Hanford Challenger

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where the conversation gets somewhere

Washington State Settles Hanford Lawsuit with DOE

Enforceable agreement, but significant delays. Energy Secretary Steven Chu, speaking, while Governor Christine Gregoire and WA State Attorney General Rob McKenna look on.

A settlement agreement between the State of Washington and the U.S. Department of Energy was announced in August resolving a lawsuit filed by the State in 2008 after DOE announced that it was not going to meet deadlines in the 20 -year clean-up agreement. Missed deadlines include significant delays and budget overruns with the Waste Treatment Plant (the vitrification plant), and delays in retrieving wastes from single-shell tanks.

In 2007, the federal government announced that the Waste Treatment Plant would open years later than planned, at a cost nearly three times the original $4.6 billion estimate. The operational costs are expected to exceed $45 billion, and may reach $65 billion.

Most of Hanford's 53 million gallons of high-level nuclear waste are slated for treatment at the Waste Treatment Plant (WTP). These wastes are currently stored in about 177 underground storage tanks that were built decades ago. One third of these tanks are leaking, and they are all beyond their design life. The settlement includes a Consent Decree which contains court-enforceable milestones and dates for the construction and commissioning of the WTP. The Decree will be signed

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Say it Ain't TRU — Plutonium in the Soil at Hanford

There is enough buried plutonium at Hanford to make at least 120 atomic bombs.

The story of Hanford's plutonium does not end with the trillions of gallons of liquid waste discharged to the soil, or the staggering discharges to the atmosphere that resulted from production of nuclear weapons materials. Plutonium and other transuranics (TRU) buried across the site from the 1940s to the early 1970s have entered the groundwater and threaten the Columbia River. The Department of Energy and State of Washington have no comprehensive plan to clean it up.

According to research released by Robert Alvarez, a researcher for the Institute for Policy Studies, around 1600 pounds of plutonium-239, enough to fuel 120 Nagasaki-sized nuclear bombs, was dumped at 55 locations on the Hanford site. At 16 of these dumps, concentrations of plutonium exceed the DOE's own standard requiring removal and disposal in a geologic repository. In some cases, plutonium has migrated deep into the subsurface and contaminated the groundwater that flows into the Columbia River. Due to the presence of organic chemicals in the contaminated soil, migration of the radioactive waste has been accelerated 1,000 times faster than

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State Settles Lawsuit — *Long delays—and questions remain about offsite wastes.*

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after a 45-day public comment period that ends December 11, 2009. Details include:

- **A requirement to start treating tank waste at the WTP by 2022. (Originally startup of WTP was to begin in 2009, with plant operations active by 2011.)**
- **A requirement that all single-shell tanks be emptied by 2040, and the single-shell tank farms closed by 2043.**
- **A new deadline to complete tank waste treatment by 2047, nineteen years later than the prior agreement that treatment be completed by 2028.**
- **An agreement to not import and bury certain offsite waste, at least until the WTP starts operations, and to issue a Draft Environmental Impact Statement on Tank Closure and Waste Management by November that recommends as the preferred alternative that offsite waste will not be disposed of at Hanford for the foreseeable future.**
- **An agreement that DOE will prepare a report detailing the lifecycle scope, schedule and cost for completion of the Hanford cleanup.**
- **The establishment of new deadlines for groundwater remediation, including milestones to contain contaminants adjacent to the Columbia River including chromium and strontium.**

At the announcement ceremony, attended by Energy Secretary Steven Chu, both Washington State Senators, Governor Christine Gregoire and Washington Attorney General Rob McKenna, enthusiastic praise was the theme of the day.

"We are upbeat about the fact that the agreement gives more power to the State of Washington to enforce the Tri-Party Agreement in federal court, a key ingredient missing in the old agreement. The extension of the off-site waste importation and disposal ban is not as strong as originally portrayed," said Hanford Challenge director Tom Carpenter. At a recent briefing, officials made clear that Hanford could be chosen to receive highly radioactive commercial waste and mercury, and perhaps other types of wastes as well.

The DOE continues to insist that it will "accelerate cleanup" and will shrink the Hanford Site to a 75-square mile area that includes the old reprocessing plants and the tank farms, by cleaning up the river corridor by 2015. Many remain skeptical that this can be done in that time frame.

Also worrisome is the fact that this Agreement incorporates long delays in starting the vitrification plant and treating tank waste. Many of the tanks have already failed, and the integrity of all the single-shell tanks is suspect. Under this agreement, tanks are expected to hold up for another 30 or 40 years. These tanks were designed to last for 20 years, and most of them were built in the 40's and 50's.

For Hanford Challenge, systemic issues remain unaddressed. These include the conflict of interest on the part of a federal agency that created the mess, has to pay for the cleanup, and is supposed to regulate the site. If we don't improve the management of the cleanup, we won't achieve cleanup.

On balance, however, the settlement agreement represents significant progress and affords the State of Washington the necessary tools to better achieve compliance in the future.

Hot Particles and Hanford — New Testing Methods Serve Public Interest

Marco Kaltofen

Marco Kaltofen and Tom Carpenter collect samples from Acid Canyon in Los Alamos, 2008.

On a long flight home from Los Alamos, New Mexico, I sat next to an interesting nuclear activist. He was an executive with a firm that markets and constructs new nuclear power plants. He was glad to meet someone with nuclear familiarity and discussed the challenges of his work due to the high costs of nuclear facilities. I don't meet too many nuclear sales engineers, so I appreciated the chance to hear his perspective. I did warn him. I let him know that as an environmental engineer, my work with the nuclear industry involved monitoring radiation releases. I appreciated our open discussion though I thought that if he met me while on the job, he might find it hard to be as open or free in discussing the challenges of the nuclear industry.

Looking back on that conversation, I questioned my attitude that the nuclear industry should inherently resist regulation. The fact is, the nuclear industry needs to welcome auditors. It needs people who can measure its health impacts and will absolutely not survive without aggressive environmental monitoring. It may not survive anyway, if the amount of money, environmental risk, and energy required to run the industry is beyond our means. But without auditing the impacts of the entire nuclear cycle, you can't make an informed choice about what to do next with existing or proposed nuclear plants.

The money spent on monitoring by Hanford Challenge is tiny compared to what the Department of Energy spends. Despite that imbalance, it's the independent nature of Hanford Challenge that makes that small budget interesting. Independent studies have the flexibility

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Public Comment Needed by December 15 to Protect Nuclear Whistleblowers

Nuclear workers must be free to speak out.

Protecting freedom of speech for workers when it comes to raising safety, health and environmental concerns has long been a focus at Hanford.

Employees at sites like Hanford are the first line of defense for safe and effective operation of the facility, including the efforts to remediate the long-lasting and deadly legacy of plutonium production.

That is why Hanford Challenge recently filed a formal petition with the Department of Energy, the agency that owns and operates the Hanford Nuclear Site, to enact a rule applicable to all nuclear contractors that establishes a Safety Conscious Work Environment. This is a formal program adopted by the Nuclear Regulatory Commission (NRC) to ensure that employees are free to raise concerns internally without fear of reprisal. Failure to maintain such an atmosphere on the part of an NRC licensee can result in fines and a suspension of the operating license. The NRC audits commercial nuclear facilities and takes action if it finds that a nuclear operator has a "chilled working environment" that discourages the raising of issues.

Hanford has a long and inglorious history of reprisals against workers who raised concerns. A recent example was the $7 million jury verdict against Hanford contractor Fluor Federal Services after 11 pipefitters filed complaints following their terminations for refusing to install a questionable valve in a radioactive waste piping system.

A Safety Conscious Work Environment (SCWE) is defined as an environment in which employees are encouraged to raise concerns, where concerns are promptly reviewed, given the proper priority based on their safety significance, and appropriately resolved with timely feedback to employees. Attributes of a SCWE include (1) a management attitude that promotes employee involvement and confidence in raising and resolving concerns; (2) a clearly communicated management policy where safety has utmost priority, overriding the demands of production and project schedules; (3) a strong, independent quality assurance organization and program; (4) a training program that encourages a positive attitude toward safety; and (5) a safety ethic at all levels characterized by an inherently questioning attitude, attention to detail, prevention of complacency, commitment to excellence, and accountability in safety matters.

"The public relies on employees at sites like Hanford to come forward with issues that might affect human health and safety, the environment, and efficient use of government resources. Such employees deserve strong and effective protections against reprisal, and the government should make sure that there is a free-flow of information from workers so that problems are addressed at an early stage and effectively," states Tom Carpenter, Executive Director of Hanford Challenge.

Public comment is now being taken by the DOE. Email comments to steve.krahn@em.doe.gov with subject line: "Petition for Rulemaking," by December 15th.

For a copy of the Rulemaking Petition, check Hanford Challenge's website at ***www.hanfordchallenge.org***.

Buried Plutonium at Hanford *"There is far more plutonium in the soil than in the tanks."*

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expected. Dangerous for hundreds of millennia, even tiny particles are cancer-causing.

In terms of radioactivity, there are nearly as many curies of plutonium and other transuranics buried in the soil (almost 350,000 curies) as are found in Hanford's notorious high-level waste tanks.

In terms of volume, there is far more plutonium in the soil than in the nearby underground tanks. Hanford is host to more plutonium (by volume) than all other sites in the US nuclear weapons complex combined.

One of the worst of the Hanford plutonium sites, the so-called "Z Crib", contained such high concentrations of plutonium that DOE was compelled to remove 58 kilograms in the 1970's from this site to prevent a spontaneous criticality from occurring, which would have released high levels of lethal neutron radiation and caused disastrous releases to the environment. Plutonium has migrated from that one site as far as 127 feet below the surface – the limits of the measuring capacity – and has entered the groundwater.

The commercial low-level radioactive landfill at Hanford known as US Ecology also contains a large amount of plutonium. In almost every case, including the commercial landfill, DOE and the State of Washington are proposing to cap and cover the plutonium and walk away. This ignores the reality of the rapid migration of this material into the environment and long-term human health risks.

It is time for the State of Washington and DOE to acknowledge the extent of the risk that buried transuranic wastes pose to the people of the region, and to remove as much as possible for geological disposal.

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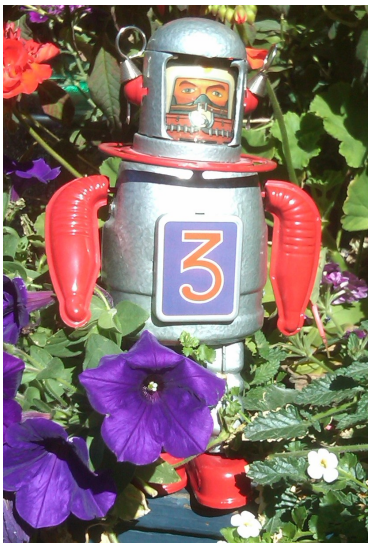
Radioactive Wasps Plague Hanford Site

They're back. Like a B-Grade science fiction movie that re-runs on late night TV, the radioactive wasps have returned to Hanford in force. Thousands of hot wasp nests have been discovered near the reactor areas around Hanford and are targeted for elimination. The wasps pick up contamination from building nests in contaminated Hanford soils. One Hanford official was quoted as describing the nests as "fairly highly contaminated."

Are giant radioactive ants next?

The radioactive wasps are nothing new. They were written about in 2003, along with stories about radioactive fruit flies, gophers, snakes and birds. Even radioactive tumbleweeds are a ubiquitous hazard at Hanford. The nuked nests occurred because of 2003 demolition work on a basin holding irradiated fuel at Hanford, where plutonium was produced for the nation's nuclear weapons program. Water used during the demo work created mud, which attracted the wasps. Site officials state that as much as 75 acres of land around the H-Reactor complex will be dug up to rid the area of the wasps.



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Hot Particles, New Testing Methods

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to explore radiological health impacts that pure regulation may overlook.

Here's an early example of independent analysis. A 1968 study by Bernd Kahn of the US Public Health Service and MIT, noted that industry data are used to demonstrate that power plants are safe, but not that populations are safe from exposure to radiation from the industry as a whole. In 1968, Dr. Kahn asked why the Indian Point power reactor discharged 3500 times more beta active wastewater than the Yankee power reactor.

Despite its age, the study remains an insightful view of the many impacts a reactor has on the environment. Dr. Kahn reviewed the routine everyday escape of radiation from a power plant. A civilian power plant routinely emits a small amount of radioactive dusts and a much larger amount of radioactive gases. It also emits precipitated radionuclides that build up in sediments from plant wastewaters, Some of this radiation shows up in local plants and animals, or is released again when harvested wood is burned. Fueling the plant requires mining operations and processing facilities, whose emissions are part of the costs of doing nuclear business. In 1968, these wider impacts were already better defined by independent monitors, rather than narrowly-focused, if sincere and technically formidable, in-house experts.

Monitoring these emissions was already within the ability of small study groups at least as far back as 1968. Since then, the technology of doing independent radiation measurement has improved exponentially. The public's determination to build a better Hanford has allowed Hanford Challenge to create a network of operators, scientists and professionals who independently have access to monitoring technology. In the 40 years since Dr. Kahn's study, testing equipment has gotten smaller, faster, portable, and enormously more powerful.

Our year-long study of dusts and sediment at Hanford has been an effort to take advantage of these newer technologies. The work has used classical gamma spectrometry to analyze samples. It has also used scanning electron microscopy and X-ray analysis to study individual dust particles. The dust study, which was accepted as a Masters Thesis at Worcester Polytechnic Institute, was designed to help indentify the sources of radioactive particles in Tri-Cities environmental samples.

Most of the study samples were close to background levels in total radiation. The interesting finding was that these same near-background level samples had a small number of fine, respirable particles which contained high concentrations of uranium, thorium, plutonium, lead, or cadmium-109. These "hot" particles represent a different type of environmental risk than uniform low level radioactivity.

Where a 1960's researcher needed to collect pounds of samples, today's analysts can make use of nanotechnology tools that can isolate a single dust speck to tell about a reactor's internal workings.

It's no wonder that I felt the need to warn that sales engineer guy.