National Institute for Occupational Safety and Health (NIOSH)
Worker Outreach Meeting for Los Alamos National Laboratory

Meeting Date: Wednesday, May 9, 2007, 9:30 a.m.

Meeting with: Executive Board of International Association of Firefighters (IAFF) Local 3279, Los Alamos County Fire Department, White Rock, New Mexico

NIOSH/ORAU Team:

Gregory Macievic, PhD, National Institute for Occupational Safety and Health (NIOSH) Office of Compensation Analysis and Support (OCAS), Health Physicist

Jack Buddenbaum, Oak Ridge Associated Universities (ORAU) Team, Site Profile Team Leader

Don Stewart, ORAU Team, Dose Reconstructor

Mark Lewis, Advanced Technologies and Laboratories International, Inc. (ATL), Senior Outreach Specialist

Proceedings

This is the first of three meetings between a team from NIOSH and the ORAU Dose Reconstruction Project, and members of IAFF Local 3279 representing the firefighters from Los Alamos County Fire Department who serve as first responders to calls at Los Alamos National Laboratory (LANL).

Mark Lewis introduced himself to the members of the Executive Board of IAFF Local 3279. He thanked them for inviting NIOSH and its contractors to meet with them. Mr. Lewis stated that he is on a leave of absence from the Portsmouth Gaseous Diffusion Plant to serve as a union liaison for the Oak Ridge Associated Universities (ORAU) Dose Reconstruction Project for NIOSH. Mr. Lewis introduced the NIOSH/ORAU Team: Health Physicist Greg Macievic, Site Profile Team Leader Jack Buddenbaum, and Dose Reconstructor Don Stewart.

Mr. Lewis stated that the main purpose of the meeting was to get information for the Los Alamos National Laboratory (LANL) site profile. He stated that when the team had met with other unions representing LANL workers, he had not realized that the fire department had its own union until they had contacted him.

Mr. Lewis asked for permission to record the meeting to document participants' concerns. He circulated a sign-in sheet. Mr. Lewis then turned the program over to Mr. Buddenbaum for the presentation.

Mr. Buddenbaum thanked the Executive Board members for attending. He stated that worker input is an important part of site profile development. Mr. Buddenbaum explained that site

profiles are “living” documents that are revised when NIOSH gets new information that may improve the dose reconstruction process. He said that he is health physicist with the ORAU Team, and that his primary responsibility has been to lead the team that developed the technical basis documents (TBDs) that make up the site profile for LANL. The site profile is a tool that is used in the dose reconstruction for Part B claims for workers from Los Alamos. Dose reconstructors use models approved by national and international organizations to estimate the radiation doses for these claims.

Mr. Buddenbaum stated that the most important reason for the meeting was to give the attendees the opportunity to share their work experiences and concerns with the team. He encouraged them to also submit their concerns, comments, and questions in writing to NIOSH. He said that their input may potentially have a real impact on how NIOSH estimates radiation doses because the documents from LANL do not necessarily fill in all the pieces of the puzzle. It is important that NIOSH hears about the workers’ experiences to fill in the missing pieces.

Mr. Buddenbaum began his presentation: The Energy Employees Occupational Illness Compensation Program Act of 2000 (EEOICPA or “the Act”) was signed by President Clinton to provide compensation and medical care for eligible Department of Energy (DOE) and Atomic Weapons Employer (AWE) workers who have become ill as a result of their work at a DOE nuclear weapons facility. A worker’s survivors may also be compensated, in some cases.

AWE sites were contracted to DOE or the Atomic Energy Commission (AEC) to provide production, materials testing, and other services for uranium and other radioactive metals used in the production of nuclear weapons. Bethlehem Steel in Pennsylvania is an example of an AWE site. They contracted with the AEC in the 1950s to mill, cast, and roll uranium metal because they had the production capabilities for that work.

There are two parts to the Act: Subtitle B and Subtitle E. Subtitle B deals with cancers caused by occupational radiation exposure, and Subtitle E deals with illnesses caused by exposure to toxic chemicals in the workplace.

The compensation program is managed and overseen by the Department of Labor (DOL). Current or former workers, or certain survivors, submit their claims to DOL. DOL verifies the worker’s employment at an eligible facility and the medical diagnosis. DOL sends only Part B claims for radiation-induced cancers to NIOSH for dose reconstruction to determine whether the claim may be compensated. Part B claims for other illnesses and Part E claims for illnesses caused by chemical exposures are handled solely by DOL.

After NIOSH receives a Part B cancer claim for dose reconstruction, they send a request to DOE for the worker’s personnel records – film badge or TLD results, medical X-rays given as a condition of employment, bioassay results, and any other information that may be used to estimate the worker’s radiation dose. If there are no monitoring data or dosimetry data for a worker, NIOSH may use monitoring records or other information for coworkers to determine the worker’s dose. A claim may be compensated if the worker’s cancer is “at least as likely as not” (50% or greater probability) to have been caused by their work for DOE. Dose reconstructors

take a second look at any claim that falls in the mid- to high-40% range to make sure that the most claimant-favorable assumptions were applied in the dose reconstruction.

Worker 1: What are the biggest potential "blots" for the dosimetry program, for example? How do you fix that or adjust the calculation?

Mr. Buddenbaum: There are a number of techniques. Don Stewart is a dose reconstructor on our team, so I'll ask him to address that.

Mr. Stewart: We have identified systematic problems with different sites and LANL is no exception. For example, we noticed when we reviewed the program that the neutron doses that were measured in the 1970s were underestimated. So we have implemented provisions to calculate the neutron dose in a more accurate and overestimating manner. You will see that throughout the sites. The site profile documents have fixes to address those inadequacies so we can bring the doses up to what they should have been. Dose monitoring techniques at LANL developed over time, but there were certain things that they missed.

In some cases, NIOSH assigns unmonitored dose because not necessarily all of the radiation types were effectively monitored. Sometimes those doses were underestimated. So, for example, we might use a projected neutron dose based on a measured photon dose. We know that the photon doses were pretty accurate. If we come up with a neutron-to-photon ratio that shows that the most highly-exposed neutron workers at LANL would have gotten about 75% of the amount of photon dose from neutrons, we add that in. So any fixes for systematic problems that we have identified were implemented in the site profile. We have a couple of those fixes for LANL.

Additionally, each dose reconstructor needs to look at the record – the human record – and decide whether it's accurate. For example, in a case that I did, the employee had described two periods of employment but we only had dose monitoring data for one – the later period when the worker was a draftsman. He had described responding to an incident during the first period, so we needed to go back to the site and look for the data. So we are going to look at all of the information in the case. What we need to say here is that the interview with the claimant is a very important reference for us. We take all the things that the claimant says during the interview seriously. What they say may not change the dose estimate. In fact, it usually does not. But if they give us enough information, we can see the flaws in the process or in the records. We have gone back and looked at TBDs because of comments we have heard in the interviews.

Worker 1: One example that I can cite from a firefighter's perspective – and we spoke about this off the record earlier – is that when we respond to incidents at the Lab in certain laboratories that possibly contain radiological material, we tuck our TLDs into our structural gear.

Worker 2: We have our TLDs on a lanyard or on our shirt, and then we put our bunker gear – our turn-out gear – over it.

Mr. Buddenbaum: In that case, the TLD is measuring the radiation that is penetrating your bunker gear. Frankly, high-energy protons are not slowed down that much by your bunker gear,

so you are getting a pretty accurate measurement. If you are wearing a TLD outside your bunker gear, you are probably getting an overestimate of your actual dose.

Worker 1: But that doesn't take the contamination into account.

Mr. Buddenbaum: No, it doesn't.

Mr. Stewart: There are a couple of reasons why. The TLD that you get is for your external dose. Contamination is something else. Contamination and (unintelligible) controls are two reasons: We don't want to go outside the control area and we don't want the person to inadvertently take it into their body. On the surface of the body, it's not really that much of a hazard. I can calculate a skin dose from beta contamination. What we are looking at is the cancer and the chances of that cancer occurring in the exact spot where that contamination was. That would need to be looked at and analyzed in detail. But generally, with contamination, you want to get it off you so that you don't take it into your body. And that is particularly true with alpha contamination. I'm sure that you have been told that alpha contamination is not hazardous outside the body, but you can eat it or breathe it. That's why you want to hold on to your bunker gear and your SCBA. You need to have those things on all the time and I'm sure that is how you are trained.

Worker 1: That's true, with the exception of wildland fires or shot activities that go on in the Lab sites. We are not wearing that equipment. In that situation, we are not sure exactly what we are being exposed to or to what extent. We believe that maybe our doses have not been accurate because of that.

Mr. Stewart: Have you been submitting bioassay samples for urinalyses?

Worker 1: We did in the late 1980s and the early 1990s, and then they dissolved the program. [Redacted] and I started in the DOE days in 1989. Since then, we've seen that program go by the wayside.

Mr. Stewart: Generally, we are speaking of the particulars of the modern programs here at LANL.

Worker 1: Didn't you say those are categorized by site as far as what those exposure levels might be?

Mr. Stewart: Yes. I would go to the LANL site documents and figure out the possible environmental contamination levels for what you might have been exposed to in an airborne situation. That's the environmental dose. We calculate both external dose from contamination in the environment and the internal dose from what you might be breathing in out there. Those numbers for LANL are not yet complete. We have them from 1971 onward.

Worker 1: Does that take the legacy waste sites into account?

Mr. Buddenbaum: Yes.

Mr. Stewart: For the worst cases, we estimate the dose using the highest measured values.

Mr. Buddenbaum: Right. And, certainly, those legacy burial sites, for example, there is a lot more air monitoring that has gone on at the Lab to see if there is any fugitive dust conditions and things like that. From what I have seen in the documents, a lot of that material is covered. Now there were workers who covered that debris and such that might have been contaminated. And that becomes a question of did they have adequate respiratory protection on and so forth when they were operating bulldozers and whatever they were using to cover the material up. But over the years, LANL has added more and more air sampling locations around the reservation and within the DOE boundary, which covers a pretty big area, as you know. The legacy waste – the exposures that might have occurred back then when some of the initial burials took place – back in the 1950s and 1960s – the records aren't particularly great in terms of what went in there necessarily, what sort of protection the workers had, particularly respiratory protection equipment. Often times, they would be wearing dosimeters – film badges back in those days are what they used to use. Today it's TLDs. But, you know, the records aren't as good. Today, if you are concerned about your exposures, those areas should be fairly well characterized. As you have your responsibilities in the areas that you're supposed to cover at the Lab, I suggest that you talk with LANL folks. They should be more knowledgeable than anybody. If you don't feel like you're getting your questions answered, then perhaps we can look into it as well. In the more modern days, there is quite a bit of air sampling data out there. We are using that to calculate environmental doses for claimants.

Worker 1: Well, the problem that I have is the air sampling – using the Cerro Grande fire as an example – is that the documented results added filters for some of those air sampling sites so it's debatable that they were actually monitoring at all times during the fire. Secondly, it was documented that there weren't enough air sampling sites. They couldn't possibly have documented all of the sites that the firefighters were at. For example, one of the legacy sites actually caught on fire. Right after the fire *(interrupted).*

Mr. Buddenbaum: Was the waste actually in the fire?

Worker 1: It was a subterranean fire.

Mr. Buddenbaum: Where was that fire? Do you know which one it was?

Worker 2: I think it was at CMI. It might have been at TA-11.

Worker 1: They asked us to go and use penetrating nozzles to put it out, but the fire department…

Mr. Buddenbaum: It was one of the legacy burials?

Worker 1: Yes. Well, we are assuming that it is. They asked the fire department to go put it out using penetrating nozzles, which we did not do because we were concerned about the

contaminants. So what the Lab wound up doing – to my understanding, I wasn't there – was that they sent out folks in Level A suits to do it.

One of the things that might be helpful – and I've made a note about this... was that… well, it was certainly during the Cerro Grande fire, so I know when those dates are. We have asked several times to see their incident files for the fire protection as well as the security guard protection. They keep a log on every incident that is called out, but a lot of that is classified.

Worker 2: That's our biggest problem, too, when it comes to them letting us know about potential exposures. A lot of it is classified.

Mr. Buddenbaum: Last week, I finally got an email from our DOE interface to LANL. They have opened the door for us to come in to look at those incident files, but we haven't made the arrangements to do it yet. That's not to say that the incident that you are referring to is in there, but we certainly will look to see if that occurred and if there was air monitoring going on and so forth. Maybe there will be some information about the workers who were involved in that situation. Again, that's something for us to look at and we would modify our site profile document and repeat that information in dose reconstructions if we think it's going to help.

Worker 1: Another thing that you're going to find out from others who come in here is that we were in areas during the fire where we are typically not allowed to go.

At this point, the recording device stopped.