

Tri-Valley CAREs ✧ Western States Legal Foundation
Bay Area Physicians for Social Responsibility
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**PLUTONIUM THREAT IN LIVERMORE AND THE PUBLIC'S RIGHT TO KNOW:
WIDESPREAD CONTAMINATION AND MORE TO COME**

Why is a "Public Health Assessment" Being Conducted?

Since the Lawrence Livermore National Laboratory is on the U.S. Environmental Protection Agency (EPA) list of worst contaminated sites in the nation (the Superfund), the federal Agency for Toxic Substances and Disease Registry (ATSDR) came to town to conduct a public health assessment. Working with the California Department of Health Services (CDHS), ATSDR set up a "site team" to guide their assessment. The site team includes representatives from Tri-Valley CAREs, Physicians for Social Responsibility - Greater San Francisco Bay Area Chapter, Western States Legal Foundation, Alameda County Health Dept., the City of Livermore, Livermore Lab, the U.S. Department of Energy (DOE) - which is the Lab's parent agency - and others. The health agencies began by looking at plutonium contamination in Livermore.

Plutonium Pollution in Livermore

Plutonium is a man-made, radioactive metal used to create the atomic explosion at the core of a modern nuclear weapon. Plutonium 239, the bomb-grade isotope found in the Livermore community, has a radioactive half-life of 24,400 years. Plutonium is, in human terms, forever. There is no safe level of plutonium exposure. A microscopic particle, if inhaled, can cause cancer and other diseases.

The Lab has around 880 pounds of plutonium on site, enough for nearly 100 modern nuclear weapons. Recently, the DOE released a proposal, called the "Mega Strategy," that may shift a large amount of plutonium and new nuclear weapons work from Los Alamos Laboratory in New Mexico to the Livermore Lab.

Moving more plutonium to Livermore is of great concern for many reasons. In May 1999, for

example, the Defense Nuclear Facilities Safety Board issued a highly critical report on the air filters used to prevent releases at DOE facilities. The report described a "significantly degraded" DOE infrastructure for the filters, and stated that, "there is physical evidence that some filters presently in service may be too weak to perform their safety function effectively." DOE documents disclose that the air filters in the plutonium facility at Livermore Lab have been left in place for up to 30 years, which is 22 years longer than the Lab's own filter experts recommend. Further, in 1997, the Defense Nuclear Facilities Safety Board recommended the complete shut down of all operations in Livermore's plutonium facility due to repeated safety violations. The facility remained shut down for about a year and a half, and is just recently resuming full operation.

Where is the Plutonium-Laden Sludge?

The Lab began spilling plutonium into the city's sewer system more than forty years ago. Perhaps the largest single release occurred in 1967, when plutonium and americium were poured down a laboratory drain. The amount of plutonium released by the Lab is not known. Livermore Lab's 1967 "Preliminary Hazards Analysis - Plutonium - Americium Release to the Sanitary Sewer" demonstrates that there are no reliable data on which to base the Lab's estimate of how much plutonium left its facility. The Lab's report recognized the Livermore Laboratory monitoring system at the time to be inadequate, and stated that both the source of the plutonium release and the amount of the release over at least five days in 1967 were unknown.

In 1998 and 1999 the CDHS and ATSDR released the draft and final plutonium health consultation. Evaluation of the 1967 release by these health agencies has shown that Livermore Lab's estimate of how much plutonium was at the Livermore sewage treatment plant at the time of the release is

based on inadequate data and faulty assumptions. The health consultations pointed out that the Lab may have systematically underestimated the amount of plutonium in the sludge (by failing to analyze the solids where it would likely concentrate.) From 1967 until the early 1970s, plutonium-laden sludge was given away to unknowing residents to use as fertilizer in their lawns and gardens. The 1998 and 1999 ATSDR/CDHS reports indicate that answers to important questions, such as how much sludge was used, how much plutonium was in the sludge, and where the sludge was used are not yet known. Recognizing this data gap, the ATSDR/CDHS reports recommend "further evaluation of the distribution of contaminated sludge throughout the Livermore Valley, and other areas".

Plutonium is Discovered in Livermore Parks

Plutonium pollution was first discovered in Big Trees Park in 1994 by the EPA. The EPA also tested soil from Sunflower Street and Sycamore Grove parks. All three parks came up dirty, and the sample from Big Trees Park contained the highest level of plutonium. Big Trees is about one-half mile west of Livermore Lab. Amidst pressure from Tri-Valley CAREs and others, the Lab conducted a limited number of soil tests at Big Trees Park in 1995. Those test results turned up even higher levels of plutonium, including a finding of 1.02 picocuries per gram-- up to 1,000 times higher than that which can be attributed to global fallout. The highest levels of plutonium were found in the top two inches of dirt in the park.

The plutonium in the park does not appear to be the result of atmospheric fallout. This means that the plutonium is from Livermore Lab activities-- which, in fact, the Lab admits is the case.

A Third Round of Soil Testing is Conducted at Big Trees Park

In 1998, again under pressure, Livermore Lab decided to undertake another, more thorough, series of soil tests at Big Trees Park. The sampling goal was two-fold: to find out whether there was more plutonium, and to shed some light on how it got there. Wind, water and contaminated sludge were thought to be the three ways in which plutonium might have gotten to the park. However, the possibility of contaminated sludge (or any sludge) being used in the park was repeatedly denied by the

city sewage treatment plant and the Livermore Area Parks and Recreation Department.

The sampling results showed high levels of plutonium at numerous sites in the park. Somewhat elevated levels of plutonium were also found behind an apartment complex between the Lab and the park. The highest concentration of plutonium found was (.774 picocuries per gram) up to 700 times "background" levels (but below the EPA's "screening level"). Once again, most of the plutonium was found in the top two inches of dirt. The Lab took samples in tree wells. No plutonium was found in samples about twenty inches deep, around the roots. So, the city agencies may be correct that no contaminated sludge was used in planting the trees.

ATSDR's Latest Report is Contradictory

ATSDR's "Pathway" Report contradicts some of the conclusions found by the Agency in its Draft and Final Plutonium Health Consultation. The ATSDR report released at the September 16, 1999 "site team" meeting concluded that sewer sludge used as a soil amendment is the most likely pathway by which plutonium reached the park. ATSDR is basing its conclusion that sewer sludge is the only "viable" pathway on a comparison of the concentrations of both plutonium and heavy metals collected from within the tree wells to the concentrations present outside the tree wells. These data may be construed to indicate the possibility of a sewer-sludge pathway, but the data do not rule out other pathways of contamination.

ATSDR's new report attempts to rule out a surface water pathway (i.e., from Livermore Lab via the Arroyo Seco) based on finding only two samples with plutonium levels above the detection limit in the channel. However, the ability to interpret the Arroyo Seco samples is severely compromised by the significant disturbance that occurred to the soil in the channel prior to sampling. ATSDR also tries to rule out an air pathway, but here again the conclusion was not well supported by the data and methodology they provided. The ATSDR "pathway" report also failed to consider the results of the 1995 Big Trees Park sampling program, which revealed the highest concentrations of plutonium found in any publically released study to date.

ATSDR's current conclusion is also in contrast to its 1999 CDHS/ATSDR Health

Consultation on Plutonium Contamination in Big Trees Park which said that: "Although CDHS-Environmental Health Investigations Branch cannot draw conclusions without additional investigations, we have shown the plausibility that the Plutonium 239 discovered in Big Trees Park may be the result of sediment distribution from the Arroyo Seco channel. It is also plausible that limited aerial deposition occurred. (Although sludge distribution from LWRP [Livermore Water Reclamation Plant] probably occurred, it is not known whether Big Trees Park was a recipient, and a reliable source disputes this theory". The pathway analysis ATSDR is planning to release presents no new evidence that reliably shows that plutonium in the air or in surface water could not have been a source of contamination.

What Are the Health Risks of the Plutonium Contamination in Livermore?

All three times plutonium has been discovered at elevated levels in Big Trees Park, Livermore Lab officials have rushed to assert that there is no harm to human health or the environment from the plutonium, and that no cleanup or follow up action is warranted. ATSDR claims that "although plutonium is elevated in the park, these levels are below levels of both health concern per EPA Region IX Preliminary Remediation Goals [PRG]..." So, while high levels of plutonium have been found atop park soils in which children run, dig and play, the community has no regulatory mechanism to enforce cleanup. If as ATSDR suggests, sludge caused the plutonium contamination at Big Trees Park, how can ATSDR dismiss the public health impacts of this finding, since it is undisputed that contaminated sludge was distributed widely throughout the Livermore community?

Although the health impacts of "low-level" radiation exposure are controversial, it is widely accepted among the scientific community that low level environmental exposures to radionuclides result in cancer and inheritable genetic damage that may appear years or decades after exposure. There are many uncertainties about the magnitude of effects of radiation at low-doses; however, the prevailing scientific view is that the induction of cancers and inheritable genetic damage is the main effect that may result from low dose exposure to ionizing radiation. In this regard, most epidemiologists will agree that natural background radiation causes a certain percentage of childhood cancers. In addition, there is considerable evidence for increased chromosomal aberrations.

The Precautionary Principle: Putting Public Health First

There can be no assurance of safety when the public is exposed to levels of plutonium higher than background, since even background levels can be harmful. There continues to be scientific uncertainty regarding our knowledge of the health impacts of low-level exposure to ionizing radiation. Here at Livermore, there continue to be large uncertainties surrounding environmental releases and human exposure. To protect public health, what has become understood as the Precautionary Principle should be part of ATSDR's calculation regarding risk. The Precautionary Principle can be summarized as, "When an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." The people who are in the directly affected community have a right to be full participants in any decision-making.

Recommendations for Follow Up

- The California Department of Health Services should conduct a comprehensive investigation into where the plutonium contaminated sludge ended up. The Lab should pay for sampling on demand for any area residents who think they may have gotten plutonium-laden sludge for their home use. The suggestion, endorsed by the U.S. EPA Region IX in 1998, to provide a call-in number to the local community to answer questions about possible plutonium contamination should be implemented immediately.
- The community has a right to public hearings and a thorough environmental review before any new plutonium is moved to Livermore. Thus far, DOE and Livermore Lab are keeping the community in the dark regarding the hazards associated with bringing additional plutonium to the Livermore Lab under the proposed "Mega Strategy." Another DOE proposal involves moving plutonium parts from Rocky Flats in Colorado to Livermore. Before any more nuclear material is moved, the community must be brought into the discussion.
- The Lab should institute changes in its filter maintenance and operational procedures in the plutonium facility to assure that there are no releases. Further, the plutonium facility should be phased out of operation, and the workers given assignments elsewhere within Livermore Lab.
- Sampling should be done of other likely "hot spots," including east of the Lab where plutonium has been found in an off site air monitor. Samples should be analyzed for particle size to help determine the amounts of plutonium escaping through the filtering system.
- "Hot spots" should be cleaned up. There is no excuse for the Lab leaving elevated levels of plutonium in a park.