

National Institute for Occupational Safety and Health (NIOSH)

Worker Outreach Meeting for Sandia National Laboratories

Meeting Date: Tuesday, September 25, 2007, 1:30 p.m.

Meeting With: Office and Professional Employees International Union (OPEIU) Local 251 and Albuquerque Metal Trades Council (MTC), Albuquerque, New Mexico

NIOSH Worker Outreach Team:

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

Steven Reed, Oak Ridge Associated Universities (ORAU) Team, Health Physicist and Dose Reconstructor

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

Mary Elliott, ATL, Technical Writer/Editor

Wilfrid "Buck" Cameron, ATL and Center to Protect Workers' Rights (CPWR), Senior Outreach Specialist

Proceedings:

Mark Lewis convened the meeting at 1:30 p.m. He thanked the representatives from OPEIU Local 251 and AMTC for meeting with the NIOSH Worker Outreach Team. The Sandia Security Police Association was not represented at the meeting due to its involvement in an arbitration case.

Mr. Lewis explained his role in coordinating worker outreach for the NIOSH Office of Compensation Analysis and Support (OCAS) under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA or the Act). Prior to his current activities, Mr. Lewis worked for 30 years at the Portsmouth Gaseous Diffusion Plant in southern Ohio. He is a member and former safety officer of the United Steelworkers of America (USW) local at that plant.

Mr. Lewis introduced the NIOSH Team: Sam Glover, Steven Reed, Buck Cameron, and Mary Elliott. He stated that the meeting was being recorded to assist Ms. Elliott in accurately capturing the union representatives' questions and concerns in meeting minutes that will be posted on the NIOSH Web site. He asked the union representatives to introduce themselves.

Mr. Lewis turned the meeting over to Sam Glover, a health physicist with NIOSH OCAS. Dr. Glover explained that a contractor team from the Oak Ridge Associated Universities (ORAU) performs several tasks under guidance from NIOSH, including collecting and reviewing data to develop the site profiles that are used by dose reconstructors to perform radiation dose reconstructions for EEOICPA claimants.

Dr. Glover recalled that the NIOSH Team first met with OPEIU and AMTC in 2005 to discuss what kinds of information the workers could share with NIOSH to assist in the development of the site profile. He introduced Steve Reed, a dose reconstructor on the ORAU Team, to present

the Sandia National Laboratories Site Profile. Dr. Glover encouraged the union representatives to ask questions and comment freely during the presentation.

Mr. Reed began the presentation by explaining that the purpose of the meeting was to discuss the site profile and the impact of worker input on its development, as well as to hear questions and comments from the representatives of the OPEIU and MTC.

The Sandia Site Profile is used in dose reconstructions for workers from the Sandia National Laboratories. It has six sections that describe the workplace facilities, activities, processes, technology and events that can affect a worker's radiation dose. These sections are the Introduction, Site Description, Medical Dose, Environmental Dose, Internal Dosimetry and External Dosimetry.

The Sandia Site Profile was signed and released on June 22, 2007. There is still a need for worker input to make the site profile a more complete and accurate document for dose reconstruction. NIOSH includes worker input in the site profile because the "official" records from the U.S. Department of Energy (DOE) and its contractors may not always accurately represent the actual working conditions and safety practices at a site.

Because Sandia only keeps records from 1990 to the present at the site, the site profile team had difficulty acquiring pertinent information. Data collection continued through the document approval process. Hard copy documents and computer files from those efforts are being reviewed and considered for a future revision to the site profile. Other data was not available because it was stored in archaic formats such as Bernoulli drives that have not been maintained at the Sandia site. NIOSH is searching for ways to retrieve those records. In addition, a large amount of internal dosimetry data for the years 1951 to 1986 did not get transferred to NIOSH. Since those records are necessary to develop co-worker studies to use in dose reconstruction, the site profile team is waiting for Sandia to send those records again.

By moving forward with the approval of the Sandia Site Profile, NIOSH has been able to begin dose reconstructions for some of the Sandia claims that have been in the system for several years. Since site profile is a "living document," it will be revised to include the new information.

The AMTC Secretary-Treasurer related a personal experience from the late 1980s or early 1990s: He and several other employees (a plumber, two millwrights, and an electrician) removed a fume hood from Building 805. The plumber disconnected the plumbing first and rodded out the drain line, spilling water on the floor. The AMTC representative was the electrician on the job and recalled crawling through water so he could get underneath to disconnect the electrical fixtures in the fume hood. After the fume hood was removed from the building and taken to Reclamation, a survey showed that the hood was very "hot." The crafts workers were unaware that laboratory personnel had apparently poured radioactive material down the drain in the fume hood. A day or two later, an industrial hygienist surveyed the electrician's truck and tools and found that they were "hot." All of the personnel who disconnected the fume hood were sent to Los Alamos National Laboratory (LANL) for whole body counts, but were never notified of the results. Approximately a year later, the electrician attempted to get a record of the results of the whole body count from the Industrial Hygiene Department (Building 869) and discovered that there were none. In 1993, the radiation protection group took over the records because they monitored the dosimetry program. The Metal Trades President said that he did not know of anyone ever being given their dosimetry results after they turned in a badge. The AMTC representatives related that the plumber on that job became ill shortly thereafter. He was eventually given a

medical retirement after he was diagnosed with Alzheimer's and Parkinson's. He has not been compensated under EEOICPA.

Mr. Reed continued: NIOSH recognizes in the site profile that LANL provided whole body counting services for Sandia. If it becomes evident during the dose reconstruction that a worker went to LANL for a whole body count, NIOSH requests that record from LANL. Since Sandia employees were often sent to work at the Nevada Test Site (NTS), LANL, and other sites in the nuclear weapons complex, NIOSH makes additional requests for records from those sites.

During the dose reconstruction process, an EEOICPA claimant is interviewed by telephone. It is very important for the claimant to give NIOSH detailed information during the telephone interview in the early stages of the claim – building names and numbers, process areas and incidents. These details are all very helpful in searching for additional information. Missing information can make the dose reconstruction process more complicated.

The AMTC Secretary-Treasurer stated that he had never received his record from the whole body count at LANL. Dr. Glover responded that since he has not filed an EEOICPA claim, NIOSH does not have access to his information unless it is necessary for a co-worker study, at which time additional Privacy Act paperwork must be submitted. An energy employee can request a copy of his or her record under the Freedom of Information Act (FOIA).

The AMTC President asked for clarification regarding the different parts of the Act. Dr. Glover stated that EEOICPA has two Subtitles that provide compensation for eligible energy employees. The U.S. Department of Labor (DOL) administers both Subtitle B and E, but NIOSH only performs dose reconstructions for Part B claims for cancers that may have resulted from the employee's occupational radiation exposure. Another EEOICPA subtitle, Part E, compensates for other illnesses resulting from exposure to radiation or toxic chemicals. A worker may be eligible for compensation under both Subtitles B and E.

The AMTC President asked what the rate of compensation is on a nationwide scale. Dr. Glover replied that NIOSH has received approximately 24,000 Subtitle B claims for dose reconstruction. Of those, approximately twenty-five percent (25%) have been compensated. The rate of compensation varies by site since the hazards were different. Sites that had large amounts of unconfined radioactive uranium and plutonium had a higher risk than sites that had contained plutonium sources, such as those that were put into the weapons. NIOSH has received 244 Subtitle B claims for Sandia, and 16 of those have been compensated under Subtitle B. The AMTC President stated that as of the meeting date, 150 total claims (both Subtitles B and E) from Sandia had been compensated. Dr. Glover stated that those claims probably do not include Sandia workers who also worked on projects at Los Alamos and qualified for compensation under the Special Exposure Cohort (SEC) class for LANL.

EEOICPA covers more than 300 sites that were part of the nuclear weapons complex under the U.S. Department of Energy (DOE) and its predecessors. When the OPEIU Vice President asked if White Sands Missile Range is an EEOICPA site, Dr. Glover replied that since that facility is a military installation, compensation is made under the Radiation Exposure Compensation Act (RECA). New Mexico has many sites that have been involved in the nuclear weapons programs, but many of them are covered under other compensation acts that are administered by federal agencies other than DOL.

The OPEIU President commented that there are many sites in New Mexico that were connected to the nuclear weapons program besides the national laboratories. The above-ground testing in

the earliest years of the program caused contamination throughout the state. She stated that the incidence of cancer is high in those areas.

A brief discussion ensued regarding the responsibilities of the various agencies involved in the administration of the Act. DOL takes the initial claims and requests the employee's personnel records from DOE. DOL verifies the energy worker's employment and medical information. DOL sends NIOSH the Part B cancer claims for dose reconstruction. After the dose reconstruction is complete, NIOSH returns the claim to DOL with a recommended decision. DOL makes the final decision for compensation if the dose reconstruction shows that the cancer is "at least as likely as not" to have resulted from the employee's occupational radiation exposure. If the claim is denied, the employee may appeal the decision and the claim is adjudicated by a three-member panel.

Mr. Reed continued the presentation: The energy employee's records are used during the dose reconstruction, including film badge readings, medical X-rays, bioassay results, whole body counts, incident reports, environmental exposure data, coworker data, and information from the telephone interview at the beginning of the dose reconstruction process. An employee's personal records can sometimes help when information seems to be missing.

Responding to the incident described by the AMTC Secretary-Treasurer, Mr. Reed said that when a whole body count indicates the presence of radioactive material, often the worker is asked for follow-up testing. Since he was not contacted again, it is likely that nothing was detected. Dr. Glover reiterated that the record should be available by FOIA.

The OPEIU Vice President related an incident in which she and other employees were exposed to tritium while they were working in vault maintenance. The vault was in an historic building where a lot of old equipment was stored. The workers had been moving the equipment around when the tritium was detected on the dials of a piece of old training equipment. The workers were tested and told that their risk was minimal because tritium is water soluble. She felt that the company made light of the situation when they suggested that the problem would take care of itself if they increased their fluid intake. She stated that signs were posted after the incident.

Mr. Reed stated that the site profile recognizes that tritium is a major concern for exposure at the Sandia Labs. Both the Environmental and Internal Dosimetry sections include mention of the tritium sources. Dose reconstructions for Sandia claimants include calculations for tritium exposure.

The AMTC President stated that badges are exchanged every 90 days, but he did not recall ever seeing a report. The AMTC Secretary-Treasurer recalled receiving reports, but said that they all had "0" readings.

The OPEIU Vice President expressed her concern that a great amount of antiquated equipment is stored around the site. Because there is uncertainty regarding what materials may have been used around the equipment, it is not always possible to know if there are exposure hazards. She stated that more auditing and reporting is necessary so workers are aware of all the hazardous material and equipment that can be found around the site. She supports researching the history of the older facilities to determine what processes and materials were used in them, as well as any cleanup that may have been done. She related that a "sick" building had been demolished right next to the building where she worked.

Mr. Lewis explained that her concern was the very reason why unions should be involved in the development of the site profiles. Labor organizations can help by having people who worked in the earlier years review the profiles and tell NIOSH if there is missing or incomplete information.

He reiterated that the site profile is a “living document” that can be changed when new, relevant information comes to light. He encouraged the union representatives to circulate the site profiles to retirees and other workers who can verify the information in the site profile and point out gaps or incorrect information. Since the Site Description contains the historical information about the Sandia site, that is a good starting point.

The OPEIU Vice President asked if she could include this information on the OPEIU Local 251 Web page. Dr. Glover stated that workers are encouraged to comment on the site profile and can send information directly to NIOSH. Contact information can be found at the end of the presentation.

Mr. Reed stated that DOE is in the process of demolishing many of the old buildings and process facilities used in the nuclear weapons program. If workers have any information about these buildings that are being decommissioned, NIOSH may find it useful in characterizing the buildings at the site – concentrations of radioactive materials, hazardous waste, asbestos, etc. DOE characterizes a building when it is scheduled for demolition and then removes the waste before tearing the building down. The OPEIU President stated that Sandia management denies the presence of asbestos anywhere on site. Mr. Lewis reiterated that NIOSH only handles radiation claims.

The AMTC Secretary-Treasurer asked Mr. Reed to explain dose reconstruction. Mr. Reed described how the dose reconstruction process as follows:

- The dose reconstructor receives a cover sheet for the claim from the NOCTS (NIOSH OCAS Claims Tracking System) database with the claim number and the employee’s work history (all nuclear weapons sites and dates) and personal data that are pertinent to the dose reconstruction. Medical codes (ICD-9) for the employee’s medical diagnosis are also included on the sheet. Since all of this information is protected by the Privacy Act, all employees who handle this sensitive material receive Privacy Act training.
- The dose reconstructor retrieves the employee’s dosimetry records from the database and reviews the worker’s personal work and medical information from the CATI (computer assisted telephone interview) to determine if there is enough information to do a dose reconstruction.
- The dose reconstructor refers to the site profile to fill in the gaps in the worker’s employment history with co-worker studies or documented assumptions when the exposure information is incomplete. For example, if the medical X-ray history is incomplete, the Medical section in the Sandia Site Profile assumes a pre-employment X-ray, an annual X-ray for each year of employment, and an exit X-ray. The dose reconstruction does not include X-rays that were taken for on-the-job injuries, only those that were occupationally required.
- The dose reconstructor considers a worker’s job description. A secretary probably did not receive more than environmental dose from being in an office or walking through the site. Many sites did not issue dosimeters to this type of worker because they had low-level exposures. The dose reconstructor will consult the Environmental section for this worker’s probable exposure. On the other hand, a material handler would be a radiological worker. If there are gaps in a radiological worker’s dosimetry records, the dose reconstructor may have to fill in those gaps using either a maximizing assumption or coworker studies to account for the amount of exposure

the worker received. The Internal and External Dosimetry sections are also used for these radiological workers.

- The dose reconstructor consults the Internal Dosimetry section for information for calculating a worker's internal dose based on bioassay results. Until the site profile was released, many of the Sandia claims were on hold because there were not enough Sandia records available to document internal radiation exposures. The site profile team is still waiting for the internal dosimetry information from 1951 to 1986 to make this section more accurate. When that information is received, the section will be revised so the remaining claims can be processed.
- The dose reconstructor inputs the employee's data into the IREP (Interactive RadioEpidemiological Program) to determine the probability of causation (POC), or the likelihood that the employee's cancer is work-related. If the POC is greater than fifty percent (>50%), the claim may be compensated.
- A dose reconstruction report is sent to the claimant for review. If the claimant is satisfied that all of the employee's information was considered, he or she is asked to sign a form (OCAS-1) to release the claim to DOL.
- DOL is responsible for making the final compensation decision.

Dr. Glover suggested that Mr. Reed discuss the dose reconstruction method for construction trades workers. Mr. Reed described the technical information bulletin entitled Parameters to Consider When Processing Claims for Construction Workers (OTIB-0052). He stated that the job description and CATI information are used to assign a reasonable dose based on what the worker did on site. Dr. Glover explained that NIOSH recognized that construction workers were often inadequately monitored. NIOSH worked with the Center to Protect Workers' Rights and the National Building and Construction Trades Department, AFL-CIO, to develop coworker studies using the highest exposure levels for workers from the sites with similar job descriptions to determine the reasonable exposure levels for the workers in the building trades. Mr. Reed compared a bricklayer working in new building construction to a site worker who would only receive environmental exposure. Conversely, an electrician who performed work in radiological areas may receive the highest exposure level (95th percentile).

The AMTC Secretary-Treasurer commented that he had also worked in 1961 at Argonne National Laboratory (ANL) near Chicago while still an apprentice electrician and was required to "suit up" for the work. He had also worked shut-down at Indian Point Nuclear Power Plant in New York, but was not allowed into the reactor areas because he did not have the Form 4 information from ANL that was required by the Nuclear Regulatory Commission (NRC). He recalled being covered with graphite from his work there.

Mr. Reed added that an additional factor of 1.4 is considered when using coworker information for construction workers because their exposures may actually have been higher than on-site workers.

Mr. Reed reiterated that the Internal Dosimetry section would indeed be revised when the site profile team receives the missing Sandia data from 1951 to 1986. Some claims are still on hold until the revision is available with more accurate, complete information.

Mr. Lewis commented that worker input is important for all sections, but the Site Description is perhaps the one where their input can be most useful. The AMTC Secretary-Treasurer asked what information NIOSH is looking for there. Mr. Lewis said that workers can verify the

accuracy of the historical information in the Site Description and notify NIOSH of discrepancies. Mr. Reed pointed out the tables in the Site Description of all the buildings that NIOSH has identified at Sandia. NIOSH welcomes any clarification or additional information.

The MTC representative stated that the Industrial Hygiene Building 869 also had a machine shop in the basement that machined beryllium parts.

Mr. Reed continued the presentation: The Site Description identifies key facilities, including the dates and types of operations, the radionuclides used and their quantities, as well as the types and energies of radiation-producing machines. The reactor facilities are also described in this section. Historical information about significant programs and events is included in this section, as are major site incidents. Health protection practices are also discussed: historical accounts of the badging program, area monitoring, and access control of the radiological areas.

The labor representatives agreed that in the years prior to the Tiger Team Reports workers were not always informed of their annual exposures. They stated that after the Tiger Teams came to the sites, Sandia management was more vigilant in their safety procedures and reporting methods. Mr. Reed stated that NIOSH reviewed the Tiger Team Reports for Sandia while developing the site profile.

At 2:30 p.m., the union representatives suggested a short break. The meeting was reconvened at 3:00 p.m.

Mr. Reed resumed: The Medical Dose section provides information for the dose reconstructor about the amount of radiation dose to assign for occupationally required X-rays. Records of these X-rays are provided in the energy employee's DOE records. The site profile team did not find a good description of the equipment used at Sandia during the early years, but there are records showing that photofluorographic X-rays were used for most workers until 1966. After 1966, the standard posterior-anterior (PA) 14 x 17 chest X-rays were used. This section discusses the frequency of X-rays during various time periods and gives default frequencies when the employee's record is not considered adequate. If special X-rays were required for special jobs, additional dose is assigned.

The Environmental Dose section discusses environmental occupational exposures at Sandia facilities. This section is used to assign radiation dose to unmonitored workers such as secretaries and food service workers. Annual intakes of radionuclides from inhalation and inadvertent ingestion are given for the years 1948 through 2004. All of the Technical Areas at Sandia (TA-1, 2, 3, 4, and 5) have had environmental tritium exposures. The average environment exposure for Sandia workers is approximately 10 millirem (mrem) per year. Radiation doses from ambient external exposures are given for the same period. Results from 2005 will be incorporated when the 2005 Annual Site Environmental Reports are available.

The Internal Dosimetry section provides information for calculating internal radiation doses based on bioassay results: in vitro bioassay (urine and fecal analysis); and in vivo bioassay (chest counts and whole body counts). Sandia had contractors (CEP and IntraTech) that performed this work during some periods. NIOSH can use the minimum detectable activity limits that Sandia prescribed for these contractors to calculate "missed dose" or coworker dose when no results are available. The missing information from 1951 through 1986 will be used to develop a more accurate coworker study when it becomes available. NIOSH requests the worker's bioassay records when they are available. If they are not available, maximizing assumptions are used to develop the "worst case scenario" for that worker's internal exposure. Many times, these assumptions assign a dose that is higher than a worker would have ever received. Typical

radionuclides of concern at Sandia include tritium, uranium, fission and activation products, and plutonium and americium to a lesser degree.

Dr. Glover explained that many cancers – especially prostate and skin cancers – are not very radiogenic. It would take massive amounts of radiation exposure to cause some of these cancers. By assigning maximizing exposures, some claims can be processed more quickly by assigning higher exposure than a worker actually would have received. This is not to say that these assumptions make the claims compensable, but that the claimant is given the benefit of the doubt where the exposure is concerned.

The OPEIU President asked about the compensability of brain cancer. Her brother-in-law was a 20-year Sandia employee who was diagnosed with astrocytoma and died at 49. Dr. Glover replied that brain cancer is not a highly radiogenic cancer either. It has been compensated, but rarely. Individual dose reconstructions have many factors that affect outcome.

The AMTC President recalled that several employees who had worked in Building 880, including his brother, had died of cancer at about the same time. Mr. Reed stated that without a claim, the probability that the cancer was occupationally related would never be known.

Mr. Reed continued: Bioassay sampling was not a routine practice at Sandia in the early years, but was used in response to a worker's suspected intake of radioactive materials. In the earlier years at Sandia, workers did not handle the radioactive parts of the weapons, but the weapons in which the radioactive material was already contained. Even after Sandia began other work that involved handling radioactive materials, bioassay testing did not become routine until the Tiger Teams found many areas lacking in internal dosimetry. If NIOSH does not have bioassay information for a worker, that person's work locations are reviewed to determine their potential internal exposures based on the radioactive materials in those areas. Maximizing assumptions are used on a case-by-case basis when there is not sufficient information in a worker's records. The site profile provides guidance on dose reconstruction for unmonitored workers.

The External Dosimetry section of the site profile describes workplace radiation fields, dosimeter technology – film badges and TLDs (thermoluminescent dosimeters), dosimetry practices (whole body, skin, and extremity), and badge exchange frequencies throughout the history of the Sandia National Laboratories. The “missed dose” is a method of assigning a potential dose for radiation exposure where a badge may have read “0” because the worker's level of exposure was under the minimum detectable limit (MDL) of the dosimetry badge.

A brief discussion ensued on the topic of missed dose. An attendee stated that the badge readings often would come back “0.” NIOSH adds a measure of dose equal to half the minimum detectable limit for each “0” reading in the badging cycle in an effort to be “claimant favorable.”

The AMTC Secretary-Treasurer commented that construction trades workers were sent all over the site and never knew what they might be walking into since they were not as familiar with the areas as the workers who were assigned there. Mr. Reed stated that the Sandia site has many different working conditions – for example, accelerators in one building, plutonium exposures in another area, and uranium in another – and many energy ranges that could affect the badges. Dosimetry badges have an uncertainty factor built into them that can range from 10-50%, depending on the type of materials that were handled. Because of this uncertainty, the dose reconstruction includes a distribution that brings the “missed dose” even closer to the MDL.

NIOSH is in the process of developing coworker doses for Sandia employees who have gaps in their dosimetry records. The doses are based on radiological workers at the 50th and 95th percentiles. The Sandia Site Profile already includes some coworker tables that can be used in

conjunction with other information, such as missed dose and the number of badges. Once the study is completed, all of these factors will be combined into a single dose that can be assigned for the unmonitored workers.

Sandia workers do not have significant neutron exposure, except those who work around the neutron generator. If information is not available, a neutron-to-photon ratio is applied to measured or estimated missed or unmonitored photon doses.

Mr. Reed discussed the Sandia Part B claims statistics. As of September 11, 2007, NIOSH had received a total of 244 claims: 16 of those claims were compensated; 73 were noncompensable. Since the site profile has been approved, the 139 active claims still awaiting dose reconstruction are as follows: 96 are being worked for the first time, 33 have been returned by DOL for re-evaluation, and 10 are being held for additional information. An additional 16 claims are administratively closed or inactive.

The AMTC representatives expressed their concern that retired workers may not be as aware of the program as current employees. Mr. Lewis stated that NIOSH values retired workers for their knowledge of historical information about the work practices and safety programs during different eras. The AMTC representatives stated that they would like to take the information out to the Sandia retirees' groups to educate them on the program and request their assistance in reviewing the site profile. The OPEIU President commented that there are many retirees who had worked as long as 50 years. Mr. Reed stated that the site profile cites discussions with Sandia employees from the 1940s and 1950s for some of the historical information.

Mr. Reed concluded his presentation by stating that worker input is important in developing an accurate site profile. Because the site profile is a "living document," it will change when important information comes to light that may affect dose reconstructions for the site. He gave the attendees contact information and the Web address for the NIOSH OCAS Web site. Comments on the Sandia Site Profile and the EEOICPA program can be sent directly to NIOSH.

Mr. Lewis concluded the meeting at approximately 3:30 p.m. by thanking the OPEIU and AMTC representatives for meeting with the NIOSH Team.