *Comments on the Draft Environmental Impact Statement (EIS) For the Proposed Chemical and Metallurgical Research (CMR) Building Replacement Project at the Los Alamos National Laboratory (LANL)*, by Arjun Makhijani, June 30, 2003, online at www.ieer.org/comments/cmr.html.
13. See Hisham Zerriffi and Arjun Makhijani, *The Nuclear Safety Smokescreen: Warhead Safety and Reliability and the Science Based Stockpile Stewardship Program*, IEER, 1996. Excerpts online at www.ieer.org/reports/sbss-sum.html.
14. CMRR Draft EIS, 2003, p. C-13 to C-15.
15. M. Diana Webb and Kelly Carpenter, “Los Alamos After the Cerro Grande Fire,” American Planning Association 2001 National Planning Conference, March 14, 2001.
16. CMRR Draft EIS, 2003, p. 4-27.
17. U.S. Nuclear Regulatory Commission, Rulemaking on Controlling the Disposition of Solid Materials, 68 FR 40: 9595-9602, February 28, 2003. Online at <http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2003/03-4752.htm>.