



SANTA SUSANA FIELD LAB SITE

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • May 2012

EPA Radiation Investigation Update

The U.S. Environmental Protection Agency (EPA) has made significant progress in its investigation of radiological contamination at Area IV and the Northern Buffer Zone (NBZ) of the Santa Susana Field Laboratory (SSFL) Site, which borders Ventura and Los Angeles Counties.

The State of California Department of Toxic Substances Control (DTSC) has exclusive responsibility for overseeing cleanup for the entire SSFL Site. DTSC will make all cleanup decisions and will oversee the work that will be conducted by the parties responsible for the contamination. Cleanup agreements are in place with US Department of Energy (DOE), NASA and the Boeing Company (Boeing) for DTSC to manage the site work to its projected completion in 2017.

SSFL Open House

May 17, 2012
6:30pm to 8:30pm

Grande Vista Hotel
999 Enchanted Way
Simi Valley, CA

Summary

EPA fieldwork will be completed by the end of Summer 2012 with the final reports due in December. The on-going sampling results are provided to DTSC to inform its future cleanup decisions. To date, EPA has collected more than 2,500 soil samples and 233 groundwater, surface water and sediment samples. Each sample was analyzed for 56 radioactive contaminants. It is worth noting that of the more than 1,600 analyzed soil samples that were taken during Round One, less than one percent of radioactive contaminants analyzed exceeded screening tools, called the Radioactive Trigger Levels (RTLs), used to indicate areas of contamination.

So far, EPA has not found any unexpected radioactive contamination. Radiological contamination has primarily been limited to locations in the vicinity of the Sodium Reactor Experiment (SRE), the Radioactive Material Handling Facility (RMHF), and a few other locations, all onsite.

Site access is restricted and therefore, the public is not exposed to this contamination.

EPA's Radiological Investigation Update

EPA is nearing completion of its fieldwork. We divided Area IV into ten subareas based on the historic operations conducted at each location (see map). When completed, the work plans and reports for each of the individual investigations mentioned below can be accessed on EPA's SSFL webpage, at the Information Repositories, or EPA's Superfund Records Center (see Public Participation section about how to access each resource).

We used multiple lines of evidence (data) to pinpoint radiological contamination in Area IV and the NBZ

Field investigations completed:

Background Study – In order to determine the differences between ambient radiation levels and site contamination, we collected 149 soil samples from a geologically similar, but undisturbed open space area miles from SSFL.

EPA'S Role at SSFL

EPA's role is to conduct an investigation of radiological contamination at SSFL's Area IV and the Northern Buffer Zone, an area bounding the former Rocketdyne test facility, totaling about 470 acres of sometimes very treacherous terrain. Historically, ten small nuclear research reactors were operated on-site to support the Space Program and for commercial applications. EPA's challenge is to distinguish the difference between naturally occurring and man-made radiation, in order to advise DTSC about what and how much to clean up.

In 2009, at the request of the State and the community, EPA received \$41.5 million of DOE and Recovery Act Funds from the Federal government to conduct one of the most robust technical investigations ever undertaken for low-level radioactive contamination. The State has requested that we attempt to identify areas within the scope of our investigation which exceed natural soil background concentrations. EPA has taken advantage of the latest progress in analytical tools and techniques to address the State's objectives.

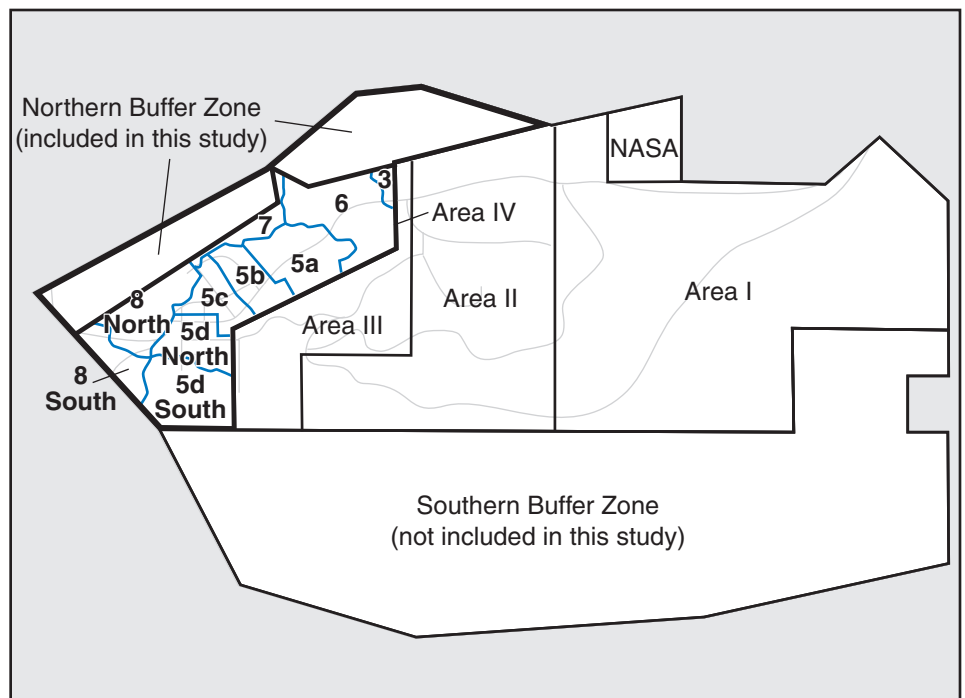


Figure 1: Santa Susana Field Laboratory Site

Historical Site Assessment (HSA) – In order to identify where releases, spills, leaks or dumping may have occurred in the past, EPA conducted a detailed study of the lab's operational history, based on existing documents, environmental data, aerial photographic analysis and former worker interviews. This document has been reviewed by our Technical Stakeholders and is expected to be finalized by mid-Summer.

Geophysical Survey – In order to follow up on areas identified in the HSA investigation, EPA used several different pieces of specialized equipment to survey the areas identified in the HSA investigation. We targeted areas with suspected underground objects including buried utilities, drums and scrap that give off unique magnetic signals. This document was reviewed by our Technical Stakeholders and the final is now available on EPA's SSFL webpage.

Groundwater, Surface Water and Sediments – In order to determine whether radionuclides were moving away from the original source areas, EPA collected 233 samples from existing monitoring wells, surface drainages or ponds and sediments in washes. In general, our results indicate that only tritium, a fission product of nuclear reactors, is present throughout the Site, but that other radioactive materials have not been observed. This document has been reviewed by our Technical Stakeholders and is expected to be finalized by late-Spring.

Who are the Technical Stakeholders?

In the spirit of transparency, EPA formed this group as an advisory body to consult about our investigation findings and to assist with planning upcoming sampling activities. The group is comprised of community leaders from the various affected neighborhoods bounding the Site, non-profit organizations, DTSC, DOE, and Boeing.

Gamma Survey – In order to determine the locations of elevated gamma radiation levels in the surface soil, EPA used several gamma survey devices, including a mule-mounted detector. EPA scanned more than 263 acres out of the total 470-acre SSFL Area IV and NBZ properties. EPA was unable to access some areas of steep terrain, which presented a health and safety issue to the workers. However, we were able to reach the vast majority of the areas of most interest in terms of where the radiological contamination likely traveled. Initial evaluations of the gamma scanning survey results reveal that there are isolated areas of elevated Cs-137 and Naturally Occurring Radioactive Materials (NORM) (uranium, thorium, and potassium-40) within Area IV. This document will be shared soon with our Technical Stakeholders and is expected to be finalized by mid-Summer.

Soil Sampling – The final step in characterizing areas of contamination consisted of surface and underground soil samples, collected generally down to 10 feet, or when the drill could no longer advance due to bedrock or debris. In several

locations, such as near the reactor vaults, we conducted deep borings which allowed us to cut through debris and gravel.

In general, EPA found elevated radiation levels in the areas where we expected to find them, isolated to a number of former process or disposal areas. Table 1 summarizes the **preliminary** soil data for Round One, which is subject to change after all quality control procedures are completed and will appear in a final report (Technical Memo).

The Background Threshold Values (BTVs) are our best estimate of naturally occurring and fallout radiation to be compared with samples from the Site. EPA developed Radiological Trigger Levels (RTLs) for purposes of conducting the on-site soil sampling for the large number of samples we had to collect to ensure that the analytical results could be reproduced with certainty. This is important when it comes time to clean up the Site. The State may elect to require the BTVs, the RTLs or other levels in deciding what is appropriate for the Site.

Subarea	Radionuclide	Number of samples	Number of locations > RTL	Detected activity (range)	Rad Trigger Level	Background Threshold Value
*5c	Cs-137	200	1	0.818	0.207	0.193
	Pu-239/240		1	0.049	0.040	0.014
5b	Cs-137	466	13	0.213 - 0.911	0.207	0.193
	Sr-90		1	0.563	0.485	0.075
	Eu-152		1	0.078	0.057	0.017
6	Cs-137	437	59	0.21 - 196.0	0.207	0.193
	Pu-239/240		1	0.051	0.040	0.014
	Sr-90		9	0.523 - 21.3	0.485	0.075
7	Cs-137	254	82	0.207 - 20.2	0.207	0.193
	Pu-239/240		2	0.05, 0.07	0.040	0.014
	Sr-90		37	0.489 - 14.3	0.485	0.075
8	Cs-137	284	3	0.212 - 0.878	0.207	0.193
	Pu-239/240		2	0.07, 0.09	0.040	0.014
	Sr-90		21	0.5 - 2.7	0.485	0.075

Table 1: Round One Preliminary results. Pico Curies per gram (pCi/gram) is a measure of radioactivity. *With the exception of the 5c data, these results are not to be considered final until published in the Technical Memoranda.

The other radionuclides of concern and their values are presented in Table 1:

- Subarea 5c – this area includes Building 4100. Of 200 samples collected, EPA found two locations that slightly exceed our trigger levels.
- Subarea 5b – this area includes Building 4010 and the 17th St. Drainage. Of 466 samples collected, EPA found 15 locations that slightly exceed our trigger levels.
- Subarea 6 – this area includes the former Sodium Reactor Experiment Area and other work areas. Of 437 samples collected overall, EPA found a total of 59 locations of elevated cesium-137. Of the areas noted thus far, one is an area on a hill above the old Sodium Reactor Experiment area and another is located just east of that representing about one acre total. Both areas show data above background. EPA found one significantly elevated spot of cesium-137 beneath a road surface referred to as ‘G Street’, unrelated to the former SRE facility, measuring 196 pCi/gram. This spot is contained under pavement and is unlikely to travel in the environment before it is cleaned up.

Elevated Sr-90 was found in nine locations.

- Subarea 7- this area includes the former Radioactive Materials Handling Facility (RMHF). Of 254 samples collected, we found approximately 94 locations of elevated radiation. We found a total of 82 locations of elevated cesium-137 and 37 of strontium-90. Additionally, we found two locations of elevated plutonium 239/240.
- Subarea 8 – this area includes former Sodium Disposal Facility (aka Burn Pit) approximately 26 individual locations of elevated measurements, 21 of which were Sr-90, and three Cs-137.
- Subareas 3, 5a, 5d, 8 South and the Deep Borehole program – in these areas, samples have been collected, but the results are not yet available.

Based on these soil studies, we have not found any significant surprises in the soil data.

EPA’s remaining soil investigation:

Round One Northern Buffer Zone – EPA has completed randomized sampling in one portion of this area and is now moving into the other.

Round Two Soil Sampling – EPA’s “step out sampling” focuses on the man-made radioactive contaminants of concern remaining on-site, even after the radioactive decay process over the years. Our goal is to delineate the area of contamination adequately so that DTSC and DOE can efficiently proceed with cleanup. EPA began Round Two sampling March 5, in the sequence shown in the table, and is currently working in Subarea 6.

Public Participation at SSFL

As the lead regulatory agency for SSFL, DTSC has developed a public participation program that includes stakeholder technical meetings and a broader forum called the Public Participation Group (PPG). Membership in the PPG roughly mirrors the participants at the SSFL Interagency Work Group (IWG) and, like the SSFL IWG meetings, the PPG is open to the public.

For further information about DTSC’s overall site work and its public participation program, please contact Yvette LaDuke, Public Participation Specialist, 866-495-5651 or e-mail her at yladuke@dtsc.ca.gov.

Because the radiological investigation is technically challenging, EPA has created a technical stakeholder group to provide additional transparency and inclusiveness during the process. The technical stakeholders are a diverse group of approximately 40 neighborhood residents, activists, company and agency representatives with extensive technical and historic knowledge about the Site. One of the most significant ways they have assisted EPA has been through early sharing of preliminary information, which allows EPA to efficiently determine future sampling activities and include stakeholder comments in the process.

EPA also shares information with the general public, including public meetings the State holds. DTSC, with EPA and collaboration with SSFL responsible parties (including DOE, NASA and Boeing), will host an Open House session with multiple stations for the purpose of explaining our respective findings to date and the remaining work to be completed.

As we conclude our investigation, we want to share results from our radiological characterization study. EPA will hold a final meeting in Fall 2012 and will work with DTSC to coordinate this potential meeting within their public participation program.

If EPA finds any significant results in the future, we will coordinate with DTSC to notify the community of the findings after we have had a chance to review the materials thoroughly.

Historically, EPA provided support to the SSFL IWG meeting, most recently with funds provided by the DOE, which is responsible for the cleanup of Area IV and the Northern Buffer Zone. Once US EPA's radiological study is complete in 2012, DOE will not continue to fund the SSFL IWG. DTSC has taken over responsibility for the SSFL IWG due to its overall role as the lead regulatory agency at the site.

The SSFL responsible parties, DOE, NASA and Boeing have their own separate community engagement activities. Along with EPA, they provide site tours, training sessions, and maintain web sites with their agencies' cleanup documents.

EPA also has cleanup documents available – in hard copy at the Simi Valley and L.A. Platt Branch libraries, and DTSC's Chatsworth Office, and electronically at www.epa.gov/region09/SantaSusana.

EPA released an update and announced the postponement of the Winter 2012 SSFL IWG meeting using an e-Newsletter. EPA received a number of electronic returns when it sent these out. If you previously signed up to receive these electronic documents and have never received them, please send a follow up request via e-mail to cooper.david@epa.gov and we will correct our database and forward the information to DTSC.

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EPA's toll-free message line **(800) 231-3075**. Please leave a message and your call will be returned.

SSFL Site Repositories

EPA has placed paper and/or CD copies of key radiological assessment documents at the following places:

Simi Valley Library

2969 Tapo Canyon Road
Simi Valley, California 93063
(805) 526-1735

Los Angeles Public Library

Platt Branch
23600 Victory Boulevard
Woodland Hills, California 91367
Attention: Janet Metzler
(818) 340-9386

Department of Toxic Substances Control Chatsworth Office

9211 Oakdale Avenue
Chatsworth, California 91311
Please contact Vivian Tutaan at
(818) 717-6520 for an appointment



EPA web address: <http://www.epa.gov/region09/SantaSusana>



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