



# NIOSH Dose Reconstruction Project Rollout Meeting for the Lawrence Livermore National Laboratory Site Profile

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## Meeting Date:

March 22, 12:00 p.m.

## Meeting with:

Current employees of Lawrence Livermore National Laboratory, Livermore, California, hosted by the Society of Professionals, Scientists and Engineers/University Professional and Technical Employees/Communications Workers of America Local 9119, AFL-CIO.

## Attendees:

Name	Organization
Laraine Spencer	LLNL
James Vigus	LLNL
Bill Smith	LLNL
Dave Slade	LLNL
Randy Keen	LLNL
Sue Byars	LLNL
One attendee chose not to sign in.	

## NIOSH and ORAU Team Representatives:

Grady Calhoun – National Institute for Occupational Safety and Health (NIOSH), Office of Compensation Analysis and Support (OCAS)

Paul Szalinski – Integrated Environmental Management (IEM), Site Profile Team Leader

Vernon McDougall – Advanced Technologies and Laboratories International, Inc. (ATL)

Mark Lewis – ATL

Mary Elliott – ATL

## Proceedings

Ms. Sue Byars opened the meeting at 12:00 p.m., thanking the management of the Lawrence Livermore National Laboratory (LLNL) for sponsoring the meeting between Lab employees and the National Institute for Occupational Safety and Health (NIOSH) and its contractor team. Ms. Byars is Executive Secretary of the Society of Professionals, Scientists and Engineers (SPSE), affiliated with the University Professional and Technical Employees (UPTE) and Communications Workers of America (CWA) Local 9119, AFL-CIO. She stated that her organization was contacted by the Worker Outreach Team in 2004 for help with getting worker input into the site profile development process. The National Institute for Occupational Safety and Health (NIOSH) recognizes that worker input is crucial in the development of the Site Profile so that it will accurately reflect the actual work experience of employees of the Lab. Subsequently, the SPSE became involved in providing information about the Energy Employees Occupational Illness Compensation Program Act (EEOICPA) and the LLNL Site Profile to Laboratory workers. Representatives of SPSE have spoken at Advisory Board on Worker Health and Radiation meetings on EEOICPA, and also formed a panel on EEOICPA at the Lab. In addition, SPSE continues to work with Tri-Valley CARES to facilitate meetings in Livermore for the Sick Worker Support Group. Ms. Byars stressed how important it is for current workers to



## **NIOSH Dose Reconstruction Project Rollout Meeting for the Lawrence Livermore National Laboratory Site Profile**

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review and comment on the LLNL Site Profile, since it is their workplace and they are in the best position to know about the work performed at the Laboratory.

Ms. Byars read a news item regarding the fate of medical records of current and former employees of the Los Alamos National Laboratory (LANL). Ms. Byars expressed concern that, under similar circumstances, the medical records of LLNL employees could possibly share the same fate, and that she would want her records to be available should she or her family ever need to file a claim. She stressed the importance of each worker maintaining his or her own records since the burden of proof that the worker has been exposed to radiation on the job often seems to fall on the worker or the worker's survivors.

Ms. Byars stated that the Site Profile contains a lot of important information about the buildings on the site, the work done in each building, and the possible exposures that exist in each building. But the employees must be able to give the details about where they worked at the site and what they did there. Sick workers cannot count on the Department of Energy (DOE) or their employers to provide records of the important details of their careers, such as the buildings where they worked, the experiments in which they participated, or even records documenting their travel to other DOE sites to work on related projects. To illustrate the last point, she said that some of the former employees of Livermore Lab who have become ill cannot document that they traveled back and forth to the Nevada Test Site.

Ms. Byars introduced Mark Lewis, who is the Senior Outreach Specialist for the Worker Outreach Team. Mr. Lewis thanked Ms. Byars and others who helped arrange the meeting. He introduced the other members of the NIOSH/Oak Ridge Associated Universities (ORAU) team: Mr. Grady Calhoun, NIOSH Office of Compensation Analysis and Support; Mr. Vernon McDougall, Advanced Technologies and Laboratories International, Inc. (ATL), the Worker Outreach Team's Union Liaison; Mr. Paul Szalinski, Integrated Environmental Management, Inc., who is the LLNL Site Profile Team Leader; and Ms. Mary Elliott, also of ATL, who produces the minutes of the meeting. Mr. Lewis turned the program over to Mr. McDougall for the presentation of the LLNL Site Profile.

Mr. McDougall gave a brief overview of EEOICPA, describing both subtitles of the Act. All claims are filed through the U. S. Department of Labor (DOL), either by a current worker or former worker at a covered facility within the nuclear weapons complex, or by the survivor(s) of a deceased worker. Subtitle B claims may be filed for radiation-induced cancers, beryllium disease, and some silicosis cases. Subtitle E claims may be filed for illnesses related to toxic chemical exposures in the workplace at a nuclear weapons facility. The DOL reviews all new claims and verifies the worker's employment history and medical diagnosis. Only the Subtitle B claims for cancers that may be the result of occupational radiation exposure are forwarded to NIOSH for dose reconstruction.

The Site Profile is a tool used to reconstruct radiation doses. The dose reconstruction process begins by examining the records provided by DOE and its contractors. A telephone interview with the worker or survivor(s) of the worker is conducted to get additional information that is needed to evaluate the worker's occupational radiation exposure. The Site Profile is a series of site-specific technical basis documents about the conditions, practices, and monitoring technologies at LLNL that supplements the information from the DOE records and the telephone



## NIOSH Dose Reconstruction Project Rollout Meeting for the Lawrence Livermore National Laboratory Site Profile

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interview. The Site Profile is a “living document” and may be revised any time new information becomes available that may impact dose reconstruction.

In November 2004, NIOSH and its contractor team met with union officials from LLNL to establish a dialogue about the development of the Site Profile. Since the documents are complex and require considerable time to develop and review, they have only recently been completed and posted on the NIOSH website at <http://www.cdc.gov/niosh/ocas/llnl.html>.

NIOSH recognizes that the best way to get input is to have the “site experts” (people who actually worked at the site) review the Site Profile. The Worker Outreach Team meets with labor organizations that represent these workers to give the workers the opportunity to provide input to the Site Profile and to inform the Site Profile Team about important documents that the team may not have seen during the development of the Site Profile. This process helps make the Site Profile a better tool for dose reconstruction. Mr. McDougall requested that the attendees ask questions and make comments at any time during the presentation.

Mr. McDougall discussed the five main parts of the Site Profile:

- 1) The Site Description describes the facilities and processes at Lawrence Livermore National Laboratory from the beginning of operations at the site in 1952 through present day. Two sites are included: the main laboratory facility in Livermore and Site 300 near Tracy.
- 2) The Occupational Medical Dose section describes the X-ray equipment and techniques used over the years for employer-required X-rays, such as chest X-rays. This dose is not included in official DOE dose records, but is included in the radiation dose reconstruction in an effort to be favorable to the EEOICPA claimant.
- 3) The section on Occupational Environmental Dose is included for workers who were not monitored. This part of the Site Profile describes the sources of environmental radiation present in the workplace and estimates the radiation exposures for unmonitored workers based on area monitoring.
  - a. Monitoring data related to external environmental dose is given for the Main Laboratory from 1952 through 2001 and for Site 300 from 1955 through 2001.
  - b. Monitoring data is provided for internal environmental dose for gross alpha and beta radiation in air for both the Main Laboratory and Site 300 from 1961 through 1971; for tritium, plutonium-239 and -240, and uranium-234 in air for the Main Laboratory from 1972 through 2001; and for uranium-235 and -238, and plutonium-239 and -240 for Site 300 from 1972 through 2001.
  - c. Tritium was also monitored in the drinking water from 1952 through 2001 for the Main Laboratory and from 1955 through 2001 for Site 300.
- 4) The Occupational Internal Dose section describes bioassay methods and practices, including the minimum detectable levels (MDLs). Primary sources of internal radiation exposure are uranium-233/234, uranium-235, uranium-238, tritium and transuranics. In an effort to be favorable to the claimant, where an individual’s bioassay data shows a



## NIOSH Dose Reconstruction Project Rollout Meeting for the Lawrence Livermore National Laboratory Site Profile

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reading below the MDL, NIOSH assigns a radiation dose based on the MDL. Intakes for unmonitored workers are based on bioassay technology and co-worker data.

- 5) The section on Occupational External Dose describes dosimeter technology, exchange frequency, and MDLs. Beta, gamma and neutron radiation have been monitored for whole body and extremities from 1952 to present.

**Question:**

Why does the data end at 2001?

**Paul Szalinski:**

That is the most current data we have available. If a case needs to be looked at with more recent data, that data would be available to us.

**Question:**

Is there a specific reason that the data was not available?

**Paul Szalinski:**

If there was a case that had a medical diagnosis from a later date, the individual's annual report (for radiation exposure) would be available to us for inclusion in their dose reconstruction. The Site Profile document is mainly for historical purposes.

**Grady Calhoun:**

That is correct. If the cancer was diagnosed after 2001, we would request the information. If internal and external monitoring records are available, it is likely that we would not need to go back to the environmental monitoring data.

**Question:**

Do you have dose records for each year?

**Grady Calhoun:**

We have environmental data for each year – location-specific as well as annual data. We have airborne levels, isotope distributions, and external radiation levels.

**Question:**

What would you do if the individual worked eight years ago?

**Grady Calhoun:**

If we have a case in which the individual was not monitored, we would use that environmental data.

**Vernon McDougall:**

It appears that bioassay data in the very early years is a little thin. Paul looked at this if you have any questions.

**Paul Szalinski:**

... That's questions and feedback. It looks like in the early years, if a supervisor thought that there was a reason for an employee to have bioassay, he sent the employee down for testing.

**Question:**

What do you mean by "early years?"

**Vernon McDougall:**

The 1950s and early 1960s, up through about 1961, are the years in question.



## NIOSH Dose Reconstruction Project Rollout Meeting for the Lawrence Livermore National Laboratory Site Profile

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### **Grady Calhoun:**

I have access to every case that has been filed – at least those that have been forwarded to NIOSH. Before I came up here today, I did a little sampling to see what types of monitoring were done early on. I saw some very early urinalysis results, including one for uranium urinalysis from 1955. It looks like nearly everybody had some type of external badging – film badges, TLDs (thermoluminescent dosimeters) from about 1958. We also have fission product data and plutonium data. Some of the individuals I looked at also did some work at the Nevada Test Site. That site has very good records, and I saw both internal and external monitoring data for them there as well. I looked at about twelve cases, and the majority of them had external monitoring and some had internal monitoring as far back as 1955.

Mr. McDougall concluded the presentation by reiterating that site worker input can make a difference in the development of an accurate, complete Site Profile. The Site Profile can be revised based on this input. Comments can be sent directly to NIOSH at the addresses included in the presentation handout. In addition to the Site Profile, the NIOSH website has information on EEOICPA and the claims process: <http://www.cdc.gov/niosh/ocas>.

Mr. McDougall thanked the LLNL audience for joining the Worker Outreach Team and invited additional questions.

### **Question:**

The history of the Laboratory spans fifty years. The building numbers change often, and many have been demolished. How does the Site Profile account for that?

### **Paul Szalinski:**

The buildings are cross-referenced in Table A-1 in the Site Description section. Many former buildings are accounted for, as well as the isotopes, equipment and records found in these buildings.

### **Question:**

Let's say someone files a claim who worked in Building 2150, which was taken down twenty years ago. How will the Site Profile help that claimant?

### **Paul Szalinski:**

If there is no data on a particular building, we look at the general site-wide exposure at the time of the claimant's employment. We do not start with the building.

### **Grady Calhoun:**

The claims process actually begins with an interview with the claimant – the job assignments, the locations, the exposures. That information is very useful, especially in cases with limited individual monitoring. If we have adequate individual monitoring for internal and external dosimetry, the actual activity at a facility is less important than it would be for a claimant with very little monitoring information. For example, if the information shows that a claimant had gross alpha urinalysis, it may be important to know that Building 5 (hypothetical) was mainly a uranium hazard and Building 7 was mainly a plutonium hazard. If we have good dosimetry records, this would be less important. If there is not a lot of individual information, the option is to use the information in the Site Profile to make the highest reasonable estimate of the claimant's radiation dose. This is where the internal and external MDLs come into play.



## NIOSH Dose Reconstruction Project Rollout Meeting for the Lawrence Livermore National Laboratory Site Profile

---

### **Question:**

The Laboratory has eliminated over 160 facilities – over 560,000 square feet. During the decommissioning and demolition (D & D) sampling of these facilities, they are preparing an extensive building profile. They are finding a lot of surprises – evidence of contamination from things they didn't know had even been used in some of these facilities as they are doing this sampling. I didn't see any reference to the D & D program in the Site Profile, and I have to wonder. Did you have access to this information? They are keeping excellent historical references on the buildings, and I think it's essential that you have this information for the completeness of your document. This program is run by the Institutional Facility Manager's Office. I think they've done an outstanding job. They go to the experimenters who worked in those buildings to get the history of the buildings and what took place there. They are coming up with a lot of information that was never known about what took place in some of these buildings.

### ***Paul Szalinski:***

I have not looked at the report.

### **Question:**

Do you have a timeframe for when the Site Profile will be finalized?

### ***Vernon McDougall:***

We don't schedule a meeting like this until NIOSH has approved the last chapter of the report. The last chapter was finalized a few months ago.

### ***Grady Calhoun:***

NIOSH makes revisions to the Site Profile documents routinely. If information becomes available at an Outreach meeting that can affect the way the dose reconstructions are done, it is a fairly easy process to make the necessary revisions. Site Profiles from some sites have been revised three or four times.

### ***Paul Szalinski:***

An earlier chapter that was finished mid-summer is already being revised with a page change. When additional data is discovered that prompts a document revision, the dose reconstructors know before the revision is approved.

### ***Grady Calhoun:***

Let me expand on that. Let's say, hypothetically, that the Site Profile Team discovers that there was a high neutron exposure at "X Building." At the time of the discovery, let's say that 200 dose reconstructions were already completed. These cases would be re-evaluated to see if the new information impacts the dose reconstructions. This is done routinely.

The Executive Secretary of the Society of Professionals, Scientists and Engineers closed the meeting at approximately 12:45 p.m. by reading the following comments about the Lawrence Livermore National Laboratory Site Profile:

### **CERCLA/Superfund Sites:**

No mention is made of the Livermore Site and Site 300 both being federal and state Superfund Sites under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA/Superfund). The Superfund List is a prioritized list of the nation's most contaminated sites. Both the Livermore Site and Site 300 have had groundwater and soil radiological contamination. While surface soil and air is mentioned in sections 2.3.2 and 2.3.3; it



## NIOSH Dose Reconstruction Project Rollout Meeting for the Lawrence Livermore National Laboratory Site Profile

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is a very limited discussion, and not based on what is known and has been published through the LLNL Environmental Restoration Activities. References: ES&H Manual: document 34.1 Site Cleanup Requirements, the U.S. Environmental Protection Agency (EPA), the California EPA, the Regional Water Quality Control Boards, and the Department of Energy.

### Results from Environment, Safety and Health (ES&H) Audits:

No mention is made of the results of the many audits and findings that have been performed on the building safety systems, radiation monitoring systems, and radiological controls at LLNL and Site 300. Sections 6.5 and 6.6 do address the possibility of calibration and processing errors with dosimeters, however they do not address actual negative findings of ES&H audits with these systems. For example, the Tiger Team audit in the early 90's found many deficiencies and triggered serious changes in the way maintenance and repairs were performed on the radiation monitoring systems and the methods of calibration to sources of exposure in the workplace. A review of these findings is an essential part of verifying the validity of the measurements and records of occupational doses at LLNL that is covered in documents on the occupational environmental dose and the Occupational External Dose. References: ES&H Incidents, DefTrak was used to track and analyze findings from external audits and internal self-assessments.

### Reconstruction of radiological contamination during the Decommission and Demolition of Facilities (D&D):

LLNL has an extensive program for excess facilities elimination with over 160 facilities that have been returned to the institution for disposition. Historical facility information as well as information on radiological contamination found during demolition is kept as project specific documents that, when completed, are sent to Lab Archives. A thorough search of historical records and discussions with former researchers, as well as radiological sampling is performed, and this information could be used to supplement the information provided in Table 2-2 as well as document the types of work that have taken place in specific facilities and areas. No reference is made to the D&D program in the LLNL Site Description Document. References: FY06 Ten Year Comprehensive Site Plan, Sept 2005, UCRL-AR-143313-05 Rev 1 (Official Use Only) Section 4.1.4 Excess Facilities Elimination/Disposition and New Construction, ES&H Manual: document 34.1 Site Cleanup Requirements.