

## National Institute for Occupational Safety and Health (NIOSH) Worker Outreach Meeting for W. R. Grace - Erwin

**Meeting Date:** Wednesday, April 6, 2011, 11:00 a.m.

**Meeting with:** Representatives of United Steelworkers of America (USW) Local 9677 and former workers from W. R. Grace – Erwin, Tennessee (Nuclear Fuels Services)

**Location:** USW Local 9677 union hall, Erwin, Tennessee

### **NIOSH Team:**

Tom Tomes, National Institute for Occupational Safety and Health (NIOSH), Division of Compensation Analysis and Support, Health Physicist

Chris Ellison, NIOSH/DCAS, Communications Development Team Lead

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

Mary Elliott, ATL, Technical Writer/Editor

### **Proceedings**

Mark Lewis opened the meeting at approximately 11:00 a.m. He thanked the attendees for taking the time to attend the meeting. Mr. Lewis stated that the representatives of United Steelworkers of America (USW) Local 9677 had asked for the meeting because they wanted to give NIOSH some information about the history of the W. R. Grace/Nuclear Fuel Services (NFS) plant. Mr. Lewis explained that he is an outreach specialist for Advanced Technologies and Laboratories (ATL), serving as a liaison between the National Institute for Occupational Safety and Health (NIOSH) and current and former workers from the nuclear weapons complex who are stakeholders in the Energy Employees Occupational Illness Compensation Program Act (EEOICPA).

Mr. Lewis explained that the local union had requested the meeting with the NIOSH Outreach Team to discuss their concerns about radiation exposures at the W. R. Grace/NFS site in the era following the Atomic Energy Commission (AEC) contract period. Mr. Lewis explained that Worker #1, a former worker from the site, would conduct the meeting. He asked everyone to introduce themselves.

Tom Tomes stated that he works at NIOSH as a health physicist, reviewing the technical information that NIOSH uses in dose reconstructions and SEC petition evaluations. He added that he would take the information presented during the meeting back to NIOSH for consideration.

Chris Ellison stated that she is a health communications specialist with NIOSH and leads the team that maintains the Web site and print materials used in the EEOICPA program. She added that she would share the information provided during the meeting with Joshua Kinman, the SEC Petition Counselor. Ms. Ellison thanked the attendees for inviting the NIOSH team to meet with them.

Mary Elliott stated that she also works with ATL in the NIOSH Worker Outreach Program. She asked the attendees for permission to record the meeting for the purpose of writing accurate minutes. Ms. Elliott explained that the recording will be destroyed after the draft minutes undergo an internal review process that ensures that Privacy Act personal information and classified information is not

shared with the public. She added that signing the attendance sheet is voluntary, and that its contents are also protected under the Privacy Act.

Worker #1 thanked the NIOSH Team for meeting with them to discuss their concerns. He stated that he had worked at the W. R. Grace facility until 1979 when he became a field representative of the Oil, Chemical and Atomic Workers International Union (OCAW), which represented workers at sites involved in atomic weapons production. He stated that he and the other attendees would present information during the meeting that they hoped would be helpful to NIOSH in performing dose reconstructions. He asked the current and former workers to introduce themselves.

Worker #2 stated that he began working at the W. R. Grace site in 1972, working as a supervisor prior to his retirement after 37 years of service.

Worker #3 stated that he was employed at the site from 1960 until he retired in 2002.

Worker #4 stated that he began working at the site in 1968 and retired in 2002.

Worker #5 stated that she had worked at Nuclear Fuels Services from 1981 through 2007, when she was diagnosed with [multiple myeloma].

Worker #6 stated that she began working as a chemical operator at the site in 2000.

Worker #7 stated the he began working at the site in 1988. He has worked for 24 years as a radiation technician.

Worker #8 began working at NFS in the yard in 1990. She has worked as a radiation technician since 1998.

Worker #1 read the following opening statement (*paraphrased*):

“As everyone present here today is aware, certain workers at the NFS/W. R. Grace Facility in Erwin were granted Special Exposure Cohort (SEC) status on August 7, 2007, which was certainly appreciated. The SEC status was granted for all employees who worked during the Atomic Energy Commission (AEC) contract period from January 1, 1958 until December 31, 1970, due to insufficient monitoring of workers’ exposures to thorium.

We requested this meeting not to bash the Department of Labor (DOL), NIOSH or the company, but to give us the opportunity to show that the SEC class should be extended for additional years of employment for all workers at the Erwin facility. We request that NIOSH study and investigate the facts presented here today and then make a recommendation to DOL that might allow the extension of our SEC time period.

We also request that additional relevant data be included in the formula for dose reconstructions [of claimants from this site]. Currently, employees of the NFS facility are given very minimal credit for [exposure to radiation due to] residual contamination from January 1, 1971 through the end of their employment. This would be a fair assessment if all of the buildings, ponds, and burial grounds from the W. R. Grace era remained in an undisturbed condition. Anyone reading the site profile dated July 16, 2008, would think that the decontamination and decommissioning (D&D) of the W. R. Grace facilities was performed by December 31, 1970. Our concern is that employees who are not eligible for the SEC class because they were employed during the residual contamination period (January 1, 1971 through 2009) are not given proper credit during dose reconstructions for their exposures to the W. R. Grace era legacy waste during the massive excavation and cleanup of

the ponds and burial grounds. Currently, they only receive 0.0007 credit for their exposures to residual contamination.

I think everyone here will agree that we would not be meeting here today if the facility had remained dormant since 1970 and workers had not been exposed to the residual contamination in the buildings when they came into contact with dry boxes and other equipment – either to their skin (externally) or from breathing the dust (internally). That is what I call residual contamination. We are going to do our best today to show you the extent of our exposures – not only from the residual contamination, but also the actual plutonium, thorium, and uranium exposures to the waste contamination from the era of W. R. Grace during D&D. We can show you through eyewitness testimony that these contaminants were in the three ponds and burial grounds. Recently, I was made aware of the “southwest trench,” which is an area that goes from the 310 Warehouse Building to here (indicating area on Figure 2.2, Page 11, *An Exposure Matrix for W. R. Grace and Company, Erwin, Tennessee* [the site profile]), estimated at 150 yards long by more than 20 feet wide by 25 feet deep. The workers here today will talk about when they excavated and removed the AEC contract era waste material, which was buried in the southwest trench up until 1969. The excavation work began in 2000.

When we read the site profile, it seemed to indicate that the D&D had been completed by the end of 1970, or that the site had been left dormant.

We are aware that NIOSH is committed to applying the best available science to dose reconstructions. In doing so, NIOSH has developed Program Evaluation Reports (PERs) and Program Evaluation Plans (PEPs) at multiple sites throughout the country. Although one from another site is used during dose reconstructions, NIOSH has not developed one for our site in Erwin. We hope that this meeting today will be the beginning of NIOSH taking this under strong consideration. We believe that we can show you today that we have very distinct problems compared to other sites.

In the late 1980s, the employees at the Erwin site began the D&D work on the Plutonium Building (Building 234) and finished taking it to the ground in the early 2000s. Currently, this area is enclosed under a dome; but they are preparing to excavate the wet cell under the dome to package and transport it offsite for burial.

The workers also have performed D&D of the 100 and 200 series buildings mentioned in the site profile from the era of W. R. Grace. In 1989, a company called Ecotec came to the site and took core samples from the different ponds and burial grounds from the W. R. Grace era. The samples taken during that time showed a high concentration of thorium, U-233, etc. We will give you a copy of the 1989 sampling document after we finish telling you about the work. This D&D work has continued to the current time, although not to the magnitude of the 1990s and early 2000s.

I was the international union representative in the late 1990s when the company indicated to us that they wanted to hire approximately 150 temporary workers to assist the bargaining unit workers who were doing the D&D work and digging up the sludge, dirt and debris in the ponds and burial grounds. The company felt that the work could be done in a short time with temporary employees. The union insisted that the company honor the terms of the contract and hire full-time employees. In fact, the company exceeded its own hiring estimate. I would never have believed when this happened in 1998 that the work would still be going on today in 2011. Worker #6 is one of the 150 workers who were hired during that time period.

The vast majority of this decontaminated debris, dirt, and other contaminants was separated, packaged in boxes and intermodal containers, and sent off the plant site for burial. The workers will tell you more about the D&D work during the meeting.

It is our intent today to present mainly three witnesses, two of whom actually worked during the era of W.R. Grace and also worked in the D&D of the ponds and burial grounds. The third witness began working in 1972 in the W.R. Grace-era buildings and was the supervisor of the decommissioning of the buildings and the cleanup of the ponds and burial grounds. Other employees also may be sharing relevant information. We will also present written statements from other workers from the Erwin site who are not present here.

We will present testimony from these witnesses who have first-hand knowledge of many events that occurred in the era of W. R. Grace that directly affect the employees who have worked at the site since the time frame for the SEC class that ends on December 31, 1970. These events occurred from the late 1980s through the present. It should be clear that these workers are not being given proper credit for their exposures during their dose reconstructions. Although the company supplies the exposure documents for the dose reconstructions, we believe that the testimony given here today will show that these records are flawed and are not true representations of the employees' exposures." *(The speaker presented a copy of this statement to NIOSH.)*

Worker #8 read a statement on behalf of Worker #5 (*paraphrased, copy of document provided to NIOSH*):

"My name is [redacted] and I was diagnosed with multiple myeloma in [redacted] after being employed at the NFS/W. R. Grace site from [redacted] to [redacted], although my last day of work was [redacted].

I believe that the dose reconstruction granted very little credit, if any, for my exposure to W. R. Grace-era contaminants. The W. R. Grace site profile only provides minimal credit for residual contamination after December 31, 1970. It is clear that I was not given consideration for my extensive exposure to the W. R. Grace-era contaminants. This exposure was not from residual contamination, but from the actual material from the W. R. Grace-era that I encountered as part of my job. As part of my duties as a Chemical Operator, I was required to help decommission buildings and work in the ponds and burial grounds. I was directly exposed to the plutonium, thorium, and uranium from the W. R. Grace era. We were required to remove contaminated dry boxes, ductwork, fume hoods, and all other equipment from the W. R. Grace-era buildings. On one occasion in the Plutonium Building while we were tearing out a piece of ductwork, we scanned it and found that there was a substantial amount of plutonium in the ductwork. This was not residual contamination. This was pure plutonium. I remember that everyone was so careful and scared because we were afraid that it might cause a criticality. After we took down the ductwork, the plutonium was removed and placed into a 2-liter bottle, which was placed into a 55-gallon drum. The ductwork was cut up and sent offsite for burial.

While performing this work, I was routinely contaminated on a number of occasions, once to the point of having my coveralls cut off me right on the job. During this time, we would be so contaminated that we had to change in the buildings. Much of the time, we were unaware of the exposure and were working without respirators. It was very common

for me to have to decontaminate my hands, arms, and other parts of my body with different types of chemicals. I have requested incident reports of these events from NFS and to this point they have refused to provide them. It is my belief that if they would not provide those reports to me, then they probably were not provided to DOL or NIOSH. I feel that the dose reconstruction should also consider these personal incidents, and that it is incomplete if that information has been withheld. At my hearing, I provided exhibits of my requests to the company to provide this information.

Even though the NFS safety and monitoring has vastly improved since the W. R. Grace era, it is still flawed. Although the monitoring and safety were bad during that era, at least the workers knew what they were handling when they worked in dry boxes with rubber gloves. When we began decommissioning the W. R. Grace-era buildings and the ponds and burial grounds, we had very little knowledge. *Exhibit 1 – NFS Ponds Mean Activity* from my hearing (copy provided to NIOSH) showed high activity of contaminants such as thorium and U-235 in 1989. Once we began working in the ponds and burial grounds, we found 55-gallon drums and 5-gallon buckets completely full of thorium and many other contaminants, not to mention all of the contaminated debris.

I was involved in another incident that occurred in the 111 Building, a W. R. Grace-era building, which was considered a “clean area” because the interior had previously been decommissioned. We were separating dirt and debris from the burial ground that was supposed to be safe. We were working without respirators and only one out of every four or six workers wore a lapel dosimeter. The dirt and debris was contaminated with high doses of plutonium and the building had to be shut down. I was one of the workers chosen to go back into the building to attempt to clean up the plutonium, but to no avail. As far as I know, this building is still shut down due to contamination. The personal contamination monitors (PCMs) had been going off for days and the company told the workers that radon was the cause. Needless to say, the company was wrong.

The two main buildings used in the D&D work of the ponds and burial grounds were the 400 Building and the 410 building. The 410 Building was about the size of a football field and there were only four air samplers in the entire building. Although the vast majority of the work was performed in the center of the building, the samplers were located in each of the four corners. Our work area was so dusty that you could barely see or breathe and, in most cases, we did not use respirators. If anyone complained, the big doors would be opened so the dust could go outside. It is certainly my belief that we did not have enough air samplers in the 410 Building to provide an accurate analysis. In the large 400 Building, the company had only seven air samplers in the entire building, which certainly was not a true assessment of the building. For a period of time, NFS had a continuous air monitor (CAM) in Building 400, and the alarm would go off on a routine basis. Instead of correcting the problem, they turned the CAM off and took it out of use. I feel that if any air samples were provided by the company for my dose reconstruction, it would have to be flawed. All of the work that I performed in the area of the ponds and burial grounds was also very dusty. I worked with numerous contaminants on a daily basis without a respirator. We were told to use water hoses to keep the dust down, both in the buildings and in the area of the ponds and burial grounds.

In most cases, employees did not wear lapel samplers during the decommissioning of the 400, 410, and 111 Buildings, and the ponds and burial grounds. NFS policy only required that one employee wear a lapel sampler for a representative reading for every four to six workers. NFS would record the same exposure for all four to six workers, but in most cases that cannot be true. With all of the dust and the wind blowing in different directions in the ponds and burial grounds, these could not be true samples. In the other buildings, especially the large buildings such as the 410 (approximately the size of a football field), it was not unusual for employees to be separated and not get the same exposure. These are only a few examples of scenarios that would render the lapel readings inaccurate, as well as my readings that were provided to NIOSH by the company (for dose reconstruction).

Full body counts were performed on workers at NFS for many years. We always thought the full body counts were an accurate, complete scan for all of the contaminants in the plant. We did not question this until the 1990s when some of the radiation technicians applied for work in Oak Ridge and discovered during their pre-employment scans that they had plutonium in their systems. That's how they found out that the full body count at NFS did not include plutonium. I just recently learned that this is not part of the record in my case. For all I know, I could have had plutonium in my system. If so, this exposure was not taken into consideration during my dose reconstruction.

I believe that when our company was required to drain and decommission the dump/burial ground, nobody really had a clue about what we were getting into. The project began in the late 1980s and lingered into the late 1990s. In the late 1990s, NFS hired a large number of employees to finish the D&D in the ponds and burial grounds – a project that they thought would last just a few months. The work was still going on when I left the plant in 2007 and is still ongoing. The sludge was contaminated with every contaminant known to man. The contaminants had heavy metal instruments, tools, gloves, fuel rods, loaded plastic bags, etc. The vast majority of the contaminated materials removed during D&D came from work during the 1950s, 1960s, and 1970s. The soil contained varying concentrations of uranium, thorium, plutonium, technetium-99, and other transuranic radionuclides.

Another point that I believe is relevant and is very sad and troubling to me is that my immediate supervisor during the D&D work was diagnosed recently with multiple myeloma and has passed away. He worked with me often, but did not have nearly the hands-on exposure that I had. Another lady who worked with us in the ponds and burial ground passed away last year from multiple myeloma. I have a family and, of course, I am scared of this awful cancer I have. I feel beyond a doubt that it was caused at my workplace.”

After Worker #8 read the statement, Worker #5 asked that NIOSH take into account the workers' exposures to materials from the 1950s, 1960s, and 1970s into consideration because she feared for the safety of the other workers on the D&D project. She stated, “I worked in every building at NFS at some point in time during the 26 years that I worked there. I was exposed to thorium, plutonium, and technetium-99. I have no idea what other things I might have been exposed to during my work. On July 7, 2007, I was told that I have multiple myeloma, which is a cancer of the blood. I had never heard of this cancer until that day, when they told me that it is incurable

and that I could expect to live about five years. I am afraid for the other workers down there, so please take this information into consideration.”

Mr. Tomes stated that he would take a look at the information that was provided to him during the meeting.

*Worker #1 handed several documents to the NIOSH Team, including the two previous statements, site maps, and several additional worker affidavits.*

Worker #1 stated that the next item on the agenda would be the discussion of a document showing the mean activity of the core samples taken from the retention ponds during a 1989 sampling conducted by Ecotec. Worker #8 indicated the location of three ponds on the site map from the W. R. Grace site profile. Worker #7 explained the method that Ecotec used for taking the samples from the pond: The Ecotec technician inserted tubes into the bottom of the ponds to depths varying from 3 inches to 5 ½ feet to get core samples about every 6 feet across the pond, but NFS workers excavated the ponds to a depth of 25 feet. Worker #7 stated that many of the drums that contained the excavated materials from the ponds showed “0” activity because the core samples only measured the contaminants that had leached into the soil at the levels represented by samples instead of the levels with the highest concentration of contaminants in the excavated materials. In other words, the workers present during the excavation were exposed at much higher levels during the excavation than the samples indicated.

Mr. Tomes asked Worker #7 to explain what the totals for uranium-235 and thorium-232 shown at the bottom of the graph for each pond actually represented. Worker #7 stated that the totals, measured in picocuries per cubic centimeter (pCi/cm<sup>3</sup>), indicated the total of all the samples taken in each pond.

Worker #5 stated that she had accompanied the Ecotec technician in the boat to help take some of the samples. She explained that the samples had been taken in accordance with NFS procedure requiring that the samples be taken from 3 inches to 5 ½ feet deep. Worker #5 stated that she had also been present during the excavation, which went much deeper than the samples. She concurred with Worker #7 that the samples did not represent the true levels of contamination at the bottom of the ponds.

Both workers stated that the samples were only tested for uranium-235 and thorium-232, in compliance with NFS procedure. Worker #5 added that she felt that the samples should have been tested for many other contaminants because the workers found “everything” in the ponds. Mr. Tomes stated that the total amount of uranium-235 was likely the radionuclide that the Department of Energy (DOE) was most interested in accounting.

Worker #1 asked Worker #4 to tell about the work he had done in 1969 and also during the clean up period (1980s and later). Worker #4 stated that when the production area was cleaned up in 1969 (before Getty Oil became the site contractor), hundreds of buckets and drums of debris lined the fence at the Scrap Building. The company (W. R. Grace) would only let workers haul the buckets and drums in pickup trucks to the trenches for two hours every day – there were five-gallon buckets and drums that contained pressed filtrate from the Plutonium Building. The containers were taken to the Number Two Trench at the burial grounds. Workers also removed wrapped equipment from the Uranium-233 Building to the burial grounds. A bulldozer operator flattened and covered the items that were put into the trench so another layer could be added.

Worker #4 stated that the bulldozer operator had not been issued a respirator until he had obtained one for the operator. The bulldozer became so contaminated that it took workers two weeks to clean it up. Worker #4 stated that he worked for two to three months (about 80 days) in the yard before he went back to the production area. When the workers finished burying all the material, the pickup truck was so contaminated that it was cut up and buried in the trench.

Worker #1 asked Worker #4 if he recalled seeing “pressed cake.” Worker #4 responded that there had been five-gallon buckets of “pressed cake” from the Scrap Building and probably the Chemical Building as well. The readings were low, but too high to ship out so the buckets had been set out of the way until they could be taken to the trenches.

Worker #3 stated that the whole site was cleaned up in 1969. He recalled that they had placed about 30 drums of drained filtrate behind the Plutonium Facility, which were eventually taken to the trenches. He explained that he had come across one of the drums containing plutonium when he had excavated the trenches in 1998 during D&D. The radiation technician (RT) had made him stop excavating when he saw that the drum was orange (indicating plutonium). The radiation technician had flagged the drum, roped it off, and brought in a special drum to put it in. The workers had also excavated a building that had been placed in the trench, which they had put into 3000-pound bags. The workers had worn Tyvek suits and respirators, but the work was done in the open.

Worker #1 asked Worker #3 to confirm that he had buried the materials in 1969 and dug it up again in 1998. Worker #3 replied, “Yes.” Worker #1 asked Worker #3 if he recalled specifically what materials had been excavated that had come from the Chemical Building (111). Worker #3 responded that there had been thorium and black powder from that building. Worker #4 estimated that approximately 1,000 five-gallon buckets of pressed cake had been sitting in the field (approximately 2 or 3 acres) when it was hauled to the trenches in 1969.

Worker #3 stated that he had been on the paint crew in 1969 when the buildings were being cleaned out. He said that the workers had moved everything away from the walls so they could paint the interior of the buildings, but nothing had been decontaminated before that.

Worker #1 asked Worker #3 if he was aware of anything that had been moved out of the Maintenance Department or any of the other buildings. Worker #3 responded that W.R. Grace had used Gulf Oil products in the Maintenance Department and that those were moved out to the field so the workers could paint before Getty and Shelley came to the plant; those products were not moved back to the Maintenance Department until after Getty Oil left. Worker #3 added that he did not know of any debris that had been removed from that building.

Worker #6 asked why he could only work in the yard for three months and why only ten hours per day. Worker #4 explained that workers had to bid on the yard job for three-month periods during the decommissioning, and were only allowed to work in the yard for two hours in the evenings after working their regular eight-hour shifts.

Worker #1 asked if any of the workers were aware of any of the materials that were moved to the Southwest Trench from the Metals Building or other buildings. Worker #3 stated that some of the W. R. Grace engineers [names redacted] quit and set up a fabrication shop in Johnson City. They built bird cages and other things. Sometime in the 1970s, he brought a crew specifically to dig up a 64-unit nickel tube from the Metals Building and sandblasted it because he had a

customer for it. It had been buried behind the 310 Warehouse. The tubes were about an inch thick and probably 12 to 14 feet long. [Name redacted] was the engineer in charge of the Ceramics Building and had something to do with the plutonium pellet production.

Worker #1 asked Worker #2 to talk about the work that was done in the 1980s and 1990s, and is still going on today. Worker #1 asked specifically about 400, 3000-pound bags of plutonium by-product that had been excavated during D&D. Worker #2 explained that he had worked in 1972 for W. R. Grace in the Plutonium (Pu) Building making plutonium pellets, as well as in the Scrap Building. He described an event that had occurred during an evening shift in the Pu Building when his dosimeter had read so high that he was taken out of the Pu Building for a week. His 3<sup>rd</sup>-shift supervisor had instructed him to go to the Laundry and sleep, so he went to the Laundry and stayed a week. After that, he was sent straight back to the Pu Building. He was not sent to Oak Ridge for a whole body count, nor did he remember giving a urine sample.

Mr. Tomes asked Worker #2 to clarify the time frame. Worker #2 explained that he had been laid off from 1993 to 1998, and then returned to work in 1998 to supervise the D&D project until he retired in 2009. Worker #1 asked him to explain why the company had built the 410 Building. Worker #2 stated that the 410 Building had been built for the D&D work on the site of a reclaimed pond that had been behind the Thorium Building. Worker #2 added that he had worked between the Plutonium and Thorium Buildings, and had seen thorium pellets thrown into the pond.

Worker #3 stated that soil that was removed from the burial ground during D&D was stored in the 410 Building. He had operated the Bobcat that moved the soil to a conveyor system called a “grizzler,” which broke up the clumps of soil and separated out the large rocks before the soil moved up through another screen on the conveyor so the workers could pick out the solid contaminants and pack it into boxes. Worker #2 explained that the contaminated soil was then loaded into 3000-pound bags. He recalled that it was very dusty in the 410 Building during this work. He added that when they stopped using the “grizzler” to separate the soil, it was sometimes piled as high as 25 feet from door-to-door except for a pathway wide enough to drive a dump truck through the building. (The building was as big as a football field.)

Worker #2 explained that the 3,000-pound bags of contaminated soil that had gone through the “grizzler” were taken to the Chemical Building (111), where three, 3,000-pound bags of contaminated soil would be compacted into one “puck” for shipment. (The pucks were loaded into a container for shipment as described earlier.)

Worker #2 used a diagram on the overhead projector to indicate Trench A, where the debris from the Plutonium Building had been buried. He recalled an incident when three workers were contaminated with plutonium after the contaminated soil from Trench A, or the Plutonium Trench, was brought into the 410 Building. Worker #2 stated that he had been the senior supervisor in the building that night and that the building had been shut down. After that incident, they stopped taking soil to be processed in the 410 Building and the separation work was moved outside the fence to a control area outdoors. When the separation work was done, a backhoe operator loaded the 3,000-pound bags with the screened soil at the control line.

Mr. Tomes asked Worker #2 to describe the bags. Worker #2 responded that the outer bags were made of heavy plastic and were 64 cubic feet (4 ft. x 4 ft. x 4 ft.) with handles that were placed over the forks of the fork lift. The bags were marked “Americium” and numbered. Then an inner

liner was dropped inside of the outside sack. The soil was loaded into the inner bag, and each liner was sealed separately. Each bag was limited to 2,800 pounds of soil per bag (measured on the forklift scale). The bags were sealed and then cleaned off, so a RT could survey them. After the bags were surveyed, they were taken to another area where they awaited shipment. Worker #2 stated that he had seen as many as 400 bags of plutonium-contaminated soil accumulate out in the open until they could be shipped to Utah for burial. When it was time to ship the bags, the workers were given a list of the bags that were to go in the shipment. He recalled that sometimes they had to move as many as 50 bags to get to one with the right number on it. At first the shipments went over the road in semi trailers, but later they used intermodal containers. There were two operators in the intermodal to guide the crane operator who was loading the bags. He explained that at first they were instructed to put only 14 bags into an intermodal, but later they were instructed to slit the bags open with hawk-billed knives so they could load 18 bags per container for a total of 50,000 pounds. Worker #2 explained that the soil was dumped from some of the bags and spread out so all of the bags would fit in the container. After the Plutonium Trench was completely excavated, they stopped bagging the soil for shipment.

Worker #1 asked Worker #2 if some loads were “hotter” than others. Worker # 2 responded that there was a limit on the radiation level for each intermodal. The Rad Tech would take readings to make sure the intermodal containers stayed within acceptable levels. At one point, a contractor was hired to bring in clean soil to mix with the bagged contaminated soil to bring the radiation level down so it could be shipped.

Worker #1 asked Worker #2 to talk about a pipe that was so “hot” that it could not be shipped. Worker #2 responded that the pipe had been one of the “64 units” from the Southwest Trench. He showed on a site diagram that the fence for the control area was three feet from the women’s locker room, six feet from the men’s locker room, and another six feet to the break room where they ate their lunches. The bags of plutonium-contaminated soil were placed right outside the fence. The “hot” 64 unit was two 2-feet x 6-feet x 1-1/2 inch flanges bolted together that had been wrapped in plastic and sat in the control area for years. The unit was surveyed periodically and wrapped in plastic again because it was too “hot” to ship. Worker #2 did not recall the unit ever being shipped during his employment.

Mr. Tomes asked how workers were monitored in the control area and burial grounds during the cleanup operations. Worker #2 responded that there were two step-off pads with hand monitors in the control area, as well as hand monitors in the lunchroom.

Mr. Tomes asked if the workers participated in bioassay or dosimetry programs. Worker #2 stated that only one worker was issued a lapel dosimeter for every four to six workers during the cleanup work. Worker #6 stated that only the workers inside the yellow fence were monitored, while those workers just outside of the fence were not counted. Worker #2 said that since he was the supervisor, he was not given a lapel dosimeter.

Worker #2 stated that the workers whose exposures were represented by one dosimeter often were scattered over an area in the Burial Grounds and also in the 410 Building. They excavated approximately 75 five-gallon buckets from the Plutonium Trench. The buckets were bagged and placed about 18 inches apart around the perimeter of the trench. (Workers called this the “Pumpkin Patch.”) He explained that since the buckets were left out in the weather for years, the operators sometimes had to re-bag the buckets. Some of the buckets contained thorium, pressed

cake, and plutonium, and had high readings. The buckets were later sealed in drums and taken to be processed in the Chemical Building. Worker #2 added that the buckets in this area had to be moved frequently so excavation of the Plutonium Trench could continue.

Mr. Tomes asked Worker #2 if uranium, thorium, and plutonium waste were located in separate control areas. Worker #2 stated that they had waded through the trenches and he had seen containers of plutonium and thorium. He explained that he had trained the new operators who were brought in for the D&D work, and they often brought materials for him to identify. Among these materials were one-liter bottles of thorium pellets and thorium powder that had been placed in the Burial Grounds in 1972 when he supervised the initial clean up of the buildings.

Worker #6 asked Worker #2 to talk about the lunchroom. Worker #2 used a diagram of the site to show the proximity of the contaminated areas to the common areas. He explained that the lunchroom was approximately 20 feet from the back fence. The supervisors' trailer was directly across the road from the lunchroom, and beside the 410 Building. He stated that the hand monitors in the lunchroom went off frequently, and would be checked, reset, or replaced. The company finally moved the lunchroom to a different area closer to the fence. After it was moved, they excavated at the former site of the trailer and found that the soil there was highly contaminated with thorium. Mr. Tomes stated that this may have caused the background readings to be higher.

Worker #2 stated that they continued to excavate at the former location of the lunchroom at the corner of the Burial Ground until they had dug at least 25 feet deep to remove all of the thorium waste. When they were finished excavating that location, the company had to buy the excavator from the contractor because it was so contaminated. The company had to buy a second excavator so they could bury the first one.

Worker #3 stated that when they moved the lunchroom trailer, he bulldozed an area where they could set it. Then they put down a sheet of plastic, covered it gravel, and relocated the trailer.

Worker #1 asked Worker #2 to explain the SAM 2. Worker #2 stated that the SAM2 was a meter that was used to take readings on the soil as it was excavated from the trenches. Before it was placed in the dump truck, each half-yard bucket of soil was scanned with the SAM 2, and then a sample of soil from each dump truck was placed in 500-milliliter bottle. If the SAM2 got a high radiation reading, that bucket of soil would be set aside and not taken into the plant. Later, a different SAM2 was used that could identify the type of contamination in the soil – plutonium, thorium, etc. If the SAM2 reading showed high thorium contamination, that bucket of soil was down-blended with clean soil. (Each 10-ton, single-axle dump truck held approximately five to six buckets of contaminated soil, and the 500-milliliter sample taken after all the buckets had been placed in the dump truck.)

Worker #1 asked Worker #2 if he had been involved in the D&D of the Plutonium Building in 2002 when plutonium was found in ductwork (per Worker #5's statement). Worker #2 responded that he had been working outside in the burial ground at the time, but he had heard of the incident.

Worker #1 asked Worker #2 about the contamination in the Southwest Trench, around the 310 Building (the warehouse), and around the railroad tracks in that area. Worker #2 explained that the trench started at the corner of the fence by 310 Building, excavated to approximately 150

yards long by 20 feet wide by 25 feet deep. The soil was removed to the 410 Building by dump trucks after the supervisor surveyed the sample and the reading was acceptable. After the excavation was finished, the workers were instructed to backfill the trench with gravel so the area would not have to be excavated again to avoid re-contamination during the D&D of the 310 Building.

Worker #1 asked Worker #2 if he knew when the 310 warehouse had been built. Worker #2 responded that the building was under construction or had just been completed when he began working 1972. Worker #1 stated – and Worker #2 confirmed – that the Southwest Trench had been started prior to 1972.

Worker #1 asked Worker #3 to describe a contamination incident at a baseball field adjacent to the plant that was used by workers and their families for ballgames and picnics. Worker #3 stated that his supervisor had told him that some high samples had been taken in that area. He was instructed to take four intermodal containers to the field. He and two other workers excavated an area that had been marked off and put the soil into the intermodal units. Worker #3 collected soil samples from the intermodal containers and took them to be analyzed. The next morning, Worker #3 was instructed to fill additional containers until all of the contaminated soil was removed -- 40 containers in total, each containing 50,000 pounds of soil. The containers were taken to the control area and sealed in bags in the same manner as the soil that had been removed from the trenches in the burial ground.

Worker #1 asked Workers 2, 3, and 4 if they recalled working in the earlier years with material from Oak Ridge. Worker #3 stated that workers recovered scrap from Oak Ridge in the 233 Building. Oak Ridge sent one inspector per shift to check sight glasses and take samples. Worker #3 told Mr. Tomes that he had begun working at W. R. Grace in 1960, when the company was under contract with the Atomic Energy Commission (AEC). Worker #1 asked if management had made them aware before the inspectors came in from Oak Ridge. Worker #3 concurred and stated that inspectors stayed two to three months at a time.

Worker #1 asked Worker #3 if he recalled labeling any of the products that went to Oak Ridge. Worker #3 stated that he had labeled thorium metal pellets that were shipped to the K-25 Gaseous Diffusion Plant (circa 1964). Mr. Tomes asked him to describe the product. Worker #3 described the process by which they made 700-pound ingots of thorium and then turned the ingots in the metal shop. The shavings were melted and made into pellets to send to K-25.

Worker #1 asked Worker #3 if he had worked in the 111 Building (Thorium and Chemical Building). Worker #3 stated that he had worked in the 111 Building where thorium oxide pellets were produced. Also in the 111 Building, workers began the production of Soljel, which was finished in Building 301.

Worker #1 asked Worker #3 to talk about the “hot” thorium area where the lunchroom was originally located. Worker #3 replied that he had burned scrap thorium metal powder at the walkway between Buildings 110 and 111. He explained that he had been burned with thorium powder before, so he was especially cautious. He described how he lit a broom so he could stand at arm’s length as the thorium powder ignited. He explained that because thorium powder is highly reactive with oxygen, the powder was put into 5-gallon buckets that were sealed and purged of air until it could be disposed of.

Worker #3 stated that when the 410 Building was built, he watched as the contractors removed 30- gallon drums of thorium at the northwest corner of the building site when they dug the footer. He explained that the contractor had placed cardboard tubes and then filled them with concrete. Mr. Tomes noted that the location was close to where the lunchroom had been located. Worker #3 also stated that he had witnessed workers burning scrap thorium with fuel oil in large trays several times.

Worker #1 commented that burning thorium in this manner had been the job of [name and personal identifying information redacted] until the end of his career. Worker #3 stated that [name redacted] had worked with him in the Chemical Building (111). Worker #4 said that [name redacted] burned scrap thorium every day. Worker #4 stated that it had been his duty to drive the truck that picked up the trash from the buildings and deliver it to the incinerator where [name redacted] burned the trash (circa 1969). Worker #1 added that [name redacted] left the plant in 1970 or 1971.

Worker #4 stated they had a contract in 1972 to run beryllium and beryllium parts from a reactor in Oak Ridge. Workers cut up the metal with a band saw and also ground beryllium pellets into powder before placing it in a dissolving tray. Workers were supposed to wear respirators, but did not always do so. Worker #2 stated that inspectors from Oak Ridge came to watch the process, check the density of the solution in the columns, and weigh the final product in crystal form before it was shipped back to Oak Ridge in 2-liter bottles.

Worker #1 referred to the statement of Worker #5, in which she described an incident in which the 111 Building – previously a clean area – was contaminated with plutonium. Worker #1 asked Worker #5 how much time passed before the company had informed the workers that they had been exposed to plutonium in the 111 Building. Worker #5 explained that the 111 Building is where workers used a compactor to make the pucks of contaminated soil from the 410 building. She stated that the workers who operated the compactor were not told of their exposure to plutonium until at least 24 hours after the incident. Workers wore respirators, Tyvek suits, and gloves when they went in to clean up the plutonium. Worker #5 stated that a crew of five workers from the Plutonium Building went into the building to clean and paint during D&D. She described how they threw many gallons of paint at the walls and on the concrete to seal the contamination and bring down the readings. Worker #1 stated that Building 111 was still closed down in 2007.

Worker #2 stated that when the 111 Building was shut down, the compactor was covered with plastic and a tarpaulin drape was put up around it. The RTs would go into the building to survey and would tell them that there was a “hot spot.” After the surveys, workers would go into the building, spray the walls down with a mixture of glue and water, and then paint the walls until the readings came down. Worker #2 stated that the company poured concrete over the entire floor after the walls were sealed. After that, the building was used as a bay for large equipment (forklifts, etc.) and workers would go into the building to get the equipment. The building was never again used as a production area. It is still considered “hot” and is sitting dormant. Worker #7 stated that the building is kept locked and keys are controlled.

Worker #1 commented that several contractors had worked at the site after 1969 – Powell Construction, J. E. Green Construction, and Getty Oil. Worker #4 stated that he had begun digging trenches in 1969 to bury material from the Ceramics Building (110), where they

processed U-233. He stated that workers had removed a wrapped Micronizer (pulverizer) from the 111 Building and put it in the trench. He was working in another trench when he saw the bulldozer operator covering the Micronizer and went to get him a respirator. The dozer tracks got “hot” and it took two weeks to decontaminate it using oven cleaner. The bulldozer operator was [name and PII redacted]

Worker #1 asked if the workers recalled any equipment contamination incidents when Powell and J.E. Green worked during D&D in later years. Worker #3 stated that J. E. Green was contracted to remove the 410 building after his crew tore out the floor. J. E. Green cut the metal from the 410 building. Nothing was contaminated until J. E. Green tore down the Plutonium Building (233) and the Scrap Building (234).

Worker #2 interjected that he had been told at one point early in the D&D project that the Plutonium and Scrap Buildings would have to be torn down block-by-block and put into drums. On day shift, J. E. Green tore down the buildings. Worker #2 and his crew came in on second shift to load the debris and block into intermodal containers. He stated that several pieces of equipment belonging to NFS had been contaminated during the course of decommissioning and were in the burial grounds. After workers finished removing Buildings 233 and 234, J. E. Green’s excavator was very “hot.” Workers tried unsuccessfully to decontaminate it, and even replaced the tracks, but it was so contaminated that it could not be removed from the plant. NFS had to buy a new excavator for J. E. Green, but the contaminated piece was used in the Burial Ground for the last three or four years of the project.

Worker #1 asked when Powell Construction came into the plant. Worker #3 responded that Powell brought in a crane to remove the 4-story column area in the rear of the Chemical Building (111).

Worker #2 stated that Powell also removed the top of the 3-story 400 Building using torches, brought it to the ground with a crane, and then cut it up and placed it in intermodal containers and boxes. Powell then cut up the siding and put it into containers. After the building was demolished, workers took apart the press that had been used to remove water from the dredged soil from the ponds, wrapped it in plastic, and stored the pieces in the Burial Ground for two or three years before it was removed. The five-foot plates from the press were laid in the bottom of an intermodal container so the debris from the blocks and the rebar would not tear up the bottom of the container.

Worker #1 asked Worker #3 to describe the process of dewatering the sludge from the ponds. Worker #3 explained that the workers used a machine on pontoons that was winched across the ponds. The machine dug up the sludge and pumped it into two 10,000 gallon tanks where the solids were pulverized. Workers added “flock” to the tanks and most of the water was pumped off the sludge and pumped back to the ponds. The rest of the material was sent into the 400 Building where the rest of the water was removed in the press. Worker #5 added that after the sludge went through the press, it was dried, run through an auger to break it up, weighed, dropped and compacted into 55-gallon drums. Since the material was dry at that point, packing the drums was a very dusty operation. If the auger got stuck, workers had to go down inside to remove the clog. They did not wear respirators during this process. Between 1990 and 1993, a total of 7,600 drums of dewatered sludge (650 pounds per drum) were shipped to Barnwell, South Carolina. Worker #3 stated that the 400 Building (STB?) opened in July 1990.

Worker #1 commented that both the 400 Building and the 410 Building (built in 1995 or 1996) were constructed for the latter D&D operations of the W. R. Grace legacy waste. Worker #3 stated that both buildings have been torn down. Worker #2 added that the buildings were sent off for burial by the Powell Company. After the 400 Building was torn down, the dredger was placed in a container and kept in a locked control area inside the plant for many years. In 2008, Powell hauled the dredger to a secure control area in the burial ground. Workers wore full-face respirators and Tyvek suits when they removed the dredger from the container and cut it up in 2008.

Recalling that the lunchroom trailer was situated in a “hot” area, Worker #6 asked the other workers to explain how much time they spent in the trailer. Worker #2 stated that he spent many days in the lunchroom reading procedures during inclement weather because they could not excavate unless the weather was dry.

Worker #1 asked Worker #3 to talk about the X ray machine in the Fabrication Building. Worker #3 stated that the chromium fuel rods for a reactor were produced in the Plutonium Building and brought into the Fabrication Building to be welded. He recalled that the workers had to wear gloves when handling the rods. After the rods were welded, they were x-rayed one-by-one. He did not recall what type of X-ray machine they used, but explained that the rods were placed into the X ray machine through a door. The plenum and pellets inside the rods showed on the X ray films, as did chips and cracks in the rod.

Worker #4 stated that the chromium rods were produced in 1969 for Central Maine Power, a commercial nuclear plant, and lasted for 21 years. The rods were loaded in the Ceramics Building and held plutonium, a thorium spacer, and uranium-233. Workers were shielded with lead bricks except for their hands and faces. Worker #4 stated that he had gotten cancer on his face, possibly from handling the U-233. Workers wore four film badges and a dosimeter, which they had to check every few minutes. Worker #3 added that they could stay on that line for 30 counts and then another worker was rotated in.

Worker #4 commented that in 1969, workers also produced three-foot-long X-ray rods for Westinghouse that contained 3 or 4 % plutonium and thorium, which were also sent over to the Fabrication Building to be cleaned and welded before they were x-rayed. Worker #4 stated that he started working for W. R. Grace in 1968 in the 301 and Chemical Buildings; in 1969, he was sent over to the Ceramics Building, where they loaded the fuel rods and pressed the uranium-233 pellets. The plutonium-233 pellets were brought over from the Plutonium Building in a lead container. The rods were ground and measured with micrometers. Thorium was used for spacers.

Worker #2 commented that workers were still loading pellets into rods when he started working in 1972. He worked the Plutonium Building where he ran the material in the ball mill before it was pressed, then went to the fabrication area to load pellets. When work was slow, he and [name redacted] were sent to the Ceramics Building, where they used an open press to make the thorium pellets that were loaded into the fuel rods. They did not wear respirators when they were working with the thorium pellets.

Worker #3 stated that workers in the Ceramics Building made a large number of pellets that contained a mix of uranium-233 and thorium-233 that was blended together in 20-pound batches. Workers made seed pellets, blanket pellets, and power-flattening pellets.

Worker #1 introduced Worker #7, a radiation technician who worked closely with the company health physics department, reading lapel and air samples and whole body counts. Worker #1 commented that at some point, the company changed their monitoring procedures, moving away from ALARA standards in order to get as much product out as possible.

Worker #7 stated that workers in the 400 and 410 buildings were assigned as many as 12 operators to a single lapel sampler, eventually reducing that to 10 workers, and then to 6 workers. Although these buildings handled materials contaminated with plutonium, uranium and thorium, approximately 80% of the readings were labeled as radon. There were stationary air monitors on I-beams in the four corners of the 410 Building, which were not representative of the work area because they were somewhat shielded from the dust. Approximately 99.9% of those readings were considered to be radon, and if workers' lapel samplers actually showed something else, those readings were discredited. The health physicist had told workers that everything was radon. Worker #7 stated that when he had done smears in the fuel facility when one or two of the air samples went to 25,000 counts and the other samplers had different readings, the health physicist would rope off the area and say that the reading was from radon. Worker #7 stated that he had discussed his concerns with the health physicist and asked how 99% of the readings could be discredited.

Worker #7 explained that the health physicists had claimed that radon contamination had caused the alarms in the 111 Building to go off for several days prior to the plutonium contamination incident in that caused that building to be shut down. Worker #5 responded that the health physicist at that time was [name redacted], not [name redacted]. Worker #7 stated that he applied an 80% deviation factor to the initial lapel readings that he did not apply to the seven-day count. The seven-day count was higher than the initial count so it could not have been radon, since the radon would have decayed over time. No bioassay specimens were collected in the first seven days.

Mr. Tomes commented that he was interested in hearing about monitoring for the workers. Worker #1 stated that he had been a radiation technician on the site at one time. During that period, both the union and the company worked under ALARA. If an area was determined to be "hot," workers were sent for bioassay urinalysis and the area was roped off. If the bioassay reading was high, the workers would be moved out of the building. During the D&D work, the monitoring standards were not as good.

Worker #6 worked in the 410 Building and the burial grounds after she came to work in 2000. She stated that the lapel sampler was usually given to the worker who was not performing the more difficult tasks in the D&D area. (Worker #7 concurred.) Worker #6 stated that this practice continued until she left the D&D area in 2003, but she could not speak about later years. Worker #2 and Worker #5 agreed that the procedure was still the same in later years. Worker #8 provided a statement from a radiation technician who worked until 2006 regarding the insufficient number of lapel samplers on site at that time.

Worker #2 commented that many times, the lapel sampler was assigned to an excavator or bulldozer operator who was somewhat shielded from the exposures that workers got on the ground. Worker #7 stated that all the workers on that lapel sampler would be assigned the same reading, which was not representative of the highest potential exposure. Worker #1 commented

that it was very rare for the person with the lapel sampler to actually have a higher exposure than the other workers.

Worker #1 asked about the air samplers on site during D&D. Workers 6 and 7 stated that there was one air sampler in the lunchroom and none in either the men's or women's locker rooms.

Three of seven air samplers in the 400 Building were located at the filter press, with one located at each of two tanks, one on the platform, and one at the compactor. Worker #7 stated that samples were collected every 8-hour shift and counted with the same 99.9% correction factor. Most high readings were discredited as radon, even when the readings differed greatly.

Worker #1 recounted that there were four air samplers in the corners of the 410 Building, although most of the work was performed in the middle the building where it was drier. The work area was very dusty and workers added lime to the soil to dry it. Workers did not wear respirators. The lapel sampler was issued to one in every four to six workers. The step-off pads were located at the entrance, not where the dirt was being stirred up. At some time after 2003, the lower panels of the building were removed to create a more open area.

Mr. Lewis asked if there was a regular bioassay program during the D&D work. Workers 2 and 6 agreed that urine samples were collected monthly. Mr. Tomes commented that he had seen a lot of bioassay records for uranium, and asked if there was other bioassay monitoring – either routine or by incident – for anything other than uranium.

Worker #1 asked if each department collected urine samples at different times. Worker #5 replied that operators gave samples every two weeks. Worker #8 stated that radiation technicians did not give samples very often. Mr. Tomes asked if the frequency varied by department. Worker #8 responded that frequency was determined by job assignment.

Worker #3 stated that workers had their whole body counts in a mobile unit that the company brought in to a location off the plant site every three months. Prior to that, the mobile unit would park at a truck stop and workers were sent to take showers if their readings were high, sometimes multiple times. He recalled one such time when he decided not to take another shower after a second high reading, and the technician told him the third reading was fine.

Worker #7 stated that two radiation technicians who had been laid off in 1993 went to Oak Ridge to work. The *in vivo* samples taken during their NFS exit exams showed no radioisotopes, but the *in vivo* specimens taken during their entrance exams at Oak Ridge showed plutonium.

Worker #1 asked if anyone recalled an incident in which [name redacted] was hit in the face with plutonium. Worker #3 stated that [name redacted] had been contaminated in the Plutonium Building when two punches came together and broke while making plutonium pellets. [Name redacted] was taken to a medical facility to have the piece removed. He had numerous whole body counts and management told him that if he was still alive, he must be okay. [Name redacted] is now 80 years old and has had numerous cancers.

Worker #1 asked Mr. Tomes if he would like to ask any questions. Mr. Tomes asked if workers were ever asked to give special bioassay samples for radionuclides other than uranium. Worker #3 stated that he had given fecal samples for plutonium two or three times. Worker #4 stated that he had been asked for urine and fecal samples when he cut his finger in the Plutonium Building

in 1998. He refused chelation treatment when it was recommended. He later had to have the area on his finger surgically removed and has had five separate cancers removed from his face.

Worker #1 stated that the high-volume air sample limit was  $2.0 \text{ d}^{-11}$  until the mid-2000s. When samples reached the limit, workers were required to wear full-face respirators. After that, the company raised the limit to  $7.5 \text{ d}^{-11}$ . [Name redacted] told workers that the company was raising the limit to the international standard because NFS was trying to attract business from foreign companies. Mr. Tomes offered that the standards used to calculate dose changed around that time. Worker #8 commented that when the  $2.0 \text{ d}^{-11}$  limit was maintained, radiation technicians had to fill out investigation sheets to report the incident and workers would be sent to give urine samples. She did not recall ever filing an investigation sheet since the level was raised to  $7.5 \text{ d}^{-11}$ .

Mr. Lewis asked if the workers are required to have regular medical X rays. He explained that the Medical Dose section of the site profile gives credit for medical X rays that are required as a condition of employment. After some discussion, the attendees agreed that X rays are done annually at the hospital in Erwin, but after age 40, workers have X rays every other year. Worker #7 stated that annual X rays are available, but workers are not required to get them. Worker #1 asked Mr. Tomes if he had any questions about the material that the workers had presented. Mr. Tomes stated that he understood the operation better and would review the meeting minutes when they became available.

Mr. Lewis explained that NIOSH is able to conduct classified interviews if necessary. He also stated that NIOSH would submit a copy of the draft minutes for the union to review.

Worker #1 stated that the union wanted to present additional documents to NIOSH to show the AEC/DOE connection to the D&D work that has continued at Nuclear Fuel Services since the W. R. Grace contract with DOE ended in 1970. Worker #1 stated that he hoped that the material presented during the discussion made it clear that the waste recovered during the D&D of the Southwest Trench and other areas up through at least the mid-1990s and possibly later was connected to the AEC/DOE work. He added that the union will continue to search for documentation that can be passed along to NIOSH.

Worker #1 stated that Mr. Tomes had raised a valid issue about the bioassay urinalysis – if the company was only checking for uranium, perhaps the internal exposures to plutonium, thorium, and other radionuclides were not recognized. He noted that the whole body counts certainly had not shown plutonium exposures. Mr. Tomes stated that was the reason the SEC class had been added for thorium exposures.

Worker #1 reiterated the union's concern that NIOSH had not prepared a PEP or a PER for the W. R. Grace/NFS site. He stated that he understood that a document that had been prepared for another site was used instead. He asked how a PEP or a PER for another site could be used in a dose reconstruction for a worker from their site. Mr. Tomes stated that he works with the dose reconstruction process at NIOSH. He explained that PERs are developed when the site profiles are revised and the new information changes the amount of dose that may be assigned to a worker. When this happens, the PER is developed and any claims that may possibly be affected are returned from DOL to NIOSH for another dose reconstruction.

Ms. Ellison stated that the site profiles are "living documents." When a site profile is revised

with information that may positively impact claimants' dose reconstructions, NIOSH reviews the completed cases and determines whether the information may make the case compensable.

Worker #1 commented that those explanations helped him understand better how the PEP and PER documents are used. He asked if the new information presented by the workers might possibly show cause for a PER for W. R. Grace/ NFS. Mr. Tomes responded that there are actually two reasons that NIOSH may reconstruct workers' doses a second time: (1) information in a site profile revision causes an increase in the amount of assigned dose and NIOSH writes a PER requesting DOL to return the affected claims; or (2) if the technical bases for the way doses are calculated are changed, NIOSH may issue a PER that can cover multiple sites. Mr. Tomes noted that NIOSH has made many changes to the way dose reconstructions are conducted as new information is discovered.

Ms. Ellison asked the workers whether they expected NIOSH to use the information they were providing for site profile revisions or for an additional SEC class. Worker #1 responded that they hoped the information might be used to extend the period of the current SEC class. Ms. Ellison stated that for that to occur, someone would need to file another SEC petition for the additional time frame. Worker #1 stated that they would like to see the class definition changed to include all workers for the entire operating and residual contamination periods. He added that they would also like to see the dose factor for the residual contamination period increased after the second year of exposure (currently 0.0007).

Worker #1 stated that three of the workers were attending this meeting to give information that they hoped would help in the dose reconstructions for other workers. He explained that those three workers could speak for at least 100 total working years between them. Worker #1 stated that any of these workers would be happy to give additional information at a later date if Mr. Tomes needed to contact them.

Worker #2 asked if claimants who had been compensated could file again for additional cancers. Ms. Ellison stated that they could file for additional medical benefits, but not additional compensation.

Worker #1 stated that he had heard from some claimants that they had received additional funds for Part E. Ms. Ellison commented that DOL, not NIOSH, handles Part E claims for exposure to toxic materials.

Worker #5 expressed her frustration that some of her coworkers had been compensated for skin cancer, while her claim for multiple myeloma had been denied. Mr. Tomes explained that the probability of causation for each different type of cancer is calculated differently due to way that different organs respond to radiation. For example, if a worker breathes in plutonium, his lungs will be exposed to a higher radiation dose than his skin. Each case is handled differently based on the unique information for each worker. Worker #5 commented that it just does not make sense that a case for a worker with a curable cancer would be compensated before a case for a worker with an incurable cancer. Worker #1 added that Worker #5 was one of three workers performing the same work in the reclamation of the ponds who had been diagnosed with multiple myeloma in a short time. He stated that Worker #5's case has been appealed for a second review.

Mr. Tomes explained that when a dose reconstruction is done for a case of multiple myeloma, NIOSH looks at the dose to the red bone marrow; the dose is then put into risk models to

determine the probability that the cancer was caused by occupational exposure. Mr. Tomes stated that compensation is determined by this two-step process of dose reconstruction and the calculation of the probability of causation. He added that NIOSH conducts worker outreach meetings to seek additional information that can help them understand how to do dose reconstructions more accurately.

Worker #8 asked how long it takes for NIOSH to get the worker's information from the employer. Ms. Ellison explained that the claimant can file a request for the information under the Freedom of Information Act (FOIA). The length of time before the claimant receives the information may vary, depending on whether or not the material has to be cleared by the NIOSH FOIA officer before it can be released. Worker #5 stated that she had made her FOIA request by registered letter, but had not yet received a response. Ms. Ellison offered to check on the request and contact her about its status.

Worker #1 stated that one of the documents presented during the meeting may help NIOSH understand that the company had a contract with DOE as late as 1998. He added that he would submit additional information when the union was able to locate it.

Mr. Lewis thanked the attendees for coming to the meeting to offer NIOSH information about their job experiences. Worker #1 thanked the NIOSH team for coming to hear what the workers had to say. Mr. Tomes expressed his appreciation to the attendees that their information had been so well organized.

Worker #1 adjourned the meeting at approximately 2:30 p.m.