

**Meeting Date:**

September 12, 2007

**Town Hall Meeting with:**

Former Blockson/Olin Chemical Company workers and survivors of former workers in Joliet, Illinois

**NIOSH Team:**

James Neton, PhD, Associate Director for Science, National Institute for Occupational Safety and Health (NIOSH), Office of Compensation Analysis and Support (OCAS)

Laurie Breyer, JD, MA, Special Exposure Cohort (SEC) Petition Counselor, NIOSH/OCAS

Thomas Tomes, Health Physicist and Document Owner of the Blockson Chemical Site Profile, NIOSH/OCAS

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

Mary Elliott, Technical Writer, ATL

**Proceedings:**

Dr. James Neton opened the meeting at approximately 7:00 p.m. He welcomed the attendees and explained that OCAS is tasked with performing radiation dose reconstructions under the Energy Employees Occupational Illness Compensation Program Act (EEOICPA or The Act). He introduced the other members of the NIOSH Team: Tom Tomes, the health physicist who revised the site profile for Blockson Chemical Company; Mary Elliott, who takes the minutes that will appear on the NIOSH Web site; Laurie Breyer, the OCAS Special Exposure Cohort (SEC) Petition Counselor; and Mark Lewis, the Senior Outreach Specialist. Dr. Neton also introduced Dr. Genevieve Roessler and Mr. Michael Gibson, members of the Advisory Board on Radiation and Worker Health (ABRWH) working group that is reviewing the Blockson site profile and the Special Exposure Cohort (SEC) Petition Evaluation Report. He asked whether there were any Congressional staff present. A representative from the office of U. S. Representative Jerry Weller (Illinois, 11<sup>th</sup> District) stated that she was also representing U. S. Representative Judy Biggert (Illinois, 13<sup>th</sup> District). Robert Stephan, from the office of U. S. Senator Barack Obama (D-Illinois), was also in attendance. Dr. Neton asked whether anyone from Sanford Cohen & Associates, Inc. (SC&A) was present, explaining that SC&A is a contractor to the ABRWH that reviews the work being done by NIOSH.

Dr. Neton stated that the purpose of the meeting was to discuss the revisions that had been made to the site profile for Blockson Chemical. The site profile is the technical document used as guidance in reconstruction of radiation doses for former workers from the Blockson site. The most recent revision was approved on June 20, 2007. He explained that the document was revised after SC&A reviewed it and found issues that NIOSH agreed needed to be changed. When the SEC petition was being reviewed, NIOSH recognized that all of the potential radiation exposures at Blockson Chemical were not being covered in the site profile. By definition under EEOICPA, Building 55 at the Blockson facility was specifically cited as the covered facility; that is the information that the original site profile was based on. The definition was recently modified to include other operations at the Blockson facility, such as the oxidation operations in Building 40 and the calcining operations. NIOSH now recognizes that all operations within the

facility need to be covered. Dr. Neton stated that all of the EEOICPA dose reconstructions that were done using the previous edition of the site profile that resulted in denial of compensation will be re-evaluated using the information in the new site profile.

Dr. Neton said that questions regarding the site profile and the SEC petition would be entertained during the meeting, but questions about specific claims could not be addressed. He directed the attendees to three questions in the handout and stated that NIOSH is seeking additional information on these issues:

- What process steps were used in Building 40 to convert the phosphoric acid to the monosodium phosphate liquor that was pumped into Building 55? How was the liquor filtered? What was done with the filtered solids? Was filter aid used and, if so, how often was the filter aid discarded?
- How was the waste from Building 55 handled? Filter aid (e.g., Hyflo) was reported to have been used in Building 55 to help remove the uranium from the monosodium phosphate liquor. The filter aid was reportedly reused after the uranium was removed from it. When the filter aid was used up, how was it handled and discarded? A liquid waste was reportedly discarded after removing the uranium in the final step of filtering in Building 55. What was done with the liquid waste? Was it treated or processed?
- What was done with the monosodium phosphate liquor that was pumped out of Building 55 after the uranium was removed? How was it processed to produce other products?

Dr. Neton asked the attendees to review the questions and said that any new information would be considered and reviewed. He turned the program over to Mr. Tomes to discuss the revisions to the Blockson Site Profile.

Mr. Tomes explained that, based on comments from SC&A, NIOSH modeled the external doses to workers in Building 55. NIOSH also recognized that other radionuclides would have been present at the site, such as radium and thorium isotopes. The doses were re-estimated, which resulted in an increase to the doses of the workers in Building 55. NIOSH also evaluated the chemistry at Blockson to estimate the thorium exposure that workers in Building 55 may have had. (Thorium is an isotope of natural uranium that is present in the ore as it comes out of the ground.) Mr. Tomes stated that thorium could pose an internal hazard to the workers because they may have inhaled some of the material. NIOSH updated the profile and added the exposure to those elements in this revised site profile. When the radiation doses are re-evaluated, there will be assigned doses from uranium as well as thorium. Doses that were assigned during the previous dose reconstructions will be higher based on these added exposures.

NIOSH also evaluated the workers' radon exposures throughout the plant, due to the radium that was present in the phosphate rock. NIOSH increased the estimated doses to allow for the uncertainty in the results. There is some radon data from Olin Chemical, but it was taken after the uranium operations ceased. In order to assign higher values for radon exposure, NIOSH used radon studies from other phosphate operations and assigned the high-end value for all of the workers at Blockson to allow for the uncertainty in the results. All of these changes result in increases to the external and internal doses, as well as the radon exposures, for all of the claims that have been processed to date.

When the U. S. Department of Labor (DOL) forwards a claim from Blockson, there is no way of knowing how much time a worker spent in Building 55, so NIOSH assumes that every employee

worked in Building 55 all the time. Previously, NIOSH did not evaluate doses outside of Building 55. The assumption was that the doses in Building 55 would be higher, but the site was not evaluated specifically as a whole to determine what those doses would be. Radiological studies from other phosphate plants that evaluate the workers' maximum radiation exposures were used to estimate an external dose for workers outside of Building 55. Either the external dose from Building 55 or the external dose outside Building 55 will be used for all workers, depending on which is higher.

**Question from the spouse of a former Blockson worker:**

How do you handle the dose reconstruction if a worker was exposed in Building 55 and then was also exposed in other parts of the plant?

*Mr. Tomes:*

NIOSH assumes that the worker was in the area that results in the highest dose for the entire time.

**Question (from another attendee):**

Are you saying that the radiation could have been higher in other areas than it was in Building 55?

*Mr. Tomes:*

In an effort to be favorable to the claimant, NIOSH modeled the external doses for workers in Building 55 to be much higher than those reported from other sites.

**Question from the spouse of a former Blockson worker:**

Are the doses from working inside Building 55 and also working outside Building 55 cumulative?

*Mr. Tomes:*

The worker would not be exposed in both places at the same time, so the higher dose is assumed. NIOSH has looked at what the estimated dose would be outside Building 55. If we looked at the doses that are assigned for Building 55 and at the worst case scenarios for doses in other areas of the site, if we assumed that you worked at Building 55, you would get a higher dose.

NIOSH also looks at internal exposures when doing the dose reconstruction. The internal dose is from inhaling or ingesting uranium or other elements that are present. NIOSH has some air sampling data that was done at Olin during the 1970s-1990s, but there is not a complete set that includes data from the contract period. NIOSH has looked at data from air quality studies that show the exposure to workers at other phosphate plants. Because those air concentrations were much higher than the data from Olin, NIOSH selected the highest concentration reported from an indoor calcining operation with a high dust concentration that was included in a study of phosphate plants done the Environmental Protection Agency (EPA). In an effort to be favorable to the claimant, NIOSH assumes that the individual worked in the highest dust concentration reported by using the highest value in that study as the "bound."

**Question from a former Blockson worker:**

Does phosphate rock contain traces of uranium? That was our basic ingredient.

*Mr. Tomes:*

Yes, it is present in very low concentrations. Typically, everyone in the plants using phosphate rock from Florida is going to get some dose.

NIOSH takes two approaches to the dose reconstruction: (1) What would be the highest dose, both internal and external, if the individual worked in Building 55; and (2) How would it compare if he worked inside or outside Building 55? NIOSH will use the highest dose.

The Blockson workers who spoke at the January meetings here gave NIOSH a lot of new information about the processes and the working conditions at Blockson during the contract period. NIOSH considered the information and incorporated it into the site profile. NIOSH also had follow-up conversations with some of the workers to better understand how the plant operated.

Dr. Neton responded to an attendee who asked about compensation for family members who were exposed to the dust that came into the homes when the workers brought their clothes home to be laundered. The EEOICPA legislation only provides compensation to workers; it does not include family members. The attendee stated that it was unconscionable for Blockson not to have conducted any monitoring for their employees, either air sampling or dosimetry. The attendee said that his father, a former Blockson employee, has bladder cancer.

Dr. Neton introduced Robert Stephan from the office of U. S. Senator Barack Obama to make a statement on behalf of the Senator.

**Comment from Robert Stephan:**

For the last two years, Senator Obama's office has been bombarded with many questions regarding this program with respect to Blockson Chemical. There are a couple of questions that we can ask that, when answered, will provide beneficial information for the people here – questions that we already know that they have.

First, I would like to introduce Kent Bennett, who is Senator Obama's State Director in our Chicago office. The point that I want to make is that this has been a very frustrating process for all of you. We are working with Congressman Weller and Congressman Biggert. We don't have any clear answers, but we continue to work on the issues.

The first question we have is related to using the radon data from other sites. I appreciate the change that NIOSH has made, that they have bumped up the exposure for Blockson Chemical beyond the data you have from all of the other sites. But the question that we have is: How do we know that the exposure levels for Blockson are as high as they should be for the work that was done at Blockson, even though they may now be higher than all the other sites for which you have data? From our point of view, if there is an admission of no data, then obviously that helps us with the SEC process. Can you walk through that for us? We certainly appreciate that it has been adjusted to be claimant favorable, but how do we know that it is as claimant favorable as it can be?

***Dr. Neton:***

As Mr. Tomes mentioned, the phosphate industry has been well studied for a long time because it has been a known fact that radon evolves from the processing of phosphate ore. There a number of measurements from a number of facilities that had very similar processes. There are only so many ways that you can crush ore with a certain concentration and process it. NIOSH has taken the distribution of all of those values of the radon measurements and chose the 95<sup>th</sup> percentile value and assumed that was the concentration that occurred at Blockson Chemical. NIOSH sees no indication that there is any difference in Blockson's processing properties that would increase that radon concentration higher than what is assigned. Mr. Tomes, do you have anything to add to that?

***Mr. Tomes:***

NIOSH has compared that with the Olin data from 1978-1983 and the value that is assigned is higher than what we have seen.

***Dr. Neton:***

The ore itself has a very low concentration of uranium and, therefore, a low concentration of radium. There is only so much radon that can come from that processed ore when you are moving it through the system.

**Mr. Stephan:**

Thank you. We requested that the next ABRWH meeting that you have be located in the Chicago area so the claimants and the families from Blockson Chemical can attend that meeting, as they did when the meeting was held in Naperville in December 2006. The most recent information that we have on the SEC petition, which – if approved – would potentially cover many people, is that the Board will not vote on that petition at the next meeting in October. Is that your understanding, or will the Board be voting on this petition at the October meeting?

***Dr. Neton:***

That really is in the purview of the Advisory Board, not NIOSH. As you know, we presented our evaluation report in July at the meeting in Richland, Washington. The working group continues to meet. There are still some issues remaining that need to be resolved before they can vote. There is a good chance that it may not be voted on, but I don't want to speak for the Advisory Board.

**Mr. Stephan (to the attendees):**

The point I want to make for all of these people is that the Advisory Board will be meeting in Naperville in October. Whether or not the Board votes on the petition at that time, certainly some Blockson business may take place and you are encouraged to come. You can make statements or introduce documents or whatever you want to do. The meeting was moved from another location so you can be there.

***Dr. Neton:***

That is correct. The Board meeting will be in Naperville on October 3, 4 and 5. The agenda will be published on our Web site and you can look for specific days and hours during which the Blockson petition will be discussed. There will more than likely be a working group report as to where they are in the resolution of the final issues.

**Mr. Stephan:**

Could you take back a request to Larry Elliott, who is the Director of OCAS? We would like to ask that everyone in the claimant database be notified via mail of the meeting.

Earlier, you talked about the information you got from these folks when you were here in January. You stated that changes have been made for some doses. Can you tell us if any of those changes has brought about compensation to any claimant?

***Dr. Neton:***

Those cases have not been reworked yet. At the beginning of the meeting, NIOSH will ask DOL to send back every case that had a compensation decision of less than fifty percent (<50%) to be reworked. Every single one of those cases will be reworked and you will receive a new dose reconstruction report that outlines the new value.

**Mr. Stephan:**

I just want to make sure I understand this, because this is a question that Senator Obama's office hears frequently. For those of you here who are workers and you have filed your own claim, or if you are a family member who has filed a claim as a survivor, and you have been denied for that claim, your claim will be reopened and reworked. That does not mean that the changes will bring about compensation, but there is that possibility.

***Dr. Neton:***

I don't want to mislead anyone. It doesn't mean that they are all going to change to over fifty percent (50%), it means that we are going to rework them. As Mr. Tomes indicated, some doses will go up.

**Mr. Stephan:**

This is my last question: Is NIOSH satisfied that it has received all of the documentation needed from Olin?

***Dr. Neton:***

I believe that NIOSH has sufficient information to make a satisfactory dose reconstruction for the cases we have.

**Mr. Stephan:**

Thank you.

Dr. Neton stated that he had 10 copies of the revised Blockson Site Profile available for those attendees without internet access. The site profile is also on the NIOSH Web site at the address in the handout. Dr. Neton opened the floor to questions and comments from the former workers and other attendees.

**Question from the son of a former worker:**

How can you put a dose on any one person when the conditions in the building – the airborne radiation – could change from day to day, hour to hour and minute to minute? A person could work in there every day and have virtually no dose. Another person could work in there the next day and get a year's worth.

***Dr. Neton:***

That is a very good question. NIOSH has taken the "worst case" conditions that could exist at the plant and assumed that every claimant who comes through our shop breathes the highest concentration for every hour of the entire year for every year that they worked there, from the time they started working there until the time when they developed cancer.

***Response:***

That is how you consider what their dose is from when they started working to when they developed cancer. Blockson preferred not to supply dosimetry or measure the airborne radiation.

***Dr. Neton:***

NIOSH does have some dosimetry data. We have bioassay samples for (interrupted).

**Question:**

They did not wear any film badges or TLDs (thermoluminescent dosimeters). Were air samples taken in the building continuously?

***Response from a former Blockson worker:***

No, no and no.

***Dr. Neton:***

The urine samples that we have are better indicators of exposure than the air samples, because those actually measure what was breathed in – what is excreted in the urine is directly proportional to the amount that was breathed in.

***Response:***

What troubles me is that you allowed the worker to take the radiation home with them. That is what bothers me.

***Dr. Neton:***

I understand that that happened, but NIOSH did not do that. That is not a good practice and I feel for those people.

**Comment/Question from the son of a former worker:**

Radiation clothing was not supplied to the workers. I worked in a nuclear power plant. When I worked in a radiation area, I had to strip down to my skivvies and put on a radiation suit. When I came out of there, I left that radiation suit behind and scanned out on a portal monitor. If I had any radiation at that time, I was sent to the showers. The Blockson workers didn't have that benefit. How can you even begin to fathom how much radiation they got?

***Dr. Neton:***

NIOSH understands that. As I explained, we have urine samples from the workers who were doing the drumming of the uranium itself, which is the highest exposure.

**Question from an unidentified attendee:**

How did you get those samples?

***Dr. Neton:***

Those samples were taken at the facility during the time that the uranium was being processed.

**Question from an unidentified attendee:**

How many people gave those samples?

***Dr. Neton:***

This is all documented in the site profile. *To Mr. Tomes:* How many samples were there?

***Mr. Tomes:***

NIOSH has 122 urine bioassay samples from approximately 25 workers that were collected from 1954 to 1958. According to the records we have, that includes the period when Blockson was producing the largest quantities of uranium based on the production data that we have.

**Question from an unidentified attendee:**

I thought that all of the records were destroyed.

***Mr. Tomes:***

The records are from the Atomic Energy Commission (AEC) Health and Safety Laboratory in New York. Those are the people who did the work.

**Comment from the spouse of a former Blockson worker:**

Mr. Tomes, we are not trying to be combative with you. But the fact is, there were people in the building that did not have urinalysis prior to that time. You cannot determine what their levels of exposure were if you do not have that information.

***Mr. Tomes:***

One way that NIOSH accounts for that is to make certain that the period for which we have samples would be representative of the highest production, and it is. The highest urine bioassay results and the highest production, as far as pounds of uranium produced, occurred in late 1955 and early 1956. NIOSH analyzed the results as a set and has taken a value larger than the highest result. That is how NIOSH accounts for the variation.

**Question from the survivor of a former Blockson worker:**

Do you have the names of those workers?

*Mr. Tomes:*

Yes, we do.

**Question:**

Are those names available?

*Mr. Tomes:*

If you have a claim with NIOSH and request your data through the Privacy Act, you can get the data.

**Comment from the spouse of a former Blockson worker:**

Let me explain something else. What I see here is that the government announced this program (EEOICPA) and asked people to submit claims. But what has been happening here is a screening out process instead of screening in. In other words, these people have submitted their claims, but they are not going to be awarded based on what happened to them individually. This is something that the government has re-created and it is not based on fact because you cannot account for those people who were not monitored who were not subject to those doses. It seems to me that the individual is not taken into consideration either. You and I are different. Our physical makeup is different. I may be exposed to something and you may be exposed to the same thing, and it may not affect you.

*Dr. Neton:*

NIOSH believes that, in general, there were no more than 20 people who worked in Building 55 during the uranium operation itself. I think that is a fairly close approximation.

**Comment from a former Blockson worker:**

What about the workers who went in and did all the maintenance?

*Dr. Neton:*

NIOSH is going to give everyone who files a claim the dose as if they sat there drumming the uranium for every time it happened. A maintenance worker would get a very small fraction of the total dose that NIOSH assigns, but the assumption is that everyone who worked there was under the "worst case" conditions. That is for every claim being evaluated. Plausibly, it cannot get any higher than that.

**Comment from an unknown attendee:**

That would make it more than fifty percent (50%) then.

*Dr. Neton:*

There are some claims that will be more than fifty percent (50%). I think there already are.

**Question:**

Why wouldn't that take all the claims to more than fifty percent (50%) then?

***Dr. Neton:***

We are going to the highest exposure. Then that exposure has to be converted to the probability of causation (POC) that represents the chance that the cancer that developed is related to that exposure. That depends largely on the type of cancer. Some cancers are more easily caused by radiation exposure than others.

**Question from an unidentified attendee:**

What are those cancers?

***Dr. Neton:***

Some examples come to mind. It takes a fairly high dose of radiation to cause prostate cancer or brain cancer. The age at which the exposure occurred also matters, because if you were younger and developed cancer at a younger age, it is more likely that the radiation exposure caused the cancer as compared to the same person developing cancer at a more advanced age. All of these factors are considered in a risk model called IREP (Interactive RadioEpidemiological Program), a computer program used to determine the POC. You can look at the program on our Web site. It was produced by the National Cancer Institute (NCI) and was modified for use in our program.

**Comment from the survivor of a former Blockson worker:**

My father started working at Blockson in 1956. I have done some research on radiation exposure. Some forms of radiation damage occur when the total radiation exceeds a certain threshold. It can cause different types of problems, such as dermatitis and skin disorders. I have lost more than half of my family. My father did not die from a cancer. He died from heart problems. Five years after leaving Blockson, he had his first major heart attack at the age of 40. I have a sister who was diagnosed with a rare genetic disorder called Sweet's Syndrome. They really aren't sure what causes it. She passed away in 2003 from lung cancer. My mother passed away in 1998 from heart problems. I have had ministrokes. It says that typically 5 to 15 years, you can get leukemia, certain types of skin cancer, breast cancer. There is also the possibility of inheritable genetic damage. The International Commission on Radiological Protection (ICRP) has concluded that the total risk factor of death from radiation-induced cancer is about 1 in 100, with hereditary disorders occurring within the first two generations.

This gentleman said that his mother had passed away from cancer. My father would come home and go into the basement to take all of his clothing off before he even came up into our home. My sister and I were just babies, two and three years old. My father's three brothers also worked at Blockson and they all have passed away from different cancers and disease.

My question is, through all this radiation analysis that you have done, have you physically gone out to the property to make sure that there are not any of these uranium drums hidden in the ground on that property? Has anyone thought to do that? Things may have been hidden during those days and not followed the proper criteria for disposal. Can any of the old-timers here help me out?

***Response from a former Blockson worker:***

There are no drums buried out there. (Another former worker concurred.) This new outfit that is digging the rock has gone out there with machines and is digging the whole place up.

***Response from another former Blockson worker:***

There is a place where drums are buried, but some of the drums that are buried were insulation that was put into black drums that originally held caustic. There could have been a lot of other

things put into them, but I'm just going on what I saw. Even when they were running the Pilot Program, there had to be some waste, but I don't know what they did with it. They could have dumped it out there, too. I could show you where it is at.

**Question from the same attendee:**

That is what I'm getting at. How was the waste from Building 55 handled? I think that should be investigated. They should go out to that property. Take them out there and show them where it is.

**Response from the latter Blockson worker:**

I don't think it was put in a drum from there. No. You would have to find out where the mud and slurry went. I don't know if the slurry went back to the fertilizer, or if it went down into the ditch and out into the river.

**Response from the same attendee:**

What I am saying is that you should be working with the people who worked there. I understand that you're trying to do an analysis, but these are the people who can help us.

**Comment from an unidentified attendee:**

You're spending a lot of money, too.

**Dr. Neton:**

I have a specific question for the gentleman here in the front. You said that the material that left Building 55 was slurry. Was it ever dried into a powdery form at some point before it left Building 55?

**Response from a former worker:**

Outside of the uranium material itself, when they washed down the presses, it was a liquid. But where did the liquid go?

**Dr. Neton:**

The waste product itself – were they ever dried and drummed up?

**Response from a former worker:**

I don't know what they ever did with the dust collectors, either. *To another former worker:* You should know something about that, (name withheld).

**Response from another former worker:**

I would say that everything wound up in the "gyp" (phosphogypsum) pile. There are 160 acres out there, and if you went out there and checked it, you would find uranium in it. All of the product from the plant went into the air, the Desplaines River, or the "gyp" pile.

**Comment from another former worker:**

I labored there (Blockson/Olin) for many years. We used to take the waste in a wheelbarrow and dump it over by Building 40. From there it was hauled out to the dumpsite.

**Dr. Neton:**

What did the contents of the wheelbarrow look like? Was it slurry or sludge or a dry powder?

**Response from the former worker:**

It could be anything that came out.

**Response from another former worker:**

It was a solid after it had been filtered. When it was in Building 55 it was solid, then it was slurried and pumped out to the “gyp” pile.

***Dr. Neton:***

So the solids were slurried and pumped out. That is helpful. Thank you.

**Question from an unidentified attendee:**

You keep saying dose. Can you give me numbers?

***Dr. Neton:***

Every case is different. We do individual dose reconstructions.

**Question from an unidentified attendee:**

Was a whole body count ever done on any worker out there?

***Dr. Neton:***

Not to my knowledge. There are some lung cancers that have been compensated. For a lung cancer to be compensated – and this is a ballpark number – a worker would have had to receive somewhere in the vicinity of 70-80 rem of radiation to the lung.

***Response from an unidentified attendee:***

Is that per day or per month or per year? How much could you get in a week?

***Dr. Neton:***

That would be the individual’s total lifetime dose over the career. You can get a fair amount to the lung in a week. The allowable limit at present is 5 rem per year to the lungs.

***Response from another unidentified attendee:***

How about to the skin and the eyes?

***Dr. Neton:***

Fifty rem per year is the allowable limit to the skin under present Nuclear Regulatory Commission (NRC) regulations.

**Question from an unidentified attendee:**

Are all of these numbers in the model?

***Dr. Neton:***

No, some of these could have been higher than the current regulatory limit. In the late 1950s, the allowable limit was 15 rem per year. Whether it was allowable by law or not is really not part of this program. What you need to understand also is the compensation decision is not based on the best estimate of whether the cancer was caused by radiation or not, it takes one of the highest values – the 99<sup>th</sup> percentile – of the risk calculation and uses that to make the decision that it is “as likely as not” to have been caused by the worker’s radiation exposure. There are additional generousities built into that calculation to account for some of the uncertainties.

**Question from the spouse of a former Blockson worker:**

Once the product is ingested or inhaled, what is the life of this product in the body?

***Dr. Neton:***

It stays in the system for quite some time – years. The standard models that we use account for how long it stays in the lung, and when it gets into the bloodstream, and if it concentrates in the kidneys. Those calculations are done in very standard models that are accepted by the IRCP. Radiation is very well studied, so we have some very detailed models.

***Response from the former worker's spouse:***

You are looking at optimum conditions; that is, if these people were monitored and everything was handled the way it should have been in that building and they got some of this into their system. Then you use those calculations, based on optimum conditions, right?

***Dr. Neton:***

I'm not sure what you mean by optimum conditions.

***Response from the former worker's spouse:***

Well, there were no optimum conditions when they weren't monitored. What I am saying is, once the product enters the system, it has indefinite lifetime, right?

***Dr. Neton:***

It is not indefinite. It has a lifetime of years. I don't know the numbers off the top of my head for the different organs, but they are known and established in our documents.

***Response from the spouse:***

If you are monitoring these people, once it gets into the system you have a way of knowing when they have reached that maximum dose, right?

***Dr. Neton:***

Yes.

***Response from the spouse:***

But if you did not monitor them, you would have no way of knowing if they had reached the maximum dose or were overexposed. Is that right?

***Dr. Neton:***

We have monitoring data for the uranium, as we mentioned. We have about 120 urine samples from the workers. We have taken the highest of the values and assumed that every person who filed a claim breathed that high value of uranium.

***Response from the spouse:***

That is an assumption. That is what bothers me about the whole thing, because there were people. You said these results were from 1954. Is that right?

***Dr. Neton:***

The results are from 1954 to 1958.

***Response from the spouse:***

What about those people who were working there before that?

***Dr. Neton:***

Uranium samples are cumulative. Once you get uranium in your body, it will continue to be excreted from your body for a long time. For instance, if you weren't monitored for the first two years, but left a urine sample the third year, you could still tell how much uranium you were exposed to for the first two years because it would still be being excreted in the urine.

***Response from the spouse:***

I'm not talking about the workers who you have the results for, I'm talking about the ones who you did not have test results for. You have no way of knowing what their exposures were.

***Dr. Neton:***

We don't know that there were uranium operators who were constantly exposed to uranium that were not monitored. We have samples from people who processed the uranium drums, the highest amount of uranium that gets into the air. If they worked somewhere remote from there, their values would be lower.

***Response from the spouse:***

I am talking about people who worked in that building. Are you saying that there were no people working in that building before 1954?

***Dr. Neton:***

What I am saying is the uranium exposures were given to the workers who took shovels or the pans of uranium and dumped them into the drums. Those are the people who we have urine samples for.

***Response from the spouse:***

I am talking about the people who worked in that building that you do not have samples for because you did not take those samples at the time they should have been taken.

***Dr. Neton:***

I would like to hear a mechanism of how their exposures would be higher than the people who actually dumped the uranium from the pans into the drums. That is the question.

***Response from the spouse:***

I have to go back to my original thought. Those are all assumptions on your part. What I said before, and what I maintain today, is that we do know that those people worked there. We do know that a certain number of people did not have monitoring devices to wear when they worked in there. We do know that they developed those illnesses. That we do know. There is an assumption on your part as to what happened in Building 55 because the whole idea of reconstructing it tells us that you really don't know what happened in that building. And the building was taken down.

My next question is: What kind of site remediation was done for those people that worked at Blockson? Doesn't the government do site remediation if they have materials that were at a site?

***Dr. Neton:***

There is a site remediation program that is run by the government.

***Response from the spouse:***

Was there a site remediation done at Blockson?

***Dr. Neton:***

I don't believe so.

***Response from a former worker:***

Yes, 16 years after the place shut down.

***Response from the spouse:***

I want to thank you for taking things a step further because this is better than it was before. But what I am telling you is that there is a certain amount of frustration because you haven't covered all the bases. There was no site remediation done by the government. These people worked in that place for years. My husband worked there for 40 ½ years, then add overtime. What would that be?

***Response from her husband, a former worker:***

That would be 80 years.

***Response from the spouse:***

I think that these people can attest to the fact that he was one of the better workers that they had at Blockson. He was very conscientious and would do whatever it took to get the job done. Am I right, people? (Several former workers concurred.) I feel that the government owes these people the consideration that they did not protect them. They introduced a program to say, "Come and submit your claim." But then you go through a process to screen them out. Somehow that does not seem fair to me.

***Dr. Neton:***

I would like to point out that NIOSH did not write this law. We are following it as closely as we can. We were tasked with doing the dose reconstructions. If we had bioassay samples and badges for every single worker, there would be no need for dose reconstruction. In fact, Congress tasked NIOSH with doing dose reconstructions, implying that there are missing data. We have done the best job that we can, technically and scientifically, to fill in those gaps. We feel that we have put a plausible upper bound on the doses of these workers. If you hear what we are saying about the claimant favorability of these values, I think that you would agree that we have done a very good job at bounding what the possible exposures could have been; so that if a person has a probability of causation (POC) less than 50%, there is a very unlikely chance that the cancer was caused by that exposure. I think NIOSH has done that.

***Response from an unidentified attendee:***

Then shame on Congress.

**Comment from the survivor of a former worker:**

My dad worked there from 1951 until 1969. He has been gone for six years now. He was diagnosed with cancer and lived for 5 years after his diagnosis. He had lung cancer. Jerry Weller's office called to ask my dad to help with names of people who worked in Building 55. They said that the family would get this settlement. He had lung cancer. He had prostate cancer, and then it went to his brain. The claim was denied. His dose reconstruction was 29%. What more could my dad have done, having worked there that long and died from three different cancers and was denied? I am confused that it was 29% instead of 50%. I don't understand that. I have heard that there are eight people who have gotten settlements and they are still alive. Is this true? Out of eight people that have gotten settlements, they still have families and haven't died yet?

***Dr. Neton:***

It depends on the years that you worked there and how young you were when you developed the cancer – there are a lot of factors.

**Comment from a former worker:**

Fourteen people have gotten settlements now.

**Question from the survivor of a former worker:**

Are all of these people still alive?

***Dr. Neton:***

We have another question in the back.

**Comment from the survivor of a former worker:**

First of all, my sister would like me to say that our father was 39 years old when he died of cancer. We were denied with the smidgen of dose that you assumed he got working in Building 55.

***Dr. Neton:***

When you inhale uranium, it goes to various different organs. You can inhale a lot of uranium and, if you have prostate cancer, pancreatic cancer, or stomach cancer, it does not concentrate in any of those organs. It only concentrates in a few organs. It is an element, so when you breathe it in (inaudible). NIOSH uses a metabolic model that has been scientifically demonstrated over the last 50 years.

**Question from the survivor of a former worker:**

Why was it that my father was notified and told that if he had been diagnosed with lung cancer he should apply for these so-called monies that were allotted by the government? Why was my dad notified by Congressman Jerry Weller's office to even file for this if he wasn't going to get it?

***Dr. Neton:***

I cannot respond to that question because I do not know.

**Comment from the survivor or a former worker:**

At the first meeting we went to about Blockson Chemical, a gentleman whose name I don't remember stated that it doesn't matter what kind of cancer it is, it will be covered. And now they are telling us only if they had multiple cancers. Well, he did, but yet he died from lung cancer.

***Dr. Neton:***

Only primary cancers are covered. Secondary cancers that have spread are not considered in the calculation.

**Comment from a former worker:**

I asked that question last time and you said it was. Well, you might not have said it, but DOL did.

**Comment from the same attendee:**

The primary cancer was bladder cancer. They didn't put it in the paper that way to begin with.

***Dr. Neton:***

In general, secondary cancers are not covered. There are a couple of exceptions.

**Question from the same attendee:**

We filled out paper after paper, year after year. Where did all the money go that was spent by your people, or whoever it was?

***Dr. Neton:***

Please allow me to explain how this program is funded. The administration of the program is funded entirely separately from the compensation fund, which is replenished by Congress every time it gets down to a certain level. The funds used for the administration of the program in no way affect the amount of funds available for compensation.

***Ms. Breyer:***

The meeting is getting a bit out of hand. We have a lot of people talking over each other, so some of you are not getting the chance to finish what you are saying. If you wish to speak, raise your hand and I will come around with the microphone so you can all have your turn. That way we can answer your questions one at a time. We can make sure the meeting stays productive if

you all have a chance to say what you came here to say. Once you are done with your comment, please sit down so we can move on.

**Question from Mr. Stephan:**

Dr. Neton, can you help us understand something? The SEC petition is a document that NIOSH has developed and submitted to the ABRWH with an opinion on whether or not to include Blockson workers in the SEC, which would compensate everyone as a group if they are eligible. As I understand it, the opinion thus far is that the SEC petition be denied. My question is: If anyone has specific questions about the site profile itself, which is the document that NIOSH has developed, or if they see something that they do not agree with, whether it be rems or any of the data included – is that not some of the specific information that would be useful for the Board members? Is that correct?

**Dr. Neton:**

That is correct.

**Comment from Mr. Stephan to attendees:**

First, it is very crucial for you to make any comments you have about that site profile. Second, so that you are aware, on this SEC group petition, NIOSH has developed an opinion and given it to the Board. But Congress has asked the Board to seek an outside opinion from SC&A. The reason that is available to the Board is so the opinion of NIOSH is not the only opinion that they hear. They essentially get a second opinion, much like you would if you were going to the doctor. *Speaking to Dr. Neton:* My question for you is this – knowing that you speak only for NIOSH: Do you know where they are in the review process? Do you know if they have issued a document? Do you know when they will issue a document if they have not issued it yet?

**Dr. Neton:**

SC&A has reviewed both the site profile and the petition evaluation report. These documents are at the working group level with ABRWH. We had a meeting several weeks ago and they were discussed then. Dr. Genevieve Roessler is here from the working group. Maybe she can give us an update.

**Dr. Roessler:**

Thank you, Mr. Stephan. The one very important thing that you have brought up is that SC&A did have some comments on NIOSH's work. Our Board Working Group is looking at those comments and we have some questions that are being distributed tonight. We would like to get answers to them from some of you here. I would encourage you to look at those questions. We have begun to get some answers. The gentleman over there who worked at the plant knows what happened to the waste and knows how things were handled. This is the kind of input that the Board Working Group is looking for from those of you here who actually worked at the plant. So please look at the questions and maybe sometime tonight you can give us the answers that we are looking for.

**Comment from Mr. Stephan to the attendees:**

Along that point – and I am not trying to diminish all of the comments that you have – we have to work within the parameters of how this program has been set up. You have a significant opportunity next month to go before the Board and give them answers to the questions that they have given you tonight. There most likely will not be a vote that day. We would encourage the Board not to vote if SC&A's report has not yet been made public. Between now and then, it is

very important to review those questions and to review those documents and comment tonight, and if not tonight, then sometime before the Board meeting next month.

***Dr. Roessler:***

I have one comment. The Board works within these working groups. I am on the Blockson working group. I am not here as the Chair. She could not be here tonight. We are hoping that the working group will have a teleconference before the actual meeting and that you will be able to call in to the meeting and participate. Again, we are really looking for input from those of you who were there and know what happened to various materials.

**Question from Mr. Stephan to Dr. Neton:**

I have to make another request. These working group meetings often happen with those of us within the federal government knowing about them. That would be just another question from NIOSH to the Chairman of the Board that the local media be notified so these people do have an opportunity to come. The only other way that they are going to find out is if we notify all the claimants. We don't have all that information to notify them, so we need to know the time, the call-in information, etc. Is that reasonable?

***Dr. Neton:***

Yes.

**Comment from the survivor of a former worker:**

The reason why we are so frustrated is that when this program started, you only had to prove that you worked in Blockson Chemical in Building 55 during a certain period of time and you were automatically compensated. Then the rules changed and you got to do your dose reconstruction. In my eyes, your program is showing me the way it failed because you have insufficient evidence – you didn't have correct data, so I am saying that your program has failed. If this was a court of law, that would be a mistrial. Once it is a mistrial, you cannot continue to try to prove your case. I don't understand why you keep getting the chance to go back to the drawing board to try to prove us wrong.

***Dr. Neton:***

There is a trade off here with timeliness of dose reconstructions. We need to get answers out there. As new information comes out, we are committed to using the best information we have. I will say that this is not the first time that we have heard that people were told at the beginning of the program that if they applied, they would get paid. I am sorry for that misconception. NIOSH did not have anything to do with that. I have been with the program from the very beginning and it has not changed. The program began six years ago and it has been a requirement to have a dose reconstruction from day one. There was possibly miscommunication from other agencies.

**Comment from Robert Stephan:**

In fairness, it is important to note that this process has been prolonged, to some degree, by members of Congress. The reason is that, had we not asked for the process to be prolonged last December, people would not have been compensated. At that time it only nine people had been compensated, and now it is up to 14 people. To raise the point that the dose reconstructions will be re-calculated, no case will be done backwards so that you have a lesser exposure. That is the reason that Congress asked that to happen.

***Dr. Neton:***

NIOSH will only re-calculate the dose reconstructions on the ones that were less than 50%. Anything that was over 50%, we don't look at.

**Question from an unidentified attendee:**

For all those employees that you have the results of what happened to them, cancers and who was affected, which body parts were affected, etc., did the government or Olin know all that information when these people were hired?

**Dr. Neton:**

I cannot speak to that. I do not know.

**Response from the same attendee:**

Don't you think that it would have been a fair thing for them to know? Apparently, people know what extracting that uranium would cause. It could cause a lot of problems, but I don't know of anyone who was ever informed that working with it was dangerous. There must have been a lot of benefits because they were selected people that had government clearances. Were they aware?

**Dr. Neton:**

It certainly would not seem fair by today's standards. I will certainly agree with that. I do not know what the knowledge level or the perception was about the harm of uranium exposure back in the 1950s. It certainly was a lot less than what we know today.

**Response from the same attendee:**

Don't you think that Olin wasn't fair to the workers by not informing them?

**Dr. Neton:**

I cannot speak for Olin. That is separate from the purpose of this meeting. I cannot comment on that.

**Question from an unidentified attendee:**

In the Technical Basis Document, how many hours per week does the program base the workers' exposures on right now? It was 40 previously. What did you change that to?

**Mr. Tomes:**

NIOSH assumes that the maximum dose rate was at 40 hours per week, but there is an uncertainty implied, too, because there is a probability that they could have worked longer hours.

**Question from attorney for the Blockson SEC petitioners:**

When you first spoke, you said that the TBD considers "the worst case scenario possible." Do you want to reconsider that statement if you say it was based on a 40-hour work week? Alright, we'll go on to the next question. What is the production quantity in the revised document over the contract period? Originally, it was based on 40,000 to 50,000 pounds. Is that total or per year? In the USA Today article, which was researched and gave rise to this whole thing, it suggested that there were 2,000,000 pounds extracted during that 10-year period. That was one of the issues that NIOSH was supposed to resolve. I'm wondering how much that increased or if it did.

**Mr. Tomes:**

We looked at that. We requested that they provide some additional information in reference to that. We have multiple documents in the TBD with reference the production numbers.

**Question from the same attendee:**

Did the numbers increase or not?

***Mr. Tomes:***

No, they did not.

**Question from the same attendee:**

Who took the urine samples? What entity – was it the U.S. Government?

***Mr. Tomes:***

Blockson Chemical requested that the samples be taken.

**Question from the same attendee:**

Do you know what entity was responsible for taking them? Who analyzed them? Who took them? Something that we look at, as attorneys, with everything is bias. If somehow this was government involved, you have to consider that bias may play a factor in there.

***Dr. Neton:***

If you can provide us with the subject, we would be happy to look at it but we cannot provide any negative speculation here. You are asking us to speculate on an entity here. The samples were taken and analyzed by the Atomic Energy Commission (AEC) Laboratory in New York City on those workers. If you have evidence that there was some fraudulent activity that occurred here, NIOSH would be more than happy to look at it.

***Response from the same attendee:***

I don't have evidence that there was.

**Comment from a former worker:**

Sir, the plant nurse took my sample. I was a lead burner. This nurse took samples once a month of our urine and blood. She thought that she was part of the institution. She worked for the company. When she got laid off, she called me up to the office and told me that we were never supposed to have more than 50 parts per million (ppm) of lead in our blood. She told me that if, in the past, we were to get any more than that we were not to do any lead burning until it got back down to 50 ppm. There were three lead burners and we all went over. I was at 420 ppm and the other two were at 380 and 100 ppm. I was at 8 to 10 times more than allowed and the company never told us. This had gone back about a year, but she called me into her office and told me that they had withheld this information from me. Whoever took those samples, they didn't necessarily get to the right place. They lied to us. That's all I'm saying. We never did anything about it, but that is what she wanted us to do.

**Question from the survivor of a former worker:**

I lost my father back in 1992. He died from lung cancer. I've been going through this for approximately five or six years. Both my mother and my sister have died from cancer, too. They called me on the phone three years ago to tell me – they had me on tape – “You will be compensated as a family member. The money is there. All of the lung cases are going to be compensated.” All of a sudden about three months later, I get this deal with the dose reconstruction. What is it? They lied to me.

***Dr. Neton:***

I'm not sure who told you that you would be compensated. If you can provide me with the name, I would like to see that.

***Response from the same attendee:***

I can come up with a name.

**Comment from a representative of Congressman Jerry Weller's office:**

I am with Congressman Jerry Weller. I am also representing Congressman Biggert tonight. I just have one comment. Back when they agreed to let SC&A conduct a review, both Congressmen and Senator Obama asked for a copy of that report. To my knowledge, no one has received it. I want to ask you if you can make sure that they all get copies of that report.

***Dr. Neton:***

I really do not know if they were provided copies.

**Comment from Mr. Stephan:**

The request was made in writing. Could the Board members who are here answer the question?

***Dr. Neton:***

I do not know the Board members' answer either. The problem is that these documents need to be reviewed for Privacy Act information and redacted. I honestly do not know if the redactions have been cleared yet. They may have, but I am not aware at this time.

***Response from Congressman Weller's representative:***

I understand the Privacy Act issues. I wanted to make sure that the request is noted and that we are kept informed of what is going on.

***Dr. Neton:***

We can post a copy on our Web site for the world to see after it clears.

**Comment from a former worker:**

I worked in Building 55 from day one. I was a millwright on the assembly and during the construction. I worked with the Ironworkers steady. Blockson Chemical did not hire outside millwrights. I was [identifying information withheld]. When Building 55 went into operation, I got my government clearance so I could go in there to work on the equipment. I specialized in Durco Y-valves – Durco cock valves. They were made of a special C-20 material that was put in the operation. It was a control valve. At the same time, I also specialized on pumps and they had a lot of them in there. Any time a pump failed or a valve needed to be replaced, I was in there. We modified a lot of those valves to be air-operated instead of hand-operated. When I went into the building, I never knew if I was going to be working on one of the Kelley presses, down in the tanks, or doing something else. I went in through the security doors, did my work and got out of there.

In October 1957, Blockson/Olin went on strike. Since I already had a security clearance, I went down to work at Argonne National Laboratory (ANL-E) as a junior reactor operator in the 300 Area, which was the reactor area. When the strike was over four months later, I went back to Blockson because I knew I would be going into supervision. After four years of letter writing and verification, I finally got the government to confirm that I worked at ANL-E and was exposed to radiation there, too.

In regards to the equipment in Building 55 and how it was cleaned, it was taken to the engine room in the machine shop and washed out in a dip tank, then washed off with a water hose before you worked on it. Many times, the keg material accumulated on the valves in the pump and it had to be chipped off before the piece could be cleaned up and put back into the warehouse supply to used again somewhere in the plant even though the pump had come from Building 55. I changed the stockings in the dust collectors. We did whatever needed to be done in that building.

What more? I had colon cancer. They took 12 inches and hooked me back together. I have had heart problems and vascular problems, but I'm in perfect shape.

**Comment from the survivor of a former worker:**

My father worked in the labor gang. I appreciate the fact that at the last meeting everyone was able to tell you what happened in Building 55. Unfortunately, he had a heart episode that morning, so he wasn't able to be here that night. I don't understand why all of my dad's information, including what they did with the waste, etc., was in the original application. It is sad that people have filled out forms, applications and had telephone interviews. Is all of that available to you? Is that available to SC&A? All of that information that you are asking for in your handout was in my dad's original claim application. Did you have all of the information that we gave to the original group? I understand that there are divisions of government. Do you have access to all of the information?

**Dr. Neton:**

NIOSH and its contractor have access to all of that information.

**Response from the same attendee:**

Were they read? You're confusing me.

**Dr. Neton:**

If we can get your name and claim number after the meeting, we can certainly look at it. We have looked at all those cases.

**Response from the same attendee:**

You ask a lot of the questions again and again. I'm glad that you get different comments that are important that probably help with the dose reconstructions. My question is this: Were any of the original applications read and were any of those transcripts of the phone interviews read? I am sure these workers have told their stories before.

**Dr. Neton:**

The comments have been very helpful. NIOSH gets every piece of information that is sent to DOL and collects it with the information that we gather from other sources. The dose reconstructors look at all that information. If we missed something, we would certainly like to hear from you.

**Response from the same attendee:**

All of these questions that SC&A has listed in this questionnaire were definitely covered in the original application. I appreciate that you hold these meetings so that people have the chance to speak out, but obviously no one ever hears anything. As years go by, my dad can't speak a whole lot for himself and can't hear a whole lot, and there are only so many years that these people are going to have to give this information.

**Dr. Neton:**

I encourage you to come up after the meeting and provide that information. We would love to have that. Thank you.

**Questions from the survivor of a former worker:**

I am [name withheld] and my dad was [name withheld]. I have a couple of questions about the technical basis document. I think I also have an answer to one of these questions, so is [name withheld] in the crowd tonight? No? He worked with my father and provided me the information. Your question in the handout is: "When the filter aid was used up, how was it

handled and discarded?" When I interviewed [name withheld] on the phone, he said that he and my father were truck driver helpers at the time. There were three men who worked on this truck and I can't think of the other gentleman's name because he is also deceased. They used to go to Building 55 and other locations around the plant picking up the waste and the discards. They took it to a dumpster at the other end of the plant. So, hopefully, there is one of your answers. I have some other questions on the TBD. I read the whole thing three times – all three documents. Questions on other possibilities of carcinogens: When you talked about the chlorination process for the oxidation on page 6, isn't chlorine a carcinogen?

***Dr. Neton:***

I am not aware that chlorine itself is a carcinogen.

***Response from the same attendee:***

I thought that in high concentrations that it could have a carcinogenic effect.

***Dr. Neton:***

If it is, carcinogens outside of radiation are not covered under this program.

***Response from the same attendee:***

Even if it was used in the process, just like the sulfuric acid, etc.? That doesn't seem logical because you use the sulfuric acid to wash the phosphate rock.

***Dr. Neton:***

The Act specifically requires us to reconstruct the radiation exposure, not the carcinogen exposure. The fact is, we have looked at this and the models for the carcinogens causing cancer are not nearly as well known as the ones for the radiation. There is no way to model that properly.

***Response from the same attendee:***

What about the effect of the radiation on the plant and the water in the plant? Was the water tested?

***Dr. Neton:***

We don't know if the water was tested. Are you talking about an on-site well? I am getting a nod from one of the workers down front that the on-site wells were tested.

***Response from the same attendee:***

What happened to the water that left the plant? I read an EPA report on their Web site that stated "the risk from radon in drinking water confirms that there are drinking water-related cancer deaths, primarily due to lung cancer."

***Dr. Neton:***

Was that at Blockson?

***Response from the same attendee:***

If you are working with high doses of radiation, couldn't it contaminate the water? Of course, we read about that all the time.

***Dr. Neton:***

The question then is "Was there a local well onsite at Blockson and was it contaminated?" I do not know the answer to that.

***Response from the same attendee:***

Isn't that something that could be followed up?

**Comment from a former worker:**

Blockson had six wells.

**Dr. Neton:**

As far as the uranium goes, NIOSH does account for ingestion because of the bioassay samples. It was being excreted in the urine, whether it was inhaled or ingested. Typically, it is a higher dose to assume that it was inhaled.

**Questions from the survivor of a former worker:**

I have couple of questions related to that. I read that there were 25 people sampled. How many employees were there at the time at Blockson – 200? I'm guessing. I don't know. So that's about 8 % sampling? Why didn't you sample more workers?

**Dr. Neton:**

As we just heard from this gentleman, the area was controlled with security clearances. We have indications that there were 20 people who worked in Building 55. NIOSH didn't take the samples. Blockson Chemical Company did. First of all, you have to sample the people that were exposed and we believe that the samples were representative of the population of workers exposed to the uranium in Building 55. There were no exposures of concentrated uranium outside of Building 55. To compare it for 200 people just doesn't make any sense.

**Response from the same attendee:**

But it is a small representative sample, when all of the other 200 people may be exposed. What I am getting at is an 8% representation in the bioassay. What about the unmonitored people?

**Dr. Neton:**

No, almost all of the people who were exposed were monitored. The unmonitored workers were less exposed, because they may have walked through the plant. We have samples from the people who actually drummed the uranium itself.

**Response from the same attendee:**

I have a question related to that. To the proximity of the drum, it goes down significantly. The assumption is two feet (30 cm) from the drum. That is on page 25. If I am touching the drum or if I am handling the filter, my exposure is 160 mrem in that one incident. If I am at 30 cm, it goes down to practically nil. It looks like a couple of mrem. The assumption that you use in the TBD is at practically nil, where someone touching and handling is getting a megadose at 150 mrem, and the math is much more significant. I did the math for my father's exposure, touching and handling the uranium; it comes out exponentially different.

**Dr. Neton:**

If you have skin cancer of the hands or forearms, you would get that touching dose. But to actually get it on your hands or forearms, you have to be actually touching or hugging the drum.

**Response from the same attendee:**

What if you are holding the drum, how are you going to be carrying it out? Are you going to be holding it at arms length? No, I'm going to carry it in close proximity. That is the way you carry something if it's a heavy load.

**Dr. Neton:**

I would have to look at the specific case you are talking about.

***Response from the same attendee:***

Why are you only taking inhalation or ingestion? Why are you taking only one or the other? What if you have both? Isn't it feasible to both inhale and ingest uranium if you are holding it?

***Dr. Neton:***

NIOSH assumes whatever is the higher form of exposure. If the dose per unit intake of inhalation is higher, we will give you the inhalation dose. If it was for ingestion and is lower, it would not make any sense to give you both. If the bioassay sample excretes a certain amount, we will take the value that gives you the highest dose per intake. What is excreted in the urine is representative of what you've either ingested or inhaled. Typically, you get a much higher dose when you inhale uranium rather than ingest it, partly because when you ingest it, it passes right through the system and about five percent or less is absorbed into the system. When you inhale it, most of it is directly deposited into the lung itself and leached into the bloodstream. But you are measuring the amount of uranium that comes out in the urine, so you have to assign it to one mode or the other because what is coming out in the urine is the combined excretion of ingestion and inhalation. NIOSH picks the outcome that gives the higher dose.

**Question from the same attendee:**

On page 36 of the TBD, what is "type F?" We talked about "M" and "S" solubility, but for the lead (Pb) and polonium (Po), it talks about "F" particularly for Pb-210. What is "type F" absorption?

***Dr. Neton:***

"Type F" means fast clearance. There are three types: "F" is for fast, "M" is for medium, "S" is for slow. "F" means that it clears quickly from the lung.

**Question from the same attendee:**

Doesn't the lead cause scarring in the lung like all the other heavy metals? I don't know how that would clear quickly from the lungs.

***Dr. Neton:***

That particular chemical form would clear quickly from the lungs. These are not visible quantities of lead. These are microscopic quantities of lead that we are talking about, not the massive amounts that it would take to cause a toxic reaction.

**Comment from the same attendee:**

Finally, I have two questions on pages 13 and 14 in the TBD. On page 13, the last sentence in the third paragraph: "This may not, however, be a valid assumption if some thorium (Th) isotopes are bound in a different matrix in the phosphate rock. FIPR 1995 reported in their study that unreactive minerals in the matrix accounted for 5-10% uncertainty in the fraction of the radionuclides reported in the phosphogypsum." What I get out of this, and what I take it that SC&A got out of this, is the uncertainty of the thorium and where it is going.

***Dr. Neton:***

That is entirely correct.

**Comment from the same attendee:**

Also, the statement in the middle of the first paragraph on page 14: "The samples were analyzed by gamma spectroscopy and results were reported for radionuclides in the U-234, U-238, and Th-232 (natural thorium) chain. Soil sample results were typically low. The four soil samples from inside Building 55 were taken from spots that were identified as contaminated based on

scan results. These data are insufficient to form a quantitative conclusion on the ratios of the various radionuclides that were present, but the data indicate elevated uranium with some natural thorium, but at much lower concentration.” I guess there are still some unknown questions.

***Dr. Neton:***

This is definitely one of outstanding issues that NIOSH has with the SC&A report and the ABRWH working group. “Where is the thorium?” That is the crux of the questions that you were handed today are attempting to deal with that issue. NIOSH assumed that all of the thorium went into the uranium barrel and the workers breathed as much thorium as they did uranium. NIOSH contends that that is still a very claimant-favorable approach.

**Question from the same attendee:**

What if it went with the sulfuric acid into the other slurry in that retention pond?

***Dr. Neton:***

If it was a slurry material, then it would not be available to generate an aerosol. Wet materials typically do not become airborne. NIOSH has not seen a higher concentration of Th-230 per gram of material in any other process than what we have assumed the workers breathed from the uranium drum. We have assumed probably 200-300 nanocuries per gram. Of all the other processes in the DOE complex that process this type of material, it is typically around 60 nanocuries. We have not seen a chemical process than we are enhancing more than that. We are looking very closely at that issue and we are here to see if people can help us with that.

**Comment from the survivor of a former worker:**

My father worked in Building 55. Our claim was denied, but the cancer that he died from was of the pharynx. The first paper that was put out by NIOSH listed the cancers at the bottom and pharynx was one of them. They have beat around the bush so they could deny the claim. Before we even got a denial letter, I talked to one of the head people – and you know him – who took me into a room where there was a computer. He had someone look up my dad’s claim and he shook my hand and said, “I am very sorry, but your claim has been denied.” We hadn’t even gotten a letter yet. I think that is very inappropriate for professional people. I could tell you who it was.

***Dr. Neton:***

I agree. I would appreciate that information.

**Question from an unidentified attendee:**

Is the dose reconstruction based on a 40-hour work week?

***Dr. Neton:***

We just talked about that. Time is not necessary to know because when you are excreting uranium in the urine, the time factor is accounted for in the excretion. How much you excrete is dependent on how much you breathe in. For some scenarios, such as external exposure, the central estimate was a 40-hour week, but there was an uncertainty placed about that to allow for more time. This is in the model. When the samples are put into the calculation, it assumes 40 hours as a default, but it will allow for more time depending on the uncertainty factor that was applied.

**Comment from an unidentified attendee:**

I have been to a lot of meetings throughout this whole ordeal. This is the first time I have ever heard that they found urine samples.

***Dr. Neton:***

That information has been in the site profile since 2003 when the first site profile came out.

**Comment from the survivor of a former worker:**

Last week, I received more questions from the dose reconstruction. I cannot answer these questions because my husband is already dead. They wanted me to fill these out myself and then I am supposed to call them and tell them when I have this filled in. I can't answer these questions because he is already dead.

***Ms. Breyer:***

This letter is from Oak Ridge Associated Universities (ORAU). It is asking about medical screening X-rays, etc.

***Dr. Neton:***

ORAU also does medical screening programs. Have you just filed a claim recently?

***Ms. Breyer:***

We will talk to you individually after the meeting.

**Comment from an unidentified attendee:**

I think that the goal of the meeting is to collect specific information for the Board working group and for NIOSH about the site profile and the SEC evaluation. I am looking at the three questions that were specifically targeted for tonight. It seems to me that very little of this information has been elicited. A gentle suggestion: For these meetings and for this meeting, there needs to be specific outreach and identification of the people who have specific knowledge of this information.

***Dr. Neton:***

We did send those questions out in advance of the meeting to selected people who we thought could help us provide information.

**Question from the same attendee:**

This also relates back to something that was alluded to several times this evening. That is whether the CATIs (Computer Assisted Telephone Interviews) with the claimants have been mined with respect to these questions specifically. Has that been done?

***Dr. Neton:***

We have been through this before. The CATIs have to be cleared with the Office of Management and Budget (OMB) when you start interviewing large numbers of people. It is impractical for us to have a tailored interview for every site. I think your first suggestion has merit though.

**Question from the same attendee:**

But have the CATI interviews with workers who are knowledgeable about the subject of these questions been mined for the information? Somebody said that these questions about the waste were in their specific CATI and it would be useful to get that information.

***Dr. Neton:***

It is standard practice to review the CATIs when the site profile is being constructed, although this information might not have had the same significance then as it does now. It may benefit us to go back now and take a second look at those interviews.

**Question from the survivor of a former worker:**

I have two questions. First, is there a specific timeframe for the new dose reconstructions using the revised site profile? This one took about six and a half years.

***Dr. Neton:***

That is a very good question. The only answer I can give you is that we will do them as soon as we can. Keep in mind that we have a competing process going on, which is the SEC. To some extent, if the site became part of the Special Exposure Cohort – and I am not saying that it will – it would not be relevant for us to reconstruct all of these doses. Right now, we are moving forward because we cannot prejudice. We are going to ask for the cases to be returned to us. Once we get them, they will go quickly because the site profile is one size fits all. It is fairly easy to do them once we get the cases back.

**Question from the same attendee:**

I have one other question for the informational process. My father worked a lot of overtime and if you are going to base his dose reconstruction on 40 hours, it would not be accurate for that external dose. In that time frame, he was the sole breadwinner for the family so he worked a lot of overtime. How will you decide dosage?

***Dr. Neton:***

Blockson did not produce a lot of uranium. On average, it was about one drum per month. NIOSH assumes that they were exposed to this drum of uranium, but it wasn't sitting there full the entire month. There are a lot of other considerations that go into this calculation.

***Response from the same attendee:***

It didn't leave the area though, did it?

***Dr. Neton:***

NIOSH is assuming that there was a full drum of uranium there and that they were in contact with it for 40 hours per week. If you make one drum of uranium per month, presumably at the beginning of the month there is almost nothing and by the end of the month you get this maximum dose rate. There is some generosity built into the calculation that maybe we haven't conveyed properly. I understand your concern about work hours.

**Comment from the survivor of a former worker:**

My father worked at Blockson/Olin from 1934 to 1968. He had colon cancer, a three-pronged tumor. They removed 18 inches of his intestines. As a little girl, I remember being at Olin and seeing a sign on the fence that said "Manmade Quicksand." To this day, I am still curious as to what "manmade quicksand" is.

***Dr. Neton:***

I have no idea. Perhaps someone here can tell you.

**Comment from a former worker:**

I worked in Building 55. I was never monitored. I didn't give urine samples. When the building went up, I sensed that it was a chance for me to get in there first and get what I could and get out. I worked a lot of overtime, and the comparison of that against a 40-hour week doesn't seem right. The dose reconstructions are all based on a 40-hour week, right? If I worked 60 hours a week and I worked 20 hours more than another person, I should get a higher rate because I was there longer.

***Dr. Neton:***

Not all of it, some of it. I don't disagree with you. One thing I will caution you about, though. Most of your exposure would be relevant for skin cancers only because that is the highest source of exposure from uranium.

***Response from the same former worker:***

I had bladder cancer and prostate cancer. I went all the way up to the adjudication with this claim. The man who made the decision told me that I was still ineligible.

***Response from his spouse:***

Somebody mentioned that they were told that certain cancers were covered under this program and you replied that bladder cancer isn't one of them. It sounded like you said that.

***Dr. Neton:***

Hopefully, I did not convey that. All cancers are considered for eligibility with the exception of chronic lymphocytic leukemia. Every other cancer is eligible. I'm sorry if I did not make that clear.

***Response from the spouse:***

I stand corrected. Thank you. There was a point in the process where he was wondering if he should continue with his claim. Someone from NIOSH encouraged him to stay with it because his cancers definitely qualified.

***Dr. Neton:***

They qualify, but that does not necessarily make them compensable. We will recalculate all of these dose reconstructions using the current document.

**Question from a former worker:**

Are only the workers from Building 55 qualified?

***Dr. Neton:***

All areas of the plant are now considered to be eligible.

**Comment from the same former worker:**

Everyone was exposed. I worked in the area where the soda ash was kept. You can ask these guys. We worked more than a little overtime. I was going to say that if you base everything on Building 55, 98% of us can walk out right now because we are not going to get anything.

***Dr. Neton:***

What Mr. Tomes said earlier is that the highest exposures to uranium that we can calculate are in Building 55. NIOSH assumes that everyone worked in Building 55. We are talking about pure uranium in a drum blowing in your face versus 0.2% uranium by mass in the phosphate ore. The exposures are much higher by assuming that you breathed pure uranium.

**Question from the survivor of a former worker:**

You said that NIOSH bases the cancer on the age of when you started working there, right? My grandfather was 46 years old and in perfect health when he started working at Blockson. He worked there for 20 years, from 1951 to 1971. In 1976, they opened him up and found that he was full of cancer. The doctors closed him up and told my mother and grandmother and said he would be dead in a couple of months. I want to know how you can base it on age for someone who worked in perfect health and when they quit, got cancer. I want to know how you can base it on age and previous health.

***Dr. Neton:***

There are very well-studied people who developed cancer following radiation exposures, most notably the survivors of the Nagasaki and Hiroshima bombings. The models that we use are primarily based on those studies. Those adjustments for age at exposure and how long it took to develop the cancer are all based on the several hundred thousand people who were exposed to the radiation from the atomic bombs. That doesn't mean that it is right for every specific case. That is why this program allows for picking almost the highest value that comes out of the model rather than just some middle value. It allows for the uncertainty that we have. Outside of that, I am not sure what else I can tell you.

**Question from an unidentified attendee:**

How many claims have there been for Blockson workers so far?

**Dr. Neton:**

There have been 116 claims filed on behalf of former Blockson/Olin workers. That is the most recent figure I have from DOL. I printed it out yesterday. The first claim that we received from Blockson Chemical was received on November 12, 2003.

**Question from the same attendee:**

When did NIOSH come into this program?

**Dr. Neton:**

I have been working on this program for about 6 years.

**Question from the same attendee:**

How many people are working in your program?

**Dr. Neton:**

There are about 40 federal employees plus a large number of contractor employees.

**Comment from the same attendee:**

My remarks have nothing to do with what you people have done. My remarks go back to the representatives here from the offices of Congresspersons Biggert and Weller and Senator Obama. If you take the figure of 100 people and multiply it by \$150,000, what do you come up with -- \$15,000,000? We have these politicians that are telling us that we are going to throw \$160 billion into a war where we don't know what in the world we are doing it for and we are standing here arguing about \$15,000,000? This could have been over a long time ago. How much have they been paying you guys in six years? All of you are probably PhDs and you are well-educated and obviously you have done a great job. But the bottom line is that we are arguing about money that I could go out there in the middle of Jefferson Street and throw up \$20 and watch it blow away and it would be the same thing. Where are the politicians at in this deal?

**Response from the representative of Congressmen Biggert and Weller:**

Because of your Congressmen, these cases are all being looked at again. That would never have happened if they had not stepped in.

**Dr. Neton:**

All of the denied claims will be reviewed.

**Ms. Breyer:**

Dr. Neton stated that NIOSH received its first Blockson claim in November 2003 and I heard a lot of rumbling back there. Many of your frustrations that you have talked about this evening, such as not giving you the right employment, or when you filed your claim, or being told that

you were going to get paid as soon as you filed, much of that is done through different agencies. The way the law was written, NIOSH is not the only government agency on the project. There are many agencies involved in this program. For example, the remediation you talked about is a DOE responsibility. The people who did the outreach to help you file your claims when the program first started were with DOL. The DOL may have received claims in 2001 when the program first started. However, DOL is responsible for verifying your employment and your medical conditions. I heard one gentleman state that they only gave him 10 days to get them the information. Again, that is DOL. When you were told that all you had to do to be compensated was to file your claim, all that outreach was done through DOL. Dr. Neton's comment that NIOSH received the first Blockson claim in 2003 means that that was the first claim that DOL sent to NIOSH. Again, we are two completely different government agencies. That is frustrating for everyone because it is DOL, DOE, and NIOSH. But again, that is the way the Act was written. It assigns each branch a different responsibility. We are here to talk about NIOSH's role under the Act.

**Question from a former worker:**

I want to go back to radon. How did you come to that conclusion? What did you base it on? The reason I am asking this question is that in Building 40, there were four different lines running, so the amount of radon coming off those units was probably higher than where you went to get your figure.

**Mr. Tomes:**

Our figure was based on a study of phosphate plants that did processes similar to what Blockson did.

**Response from the same former worker:**

How many lines did they have running? At Blockson/Olin, they had four lines running.

**Mr. Tomes:**

I don't have that information. I do know that there were some radon studies done at Blockson and I have looked at those; but they were not comprehensive and that is why we used the higher numbers from those other operations.

**Comment from the survivor of a former worker:**

My father had bladder cancer. Why have I spent all of these years waiting to have my claim denied when bladder cancer is not covered?

**Dr. Neton:**

I am sorry that I gave you the wrong impression. Bladder cancer is a covered cancer. I did not mean to imply that. What I was saying was that uranium does not concentrate in the bladder; therefore the POC will typically be lower for a bladder cancer than a lung cancer, given the same amount of uranium inhalation. Bladder cancers do get compensated periodically. I don't have the numbers in front of me, but bladder cancer is covered.

**Question from the survivor of a former worker:**

We still haven't said anything about anyone who was involved in the Pilot Program. My father was involved in that program. We recently filed a claim and we went into detail regarding the work he did in the Pilot Program. Are they going to make any adjustments for the people who worked on that program like they did for Building 55? They were doing the same process that they were in Building 55.

***Dr. Neton:***

Exactly, the adjustments are for all workers. It is NIOSH's opinion that the Pilot Program is bounded by the workers who were in the production area and drumming the quantities of uranium that they did. They would get the same dose as the workers who were drumming the uranium in Building 55.

**Question from the same attendee:**

Have we really answered all of the questions that you wanted to get answers for tonight? I talked to Dad and he told me that, in answer to Question 2, the monosodium phosphate lines went to Building 55 and the waste lines went back into Building 40 and back into the slurry pits. From there, the waste was pumped back out to the 200-acre mountain (the phosphogypsum waste pile).

***Dr. Neton:***

That is very useful. Thank you very much for that information.

**Question from the survivor of a former worker:**

Has NIOSH or SC&A, or any of the former employees gone out to the Blockson property itself to do any type of investigation? I would like to make that suggestion again, as I did at the last meeting. It has not been done. Can that be done? I would like you to go out to that property to see exactly what our fathers and grandfathers worked in and what they were exposed to in their work. Take one of the former employees with you so they can show you everything. I think that this could be resolved instead of just continuing on and on.

***Dr. Neton:***

No, we have not gone to the site. We will take that under consideration. I understand the suggestion and the thought process behind it, but as far as the levels of uranium in the air in the plant during the production era, it has been our experience that those types of visits don't inform us very well of what went on in the plant during the production operations.

***Response from the same attendee:***

I understand that NIOSH has done a lot of work. I can understand that. But go to the property and see what we saw as children. I used to go in there every Thursday with my father to get his paycheck. I remember going in that place and the smell of it. I remember the nurse. See what they were exposed to; they didn't know to wear masks to protect themselves down the road or their families. My father didn't die from cancer. The rest of my family has had problems, too. I don't think it is just cancer related, it is health related. Would you go into a place now without any type of radiation protection and think about getting cancer in the future?

***Dr. Neton:***

Frankly, this program is in place now for the very reason that you just stated. People were exposed to radiation with very little protection and were not told that they were being exposed.

**Question from the survivor of a former worker:**

My father's POC was 29%. What would that be? Would it be like a coffee can full? Would you feel safe yourself to breathe that if it is a coffee can full?

***Dr. Neton:***

I can't answer that question, but that 29% is related to many different factors that are built into that calculation, including the fact that we are picking the highest value of the probabilities. I worked in uranium facilities quite a bit and I have breathed uranium. I don't feel unsafe for having breathed uranium.

**Question from the survivor of a former worker:**

My father also worked at Blockson and had lung cancer, which metastasized to the brain. I am a nurse and I realized that certain cancers metastasize to a certain organ. Everyone in this room is in agreement. Their parents or some other relative worked at Blockson. Why is this going on and on and on? What did that person have to do or where did he have to work to be eligible, or the family. You people started this all by sending the letters out to our parents, to our mothers and whoever. We filled them out the claims and some of them have been compensated. And now you say that they are all going to be reworked. Why did the ones who were compensated get money? What kind of cancer did they have? Where did they work? My dad breathed in everything and he had to quit working there because his lungs couldn't take it. There are no answers ever, just numbers.

***Dr. Neton:***

The Act provides for claims to be considered on a case-by-case basis and that is what NIOSH is doing. Unfortunately, there is no simple answer to that question.

***Response from the same attendee:***

The whole area was contaminated. It is not just one thing. The workers didn't have the proper anything. He had to shower there because he couldn't bring some things home. We keep going over this. What constitutes a sufficient claim? Are there specific cancers that are compensated more?

***Dr. Neton:***

The site profile accounts for all of that. There is no simple answer for that. We will have a comprehensive list of the cases that have been completed to date at the October ABRWH meeting that will show a summary of what percentage of different cancers have been successfully compensated in this program. All cancers are eligible. Some cancers are more easily caused by radiation exposure than others. Lung cancers are far and away the most frequently paid cancers in this program and account for probably 70% of the compensated claims.

***Response from the same attendee:***

My dad had lung cancer. Why wasn't our claim compensated?

***Ms. Breyer:***

We can't answer questions about individual claims here. If you have questions about your claim, we will discuss them individually after the meeting.

Dr. Neton thanked the attendees for their participation in the meeting and adjourned the meeting at approximately 9:15 p.m.