



NIOSH Dose Reconstruction Project Review Meeting for the Brookhaven National Laboratory Site Profile

Meeting Date:

September 25, 2006, 2:30 p.m.

Meeting with:

Executive Board, International Brotherhood of Electrical Workers (IBEW) Local 2230, Coram, New York

Attendees:

Name	Organization
Joseph Buscemi, President	International Brotherhood of Electrical Workers (IBEW) Local 2230
Kevin Yachnik	IBEW Local 2230
Jack Kenny	IBEW Local 2230
Phil Pizzo	IBEW Local 2230
Carl McKeever	IBEW Local 2230
Frank Raynor, Jr.	IBEW Local 2230

NIOSH/ORAU Team:

Melton "Mel" Chew, Site Profile Team Leader

Mark Lewis, Union Outreach Specialist

Mary Elliott, Technical Writer,

Proceedings:

Mark Lewis opened the meeting at approximately 2:30 p.m. He thanked the Board members for taking the time to meet with the Worker Outreach Team from the National Institute for Occupational Safety and Health (NIOSH) Dose Reconstruction Project. Mr. Lewis introduced Mel Chew, the Site Profile Team Leader for the Brookhaven National Laboratory, and Mary Elliott, who produces minutes of the Worker Outreach meetings. Mr. Lewis asked that the Board members introduce themselves.

Mr. Lewis requested permission to record the meeting, explaining that the recording helps Ms. Elliott to accurately capture the questions and comments from the meeting. He circulated a sign-in sheet so that the names of the attendees could be included in the minutes. The minutes are sent to NIOSH for publication on its Web site after the union has had a chance to review them.

Mr. Lewis stated that the Energy Employees Occupational Illness Compensation Program Act (EEOICPA) came about as the result of a concerted grassroots effort by union workers who sought acknowledgment from the federal government that workers' health was being compromised by their occupational radiation exposures while working at Department of Energy (DOE) nuclear weapons and energy research sites. After many years of organized effort, legislation was finally passed that gave the workers compensation and, in some cases, medical benefits. He explained that even now, almost six years after the passage of EEOICPA, many potential claimants are still unaware that the legislation exists. Part of the Worker Outreach



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Team's mission is to provide basic information about the law, but the Department of Labor (DOL) Resource Centers are tasked with assisting people who need to file claims.

Mr. Lewis stated that the Team was present to discuss the Brookhaven Site Profile and to get comments and information from the workers from the site. The Site Profile is a tool used to help in reconstructing radiation doses for current and former Brookhaven workers who file EEOICPA claims, or whose survivors file claims.

Mr. Lewis briefly discussed the information in the handout folders. He reviewed a sheet containing information about the DOL Resource Center in Amherst, New York that handles EEOICPA claims for workers from the Brookhaven site. More information can be found on the NIOSH Web site: <http://www.cdc.gov/niosh/ocas>, including the Act and the Brookhaven Site Profile.

Mr. Lewis described his background as a union worker within the nuclear weapons complex. He served as his local union's health and safety officer, which prompted his involvement in the union effort for the passage of the EEOICPA. These experiences led to his current position as the Union Outreach Specialist on the NIOSH Dose Reconstruction Project, serving as a liaison between organized labor and the teams who write the site profiles and perform EEOICPA radiation dose reconstructions.

Question:

Is there any recourse for workers who are already deceased? One of our officers died recently from cancer.

Mark Lewis:

Yes. Survivors of deceased workers can file claims.

Question:

What about years ago when they didn't require us to wear TLDs (thermoluminescent dosimeters) in the radiation areas?

Mark Lewis:

Mr. Chew will address that comment during his discussion of the Site Profile.

Comment:

We get annual reports on our dosimetry, but we don't think they are accurate.

Mark Lewis:

Is that because of "zero" readings? Mr. Chew will address that issue, too. "Zero" readings are replaced during dose reconstruction by a formula based on the minimum detection level (MDL) of the dosimeter.

Response (from commenter):

Excellent – that is good to know.

Mr. Lewis expressed an interest in having the Team meet with a larger group to discuss the importance of worker input to the Brookhaven Site Profile. He explained that worker input is very important because much of the information included in a Site Profile comes from the "official" records of DOE and its contractors. Ideally, this is done by reaching out to the workers – the true "site experts" – to include their perspectives on actual daily work procedures, safety



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programs, and incidents or accidents affecting a large worker population. The Brookhaven Site Profile is a “living document,” which means that it can be revised at any time that new information becomes available that may affect the outcome of the dose reconstructions for claimants from that site. If the Site Profile is revised, any previously denied claims for which the calculated dose could be increased because of the revision will be reworked.

Question:

This brochure in the packet [referring to [NIOSH Fact Sheet on Special Exposure Cohort \(SEC\)](#)] says that “the energy employee must have developed one of the 22 eligible cancers.” If you don’t have one of these cancers, what happens?

Mark Lewis:

That list is for cancers that are automatically compensable for employees who are part of a class in the Special Exposure Cohort (SEC). If you are a member of that class and you do not have one of the 22 specific cancers, your claim will still require dose reconstruction. But under Part B of EEOICPA, any eligible worker can file a claim for any cancer and a dose reconstruction will be performed.

Question:

Is that saying that you won’t need a dose reconstruction if you worked at one of these DOE plants and end up with one of these cancers that are presumed to be radiation related?

Mel Chew:

The National Academy of Science has determined that the cancers on that list are potentially radiation-induced. They have conducted many studies regarding the levels of radiation that could likely cause cancer in a given organ. The answer to your question is yes, that is correct if you are an eligible member of an SEC class.

Comment:

I’m asking because one of our E-Board members had cancer and recently passed away. He worked up at AGS for years and other areas. His wife has some type of action against the Laboratory right now.

Mel Chew:

That is independent of EEOICPA. She should contact the Resource Center and start this process by filing a claim.

Comment:

That kind of lawsuit has been filed against the Laboratory before, but nothing really ever happens with them. At least that is what she’s been told.

Question:

Our friend (*name withheld*) had lung cancer. What happens when they find out that he smoked for 35 years? Do they throw out his claim or is there a way to separate the risk of his smoking from the risk of his work around radiation?

Mel Chew:

NIOSH has a process to look at the radiation doses and also what is considered the normal incident cancer rates for lung cancer. Many factors are considered in the dose reconstruction process. They do not discount a claim because the worker was a smoker.



Question:

About five years ago or maybe more, DOE did a study on occupational illnesses at the Lab – when there was that groundwater event. Are you familiar with that at all?

Mel Chew:

Yes, we saw that report. There was some tritium that they were concerned about.

Response:

That's right. They did a report on the workers' health and safety. Are you aware of that?

Mel Chew:

All of that is public record. We try to look at every available document that has information about dose reconstruction, exposure, and incidents or accidents so we can factor that into the Site Profile. Not everything is in there because there is a lot of information about Brookhaven. We were trying to compile enough information so we can do dose reconstructions.

Question:

(Name withheld) and I both worked the same job. We've been at Brookhaven about 35 years. The first 20 years, we worked in the radiation areas where the reactors were. Film badges and dosimeters were something that, if you remembered, you took them. If you didn't, you didn't. The last 15 years, I've been out of the radiation areas. How do they verify that you were exposed to radiation when wearing your dosimeter every day really wasn't a requirement?

Comment:

I used to work up in AGS (Alternating Gradient Synchrotron) and we used to go in when the ring was running. There were a lot of these vacuum pumps that we had to charge up. We had film badges, but we also had these pencil dosimeters. Every day, we recorded our doses in milliroentgens (mR) from the pencil dosimeters in a log book for the health physicist (HP).

Sometimes the dose would be 400 or 500 mR. At the end of the year, they would have a survey of our dose and it wouldn't reflect our exposure. The way they did this seemed like such a joke for the simple reason that we knew what kind of doses we got on a daily basis.

My cancer was diagnosed at the end of August 1996. I don't know whether it was related to the job or not. One of the questions I asked the occupational doctor at Memorial Sloan-Kettering Cancer Center was, "When did I contract this cancer?" He said, "You contracted it in February." I had an occupational physical a few months before that (in May) and it wasn't detected then. I had surgery to remove the cancer and went through chemo and everything else.

Sloan-Kettering did an X ray in September 1996 and another one in December or January and asked me what kind of work I do. I told them that I'm an air conditioning/refrigeration engineer and that I work in a lot of engine rooms. The doctors there pointed out that my lungs were clean in a matter of three or four months because I wasn't working in those places. I don't know if that means anything – if my cancer is related to my job. I do know that we kept a record of our daily radiation doses, but we don't know how accurate they were.

Two years later I went for another occupational physical and told them that I had had cancer in 1996. At that time, the present occupational doctor said that my medical records actually showed that there was a difference in my white blood count in the May 1996 occupational physical. They hadn't followed up or even told me that anything was wrong.



Mel Chew:

There is no question that we need to take a look at some of the things that you are telling me. We hear a lot of comments about the reliability of the dosimetry records in the early years. We spent a lot of time searching for radiation dose records for monitored construction workers from the early years of the DOE nuclear weapons programs so that we could try to reconstruct some of their exposures. During the early years, there were many construction workers on many projects. The reactors at Hanford, Rocky Flats, Oak Ridge and Brookhaven were all started at about the same time – there were a lot of things going on. One of the approaches that we can take is to look at monitored workers who may have done work similar to yours. There are probably exposure records for you from the times when you were monitored. But for the periods when there are no dose records for you, the dose reconstructor would do a co-worker study to look at people with similar jobs to do a distribution of the doses – a statistical analysis – to look at the highest level of exposure you may have received. Using a co-worker study can give a reasonably conservative estimate increased by a factor to make sure that the dose assigned for the unmonitored period is favorable to the claimant.

Film badges were probably the most reliable dosimeters because they were well calibrated and there have been many studies on them over a long period of time. The film badge was used for a week or a month – maybe more – before the film was developed. By contrast, pencil dosimeters are fairly crude instruments, probably the least accurate of all the dosimeters. If you drop them, they are likely to discharge and give a false reading, most likely on the high side. If your pencil dosimeter had a high reading, the health physicist may have said “Let’s pull your badge and develop it right now because your pencil dosimeter showed a high dose.” It is good that you recorded the pencil dosimeter reading every day because there is a limit that those dosimeters can record every day that is probably well bounded by what would show up on your film badge. If we see that there is information missing from your dose record, we assign a dose that is fairly conservative so that your dose for that particular period can be reconstructed.

Comment:

The other problem that we used to have is that we used to go to different radiation sites. Different areas had different kinds of radiation. In our field, we’re all over the site – not in any one particular area. I was assigned to the accelerator area for a couple of years, but prior to that and after that I worked at the HFBR (High Flux Beam Reactor). I understand what you said about using information from a monitored co-worker to figure the radiation dose for an unmonitored worker.

Mel Chew:

For that very reason, it is very difficult to do dose reconstruction for construction workers. It is much easier to do a dose reconstruction on a worker who works in the same lab for 30 years. When we reconstruct a construction worker’s EEOICPA radiation dose, we try to pull whatever information we can. The DOE dose records probably describe your job and what departments you worked in. Then the Oak Ridge Associated Universities (ORAU) Team has a phone interview with you and you have the opportunity to tell where you worked and other personal information. If there is no dose information for you, the dose reconstructors will probably take the highest recorded dose for that area and assign that dose for the entire time that you worked there. Every effort is made to make the process favorable to the claimant.



Mark Lewis:

Mel is talking about the CATI (Computer Assisted Telephone Interview) that is conducted before the dose reconstruction starts. During this interview, the worker or the survivor is asked a series of questions and is given the opportunity to talk about where they worked and if they were involved in any incidents or accidents – things that may not affect the Site Profile, but would definitely affect your claim.

Question:

If you file a claim under this (EEOICPA), does that preclude you from filing private lawsuits?

Mark Lewis:

Yes, it does. Before DOL will release the compensation for a particular case, the claimant(s) must fill out a waiver that states that no parties involved presently or in the future will file any suit(s) pertaining to the illness against the site contractor or DOE.

Question:

If you file a claim, are there any repercussions from the Laboratory itself?

Mark Lewis:

I can't answer that question, but I know that is a concern shared by workers across the nation. Because EEOICPA is a federal law, the United States government is the willing payer for the claims. The Laboratory does not fund any of the compensation. Certainly, there shouldn't be any repercussion, but I can't speak for the Lab.

Mel Chew:

That is a valid concern. What Mark said is correct. You have to remember that many company people are claimants, too. More claims have been made by workers from the sites than by construction workers.

Mark Lewis:

I haven't seen any repercussions from my site because there is a willing payer.

Mr. Chew referred to Mr. Lewis' comment regarding a meeting with the union's general membership. A Board member noted that attendance for the general membership meetings is not very high.

Mr. Lewis stated that his job is to serve as a liaison between labor unions and NIOSH to help workers become familiar with EEOICPA and the Site Profiles. He asked the union leadership to consider the value of reaching a larger group of workers.

A Board member responded that he would be happy to include information on EEOICPA in the local union's newsletter. The membership could respond directly to Mr. Lewis to voice interest in an additional meeting or to give input for the Site Profile.

Mr. Chew stated that the initial contact that the Worker Outreach Team has with a local union's leadership is sometimes the first time that they ever hear about EEOICPA. A Board member concurred that he had never heard of the Act before he received a letter from the Building Trades.

Question:

Is this compensation just for radiation?

Mel Chew:

There are two parts to this law, but we are only here to talk about the radiogenic cancers that are



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compensable under Part B. The Brookhaven Site Profile is used to reconstruct EEOICPA radiation doses for claimants from this site.

Comment:

I am friends with a retiree that got information about the program from his previous union. I understand that one part of it is for hearing and other health problems.

Mark Lewis:

Problems related to other toxic exposures are covered by Subtitle E. We are only here to talk about Subtitle B.

Comment:

The retired people are the ones that we should be contacting on this.

Mark Lewis:

You are right. We have met with retiree groups before. We are here to get information for the Site Profile. The DOL Resource Center is charged with assisting workers with filing claims.

Mr. Chew began the presentation by explaining that employees or former employees who worked for facilities or companies under contract with DOE or its predecessors can file claims with the DOL for \$150,000 and reimbursement of eligible medical expenses for cancers, beryllium disease, and some silicosis cases. Another part of the law covers illnesses resulting from toxic chemical exposure in the workplace and is administered solely by DOL. Surviving spouses or children may also file a claim on the worker's behalf if the worker is deceased.

When a claim is filed, the DOL verifies the worker's employment and medical diagnosis. The DOL forwards cancer claims requiring radiation dose reconstruction to the NIOSH Office of Compensation Analysis and Support (OCAS). NIOSH has contracted with the Oak Ridge Associated Universities (ORAU) Team to assist with the dose reconstructions and other associated tasks, including Site Profile development.

The Site Profile Team first came to Brookhaven National Laboratory (BNL) in January 2006 to gather information for the Site Profile. The Team examined records, visited some of the sites, and talked to people who were responsible for the safety and radiation programs. They reviewed this information to get an idea of the operations at BNL and to understand the potential radiation exposures to the workers. Since "official" records are the basis for the Site Profile documents, the Team needs input from workers to "fill in the gaps."

Question:

When you came out to do the Site Profile, where did you get your input?

Mel Chew:

We met primarily with the records people. The Laboratory allowed us access to all the records that we asked for and we scanned many of them to use in the development of the Site Profile.

Response:

My problem with that is that a lot of things that happened did not get documented. A lot of exposures that happened didn't get documented.

Mel Chew:

That is a very valid observation from your standpoint. Brookhaven is a very scientific community. Their scientific activity is well documented.



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Response:

But that is the science, the flipside of that is that their reactors were shut down because of their noncompliance with the safety regulations – the contaminated groundwater, the employee exposures. Your documentation – from my perspective – is, at best, maybe 50% accurate.

Mark Lewis:

Do you mean because there is no labor input? That is why we want you to review the Site Profile. We are here to ask you if it accurately reflects your experiences at the site.

Comment:

Once, after I had worked in a particular area for seven hours rebuilding a fan housing, an HP came around and asked me what I was doing in there. After I told him how long I had been working in there, he told me that I shouldn't be in that area for more than 15 minutes a day. I didn't have a film badge or anything. Nobody told me that I needed to have anything like that to go in there. That type of incident was very commonplace, so there was no documentation on any of that.

Mel Chew:

That information would be useful if you were to file a claim. You would have the opportunity to tell about that kind of thing as your claim is being processed. It would be considered by the dose reconstructor working on your claim along with the more general information in the Site Profile – things like where you worked and the sources and types of radiation in those areas. If there are several claims that need more information for dose reconstruction, the Site Profile Team may be directed to look at that issue to include more information in the Site Profile. The Site Profile is a “living document.” We are here to put this document before you and hear what you have to say about it.

If you filed a claim and told them what you have just told me, the dose reconstructors may look at your claim several different ways to give the most favorable outcome. If they could not find a reasonable way to determine your potential radiation dose, they might recommend that your case be considered for a Special Exposure Cohort. During the dose reconstruction process, every effort is made to be favorable to the claimant.

Mr. Chew stated that his work in the nuclear complex had given him an appreciation for the contributions of construction workers to the success of the DOE weapons programs. His work at Lawrence Livermore National Laboratory often took him to the Nevada Test Site (NTS) where a lot of the work was done by workers from the construction trades. He was present at NTS for both underground and above ground testing. He described going into the mines with the MSA packs and working side-by-side with drillers as they took samples.

Mr. Chew continued the presentation: The NIOSH/ORAU Team uses an accepted scientific method to estimate the amount of radiation the worker received while doing DOE work. The Team begins the dose reconstruction process with a telephone interview with the claimant to gather the worker's personal information and work history. The dose reconstructor enters the information from the interview and any available dose records for the worker into a computer program to calculate the probability of causation (POC) for the worker's specific cancer. The computer program is based on scientifically determined values for the amounts of radiation exposure that may result in cancer to specific organs. If the program determines that the worker's occupational radiation dose is at least “as likely as not” (greater than 50% POC) to have caused



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the cancer, the claim will be recommended for compensation. Claims with a POC of less than 50% will not be recommended for compensation. Based on radiation doses of monitored workers, scientific distributions are calculated and taken to the 95th percentile to assign a reasonable dose to unmonitored workers.

Mr. Lewis stated that NIOSH holds Dose Reconstruction Workshops periodically to help union workers understand the dose reconstruction process, as well as other aspects of EEOICPA.

During the dose reconstruction process, the individual worker's information is considered – dosimeter readings, medical X-rays, urinalysis records, incident reports, coworker data, exposure records, and personal accounts from the worker interview. The Site Profile is used to supplement the worker's information with information about the site, the work processes used, the potential sources of radiation, the types of radioactive materials used, and other details that would affect the worker's radiation dose.

The Brookhaven Site Profile provides site-specific, technical information that can be used in the dose reconstruction process. Worker input is critical. The Site Profile can be revised as new information becomes available that may affect dose reconstruction. If the Site Profile is revised, previously denied claims may be re-evaluated. A claim that was denied initially may also be re-evaluated if the claimant reports additional cancer(s). The DOL makes the final determination on the compensability of the claim.

The BNL Site Profile has five sections: the Site Description, Medical Dose, Environmental Dose, Internal Dose and External Dose.

The EEOICPA radiation dose differs from the occupational doses kept by DOE and its contractors for the internal and external exposures to workers who were monitored for radiation exposure. The EEOICPA radiation dose has four main components: external dose, internal dose, medical dose and environmental dose. EEOICPA includes the occupational medical and environmental doses to consider radiation exposures from employer-required X-rays and environmental sources of radiation such as waste pits and storage areas.

The Site Description includes historical information about the buildings and the activities at the Brookhaven facilities beginning in 1947. The major nuclear research facilities are shown in Table 2-1, including the Graphite Research Reactor, the High Flux Beam Reactor, and the Medical Research Reactor. Mr. Chew asked the Board Members to review the facilities list to verify its accuracy.

Comment:

I have worked at every one of them.

Mel Chew:

What a wonderful experience to work at Brookhaven. There have been many different types of research projects here.

Question:

Is there anything in there about the Star Wars Program in the Site Description?

Mel Chew:

Yes, it is in there. If you know of any building in which there was radioactive material that is not listed here, please let me know because that is how the dose reconstructors do their work.

Comment:



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RHIC (Relativistic Heavy Ion Collider) was called a lot of other things before it was the Heavy Ion Collider. First it was Isabelle. Then it became the Collider Beam Accelerator, and then RHIC. It's all the same area. Now it's CAD.

Mel Chew:

Was Isabelle the project name, but the facility was called the Heavy Ion Collider?

Response:

No. Isabelle was the first project. When it was scrapped, RHIC replaced it. Then RHIC was scrapped, and now it is CAD (Collider Accelerator).

Response (from another Board Member):

Yes, but it never ran.

Mark Lewis:

Did any of those projects have any radiation?

Response:

I don't think that Isabelle did. I think RHIC did.

Response (from another Board Member):

Isabel might have. What about the mini-ring that they had over in 911 and the one over in 902?

Response:

That is the Cosmotron. That is how they came up with the whole concept.

Mel Chew:

The Site Description (Section 2) is the largest section of the Site Profile. It is important that you take a look at what we have here and let us know if it is accurate. If there are other names for some of these buildings, we need to know. If you can help us cross-reference some of the project names with the buildings, it could help the dose reconstructors with someone's claim. Some of the claimants may refer to where they worked by a project name rather than a building number. You may know it by the building numbers – 102, 104, 104A, 104B... and it should say 'Isabelle' prior to that.

Response:

You have it listed as RHIC. Actually, there are more buildings than that.

Mel Chew:

Yes. Buildings 105, 105S, 106, 106A, 107, 108, 108A, 110 and 112 are also part of RHIC.

Response:

Yes, that is correct. That is the big circle on the map.

Question:

What about the little ring that we used to have, before it even went there?

Question:

What about the machine shop that only did hot work?

Mel Chew:

That is in here. We have the Hot Machine Shop listed as Building 530, 1947 to 1975.

Response:

I don't even know where Building 530 is. Building 462 was the Hot Machine Shop, right up until 1997 or 1998 when they closed it down.



Mel Chew:

It is very important that we know this kind of thing. If you see any other errors, please let us know. This is why worker input is so very important. If you know of any other buildings or locations where there was radiation and they are not on this list, it would be very valuable information for us to know.

Question:

How about the storage area right next to Science (Department of Applied Science, also known as the Target Processing Laboratory or Hot Laboratory)?

Mr. Chew continued: Many radionuclides were present at Brookhaven over time, including cesium, ruthenium and primarily cobalt-60. Major incidents are shown in Table 2-4.

The Medical Dose section describes the radiation dose received from medical X-rays that were required as a condition of employment, as well as the frequency and types of X-rays that were regularly required, and how the equipment and medical program changed over time.

Question:

We have a physical every year, or every 18 months. If they find something on your X-rays and send you somewhere offsite for more X-rays, would that be included in your medical dose?

Mark Lewis:

That is a good question. I am really not sure whether that would be included.

Response:

That happens quite often. They found traces of blood in my urine, so I had to go for a GI series.

Response (from another Board Member):

A lot of workers' X-rays show spots on their lungs and the occupational doctors send them out to their own doctors for follow-up. Then it turns out that there are spots on the X-ray machine that was used in the occupational physical, so there was additional unnecessary exposure.

Mel Chew:

That is a very good question. This dose is included for the radiation that you receive during your physical because it is part of your occupation. If you had some illness that was indicated by the X-ray, that is not necessary related to your work.

Response:

How are we supposed to know if it was or wasn't?

Mel Chew:

What you are asking, then, is if the X-ray detected an illness that was potentially related to work and required follow-up X-rays, would those count as part of your occupational medical dose? If your work was responsible for the condition, I think that it would probably be part of your medical record. That may be something we should look into and get back with you.

Mark Lewis:

I can look into that. I have never had anyone ask that question before.

Mr. Chew continued: Environmental Dose is included for workers who were not monitored. This section details the sources of environmental radiation in the workplace. For example, a worker may not have worked directly in one of the radiation areas, but could have worked outside in the areas near the ventilation stacks. The external environmental dose from 1947 to 1961 is based on retrospective reports, but was measured from 1962 to 1966 and is assumed to be 100 rems per year from 1967 to the present. The internal environmental dose is based on an annual inhalation



rate in becquerels per year (Bq/y) from 1950 to present for 26 radionuclides in air (Table 4-2). No ingestion dose is indicated.

Comment:

That is true. We worked on the roof units right next to the stacks and didn't wear badges in the early days.

Response (from another Board member):

As I said before, the documentation is 50%, at best.

Question:

What does that whole body counter do? Can it detect your lifetime exposure? Could a worker have a whole body count to see what has accumulated in his body over the years?

Mel Chew:

The whole body counter is primarily for looking at internal exposures. For instance, if one of the reactors released a certain amount of cesium or ruthenium and you breathed it, it will stay in your lungs for a certain amount of time. When you have a whole body count, it would detect the radiation in your lungs or other organs based on the half-life of the particular radionuclide. Most of the lung counts have been set up for people who work with plutonium or thorium or even uranium. Depending on the solubility of the material, the radiation moves through your body differently. More soluble materials move through the body very quickly. Less soluble materials will stay in the body longer. That is the key thing about a whole body counter. Usually, they are looking for insoluble particles inside the lungs. For example, those of you who worked in the reactors might have gone in to grind something and maybe your respirator didn't work or you didn't have one. That is induced radiation. The material is "hot" and when you grind it, you're releasing the particles. If you breathe that in, it would show up in a whole body count.

Response:

But they don't automatically do that.

Mel Chew:

No, they don't. Usually, it's done periodically or when there is an incident.

Response:

So in the case of these guys, where it's long term, the material is probably out of their bodies already.

Mel Chew:

That is correct in most cases, depending on the isotope.

Comment:

I can remember – back in my early days – being sent up on a roof to change a HEPA filter off the Radiation Lab with a Scott air pack. I had never used a Scott air pack before – hadn't been trained to use one. Halfway through changing the filter, I ran out of air and had to take off the mask. But nothing like that is ever documented – and there I was, finishing the job without the respirator. I don't know that I was exposed to anything, but that is something that is in the back of mind. At least three of the people that I worked with have died of cancer.

Comment:

We didn't have protection when we worked at the graphite reactor years ago either. They even used to give tours to school children.



Response (from another Board member):

I was one of those school kids who took a tour way back when.

The Internal Dose section describes the types of routine monitoring that took place over time, including urinalysis, whole body counting and thyroid counting. Detection limits for urinalysis and whole body counting for many radionuclides are shown over time in Table 5-3. Table 5-5 is included to describe radionuclides by solubility type, fraction activity, and particle size.

Workplace data are also summarized.

The External Dose section describes the dosimetry programs that monitored for beta, photon (gamma) and neutron radiation that came from radiation sources outside the body. Data are available for the period from 1954 to the present. Dosimeter technology during a worker's period of employment and badge exchange frequency are also considered, as are the Minimum Detectable Levels (MDLs). In an effort to be claimant-favorable in the dose reconstructions, NIOSH applies a "missed dose" component to compensate for dosimeter readings that were reported as "zero." The "missed dose" is calculated using one-half of the MDL. Co-worker information can also help the dose reconstructor to estimate the missed dose for an unbadged worker.

Mr. Chew concluded the presentation by stressing the importance of worker input in the development of the Site Profile. He emphasized that the Site Profile is a "living document" that can be changed based on worker input. He encouraged the attendees to consider other sources of information that could make the Site Profile a more comprehensive and accurate document for reconstructing dose for Brookhaven claimants. Information that might contribute to Site Profile revisions should be sent directly to NIOSH by mail or e-mail at the addresses in the presentation, or by fax at the number provided.

Question:

What part of the handout packet do you think I should give to a survivor who may want to file a claim?

Mark Lewis:

The most important thing for any potential claimant is probably the contact information for the DOL Resource Center. The survivor should call that number and speak to them about filing a claim. They can answer her questions and begin the claims process while they have her on the phone.

Question (to Mark Lewis):

How did you get involved in this?

Mark Lewis:

The Advisory Board on Radiation and Worker Health was appointed by the President of the United States to advise the Department of Health and Human Services on its EEOICPA activities. The Board is made up of workers, scientists and physicians. Three years ago the Board decided that it would be beneficial to reach out to workers through labor organizations. That is when the worker outreach effort started.

Comment:

If you could send us something to put in the newsletter – your contact information, etc.—we would make sure that the word gets out to the membership. I put out the newsletter whenever I need to get the word out about something.



Mark Lewis:

I will get something to you for your newsletter. You could contact the DOL Resource Center to see if they would like to include something, too.

Response:

How do I get in touch with them?

Mark Lewis:

There is an information sheet in your handout packet with information about your Resource Center. They should be reaching out to you. NIOSH and the ORAU Team are responsible for the outreach to get input for the Brookhaven Site Profile.

Comment:

The Department of Labor has not been too favorable to labor lately. We haven't had a great relationship with them.

Mark Lewis:

The DOL Resource Center is set up specifically for this law. Their job is to get claims and the more claims they get, the better the job they're doing.

Comment:

There's a retired employees association that has some union members.

Mark Lewis:

That would be an interesting group.

Response:

It is an organization for all retired Laboratory employees, not just retired union members.

Mark Lewis:

That probably goes back to the Resource Center. If they can't help, call me. We may need to come out here again to address more people. If those of you sitting right here can look at the Site Profile and say "This isn't right," just think how much more information we could get from people who worked here in the 1940s and 1950s.

Comment:

It is likely that most of those people are dead now. Like that guy that you mentioned earlier – (*name withheld*) – he's probably dead now. You can't reach those guys with our newsletter.

Response:

He's not dead. He's over in T-30.

Mel Chew:

(*Name withheld*) is still alive. He just resigned from the National Council on Radiation Protection (NCRP). He was the Chairman for the whole country.

Response:

That would be a guy to talk to.

Mel Chew:

We don't want to give the impression that you're going to get cancer just because you worked with radiation. The Act is written very favorably, though, for those who are claimants. It is meant to compensate the veterans of the Cold War who contributed to the nuclear weapons complex and were placed at risk from exposure to harmful radiation in their jobs. At some point in the future, the country will have to rely on nuclear power. It will need workers who understand that



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there are some risks involved and the safety program will have to be a lot better than what was in place in the past. I think that is the bottom line.

Comment (joking with another attendee):

I don't think that guy who jumped the fence into the radiation area that time would agree.

Mark Lewis (to another attendee):

Was that you?

Response (laughing):

I was fairly new at the time. I worked in water treatment for the drinking water, so I didn't really get involved in any of the radiation stuff. I totally missed the fact that that fence was to keep us out of the radiation area. I was trying to accomplish a task, so I jumped the fence and crashed the beam.

Mr. Lewis and Mr. Chew thanked the Board Members again for taking the time to meet with the Worker Outreach Team. The meeting adjourned at approximately 4:15 p.m.