UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

EPA Update

US Environmental Protection Agency, Region IX • San Francisco, California • July 1995

The U.S. EPA Announces Results of Rocketdyne's Off-Site Sampling Program for the Santa Susana Field Laboratory

The U.S. Environmental Protection Agency (EPA) has completed its review of Rocketdyne's "Off-Site" Study. Rocketdyne initiated the study to find out if past operations at its Santa Susana Field Laboratory (SSFL) contaminated areas next to the site. The study focused on the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy's Sage Ranch Park (**Figure 1**). It confirmed the presence of radionuclides (radioactive elements) in two areas near the SSFL on Brandeis-Bardin property. Specifically, Rocketdyne found Tritium, a radioactive form of hydrogen, and Cesium in one area and Strontium in another; however, EPA has determined that the radionuclides do not pose a threat to human health or the environment.

The Brandeis-Bardin Institute is a Jewish educational center also used for camping, hiking and horseback riding. Sage Ranch Park is used as a wildlife habitat, as open space, and for hiking and camping. These two areas are downhill from the SSFL, where contamination would travel with rainfall runoff.

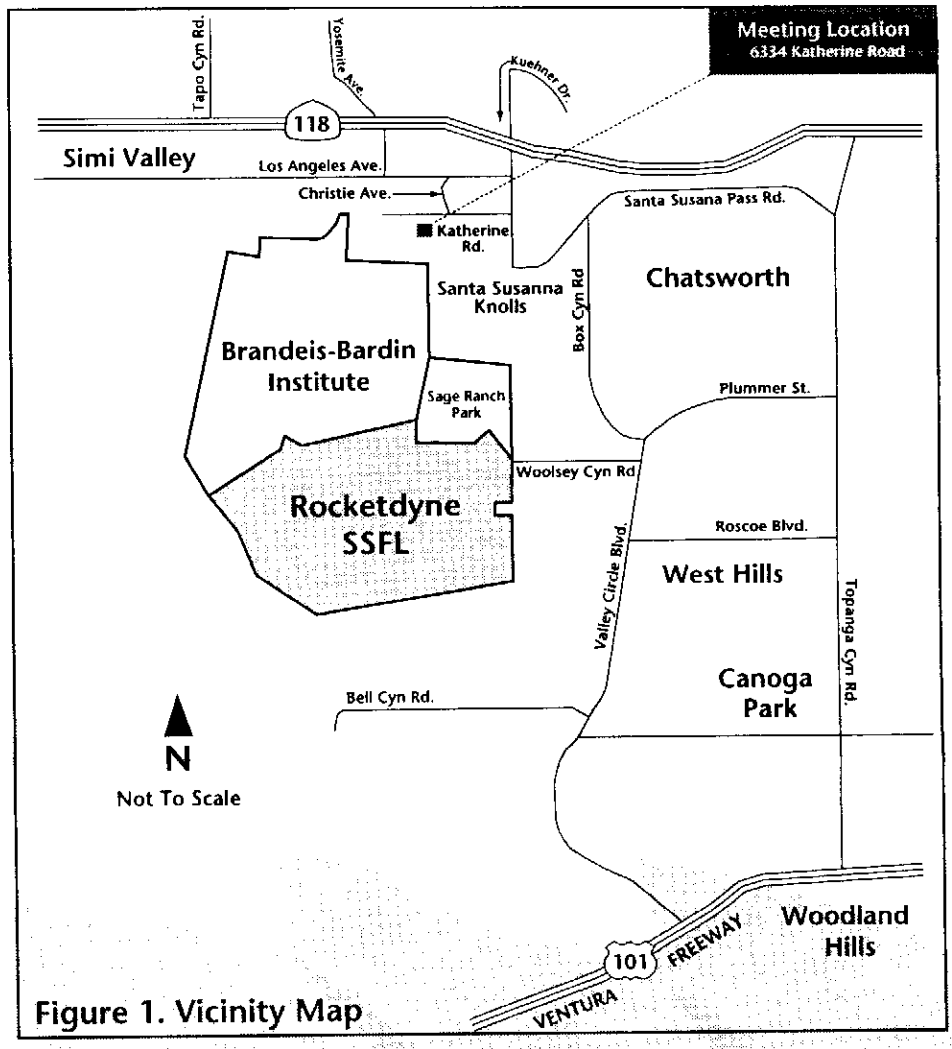

Figure 1. Vicinity Map

Special Notice

As most of you are aware, newspapers have reported that investigators from the FBI and other federal agencies, including the EPA, removed environmental documents from Rocketdyne's Santa Susana Field Laboratory. Because the investigation is ongoing, neither EPA nor Rocketdyne will be able to comment on it at our next workgroup meeting. The last page of this factsheet provides the time and date for the next meeting to discuss environmental issues about the SSFL.

Initial Off-Site Sampling

Rocketdyne began its off-site study in 1992 by collecting and analyzing 118 soil samples, seven surface water samples, four groundwater samples from two wells, and nine fruit samples. This initial study looked for both chemical and radionuclide contamination. It included many procedures to assure the quality of the study's results, such as analyzing duplicate samples. In addition to Rocketdyne's own quality assurance program, EPA, California Department of Health Services (Cal DHS) and Brandeis-Bardin independently analyzed more than 40 samples that Rocketdyne also analyzed.

Besides sampling potentially contaminated areas, Rocketdyne sampled areas, called background areas, which were unaffected by their operations. These background areas are located from 1.5 to 13 miles from the site. As expected, even the background areas contained low levels of some radionuclides. However, this background radiation comes from naturally occurring radionuclides and worldwide fallout from above-ground nuclear weapons testing. The study compared background samples with samples taken from Brandeis-Bardin and Sage Ranch Park to determine the impact of Rocketdyne's past operations.

The initial study found that Trichloroethylene (TCE), a nonradioactive industrial solvent, had contaminated the groundwater beneath Sage Ranch Park (see Figure 2). Rocketdyne already monitors and cleans up TCE -contaminated groundwater within the SSFL. Consequently, Rocketdyne decided to address the contamination through its existing program with the oversight of the California Department of Toxic Substances Control (DTSC). Rocketdyne also found mercury in the soil on Brandeis-Bardin near the Rocketdyne site boundary, and lead contamination at Rocketdyne's employee skeet shooting range on Sage Ranch Park. Since this study, Rocketdyne has removed the contaminated soil by excavating it from both areas and shipping it off-site for proper disposal. Rocketdyne confirmed that it had removed all of the contaminated soil by resampling the areas after excavation.

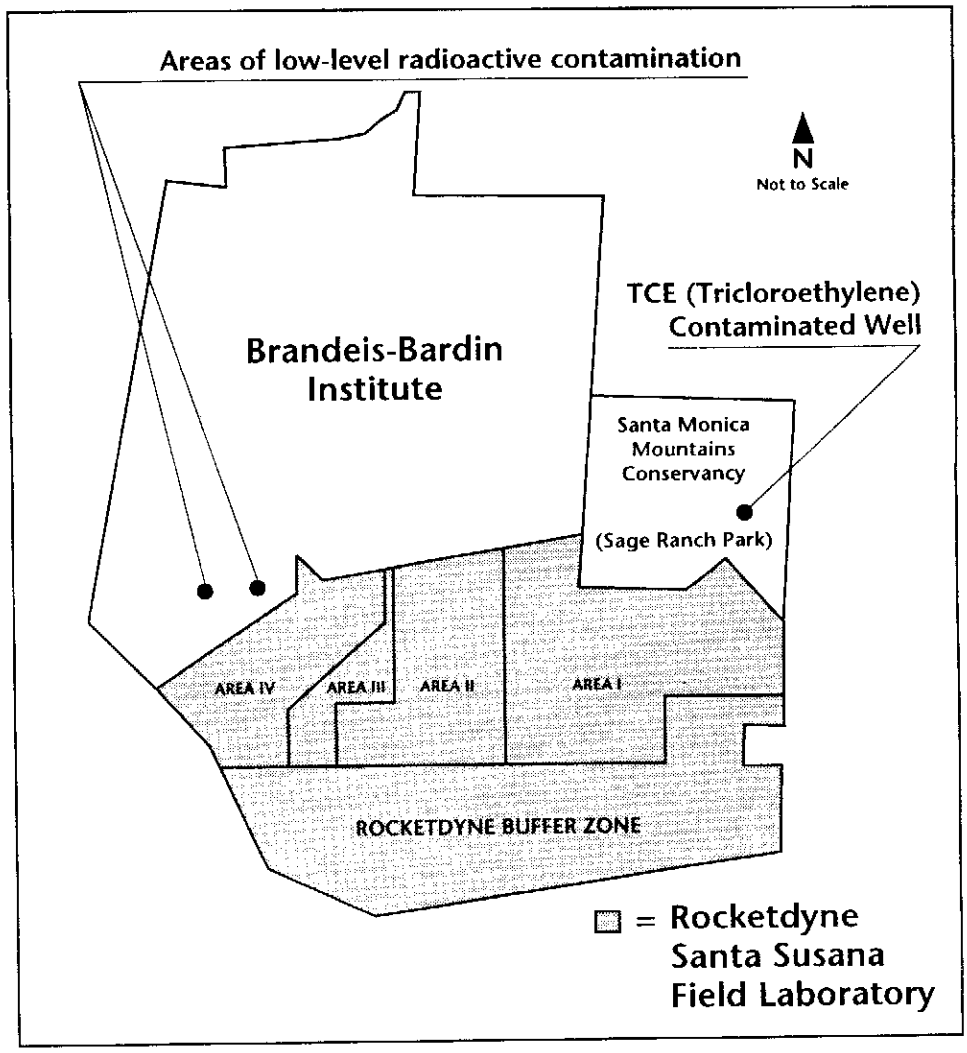

Figure 2. Site Map

The results of the study also identified a number of areas with low level radionuclides, but the study could not conclude whether they resulted from SSFL operations or were background levels. To resolve this, Rocketdyne agreed to take more samples, again in cooperation with EPA, Cal DHS, and Brandeis-Bardin.

Additional Soil and Water Sampling

The additional sampling focused on radionuclide contamination. As part of its additional sampling, Rocketdyne collected more than 120 soil samples and two additional surface water samples in March of 1994. Rocketdyne also collected an additional 40 background samples from eight different areas, in addition to resampling background areas from the initial study. This time, EPA, Cal DHS, and Brandeis-Bardin independently analyzed 54 samples collected by Rocketdyne.

Results and Conclusions

The additional study identified two impacted areas. These areas, or watersheds, are downhill from Rocketdyne facilities that caused the contamination. The first facility, Building 59, formerly housed a developmental nuclear reactor. The second, the Radioactive Materials Disposal Facility (RMDF), was used primarily for packaging and shipping radioactive waste off-site for treatment or disposal. For this study, the soil concentrations were measured in picoCuries per gram of soil (pCi/g) or per liter of water (pCi/L) contained within the soil.

Table 1 lists the concentrations of radionuclides in each impacted area, corresponding local background concentrations and typical concentrations for uncontaminated (except from worldwide fallout) areas throughout the United States. Although the impacted areas are above the local background levels, they are below typical levels found throughout the United States.

Furthermore, based on EPA's calculations, the theoretical cancer probability or risk to campers and camp counselors is less than EPA's threshold level for action of one in 1,000,000. A one in 1,000,000 risk means that one potential excess cancer case might occur if one million people were exposed to the contamination for long periods of time. EPA's calculation is based on two scenarios: (1) children camping one month a year for four years directly on the area of contamination and (2) camp counselors walking through the contamination repeatedly for ten years. For a more thorough discussion of the risk posed by the contamination, EPA encourages you to attend the meeting on August 10. See the last page of this update for more information on the meeting.

For tritium, EPA has yet to approve a test method to measure soil concentrations in pCi/g. Consequently, Rocketdyne measured tritium in pCi/L, which indicates the amount of tritium in water extracted from surface soil. For comparison purposes, EPA's existing standard for tritium in drinking water is 20,000 pCi/L. The water contained within this soil is not drinking water, but even if it were, the contamination would not exceed EPA's standard for tritium.

What's Next

DTSC issued a post-closure permit to Rocketdyne in April of this year. A post-closure permit is required for facilities that close certain hazardous waste management units, if the facility cannot fully clean up chemical contamination at the units. As required by the post-closure permit, Rocketdyne is continuing to cleanup and monitor solvent-contaminated groundwater. Furthermore, it requires Rocketdyne to complete a site-wide study of

Table 1. A Comparison of Radionuclide Concentrations

Radionuclide	Sampling Area on Brandeis-Bardin	Average Soil Concentration	Average Local Background Concentration	Typical U.S. Background Concentration
Strontium	RMDF Watershed	0.103 pCi/g	0.052 pCi/g	0.7 pCi/g
Cesium	Bldg 59 Watershed	0.20 pCi/g	0.087 pCi/g	0.7 pCi/g
Tritium	Bldg 59 Watershed	2,250 pCi/L	~140 pCi/L	100-300 pCi/L

chemical contamination, called a Resource Conservation and Recovery Act (RCRA) Facility Investigation. DTSC is currently reviewing Rocketdyne's RCRA Facility Investigation Workplan.

In addition, Rocketdyne is continuing a program of "decontamination and decommissioning" to cleanup buildings and areas that handled radioactive material, such as reactors, test facilities, and storage areas. This program includes post-cleanup surveys to verify the effectiveness of its actions. Rocketdyne is completing a radiological survey of on-site areas surrounding the facilities where nuclear work took place. This survey will look for radioactive contaminants that may have been carried with rainfall runoff away from radiological facilities.

Background

The SSFL is located in eastern Ventura County and covers an area of nearly 2,700 acres. Rocketdyne has divided the SSFL into four administrative areas (Area I, II, III, and IV) and a buffer zone. Rocketdyne owns most of Area I and Areas III and IV. Rocketdyne operates the Energy Technology and Engineering Center (ETEC) at Area IV for the Department of Energy (DOE). Area II and a 42-acre parcel of Area I are owned by the National Aeronautics and Space Administration (NASA).

The SSFL was established in 1946. Throughout the years, Rocketdyne has tested rocket engines at the site. During the 1950s, Rocketdyne expanded site operations to include nuclear energy research and nuclear reactor development for DOE. Work with nuclear materials, conducted in Area IV, included fabrication of nuclear fuels, testing of nuclear reactors, and disassembly and analysis of used fuel elements. Except for the investigation and cleanup of contaminated facilities, no nuclear work has occurred since 1988.

Information Repositories

Reports describing both the initial study and the additional investigation can be found at the **Simi Valley Public Library** and at the **Urban Archives Center of the Oviatt Library, California State University, Northridge.** The studies are titled "Multi-Media Sampling Report for the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy" and "Additional Soil and Water Sampling at the Brandeis-Bardin Institute and Santa Monica Mountains Conservancy." The Santa Monica Mountains Conservancy is Sage Ranch Park. The Conservancy oversees the park for the State of California.

For More Information Contact:

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For more information on the post-closure permit, the groundwater cleanup, or the RCRA Facility Investigation, contact Julio Narvaez, DTSC, at (818) 551-2923.

Next Meeting of the SSFL Workgroup*

Date: Thursday, August 10
Time: 6:00 pm
Location: Knolls Elementary School, 6334 Katherine Rd., Simi Valley, CA.

Tentative Agenda

(Neither the EPA nor Rocketdyne can comment at this meeting on the FBI's on-going investigation.)

1. Further Discussion of the Risk Posed by Off-Site Contamination (EPA)
2. Status Report of ETEC's On-Site Investigation Activities (ETEC)
3. The Proposed Site Treatment Plan for Radioactive/hazardous Waste (DOE)
4. Update on the Worker's Health Study of Former Rocketdyne Employees

**The SSFL Workgroup consists of federal and state regulatory agencies, four public representatives, the Department of Energy and Rocketdyne. The SSFL Workgroup meets regularly to share information on environmental issues related to the site. The public is welcome and encouraged to attend all Workgroup meetings.*