



NIOSH Dose Reconstruction Project Rollout Meeting for the Kansas City Plant Site Profile

Meeting Date:

October 19, 2005, 1:00 p.m.

Meeting with:

International Association of Machinists and Aerospace Workers Local 778, Kansas City, Missouri

Name	Organization
Mike Roepke	Business Representative, IAM Local 778
J. J. Jones	IAM Local 778, former local union president and retired worker, Kansas City Plant

NIOSH and ORAU Team Representatives:

Grady Calhoun – National Institute for Occupational Safety and Health (NIOSH), Office of Compensation Analysis and Support (OCAS)

Jack Fix – Dade Moeller & Associates, Site Profile Team Leader

Mark Lewis – Advanced Technologies and Laboratories International Inc. (ATL)

Mary Elliott – ATL

Proceedings

Mr. Lewis began the meeting at 1:00 p.m. by thanking the union representatives for meeting with the Worker Outreach Team. Mr. Lewis is employed by ATL as the Senior Outreach Specialist on the team. His primary function is to bring the team together with local labor union representatives to get input for the Site Profiles. He is a member of the United Steelworkers of America and a 30-year employee at a DOE site in Ohio. His work with the former PACE International Union led to his involvement with that union's push for the passage of the Energy Employees Occupational Illness Compensation Act (EEOICPA).

Mr. Lewis stated that the Site Profile is a document used by health physicists to perform dose reconstructions for claims filed under Subtitle B of EEOICPA. The National Institute for Occupational Safety and Health (NIOSH) and Oak Ridge Associated Universities (ORAU), its support contractor on this project, are interested in getting information from workers that may not be included in the records of the U.S. Department of Energy (DOE) and its contractors at the sites.

Mr. Lewis introduced Grady Calhoun, from the NIOSH Office of Compensation Analysis and Support (OCAS). Mr. Calhoun stated that he is a health physicist on the Dose Reconstruction Team at NIOSH. He gave a summary of the claims process:

- A claim is filed with the U.S. Department of Labor (DOL) by an employee or former employee of a Department of Energy (DOE) site or an Atomic Weapons Employer (AWE). If the employee is deceased, the claim may be filed by an eligible survivor.
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- DOL verifies whether there is a compensable illness, and whether the employee worked at one of the covered facilities. If both criteria are met, the claim is then sent to NIOSH for a radiation dose reconstruction.
- NIOSH requests the employee's radiation dose records, medical records, incident reports, and other pertinent records from the facility through the DOE.
- Claimants are interviewed by telephone to gather exposure history information on the employee.
- ORAU begins the dose reconstruction process using the site profile and other technical documents, as well as the personal information for the employee. A draft dose reconstruction report is prepared and forwarded to OCAS and the claimant(s) for review.
- The claimant is contacted again to review the draft dose reconstruction report and to make sure that all information has been included. If there is any additional information, the dose reconstruction is reworked.
- After the claimant acknowledges that there is no additional information, they are asked to sign a form.
- The case is then forwarded to the DOL for a final decision on whether or not the claim will be awarded.
- If the case is denied, DOL adjudicates the appeal.

Question:

It sounds like the cases are based on dose records from the plant. What if there are no records?

Grady Calhoun:

A claimant's dosimetry records are a major part of the claims process. If a worker was not monitored or the records are missing, an estimated dose is applied based on co-worker data. If a worker's records show "zero" readings, a "missed dose" is calculated and added to the dose reconstruction.

Question:

What if a worker was never issued a dosimeter?

Grady Calhoun:

We look at X-ray dose and ambient radiation levels – adjustments are made for these things – the dose for any claim will never be zero.

Jack Fix:

If a claimant was not monitored or there is no record, a claimant's statements during the phone interview are taken into consideration. These will indicate whether there should have been a radiation dose.

Mark Lewis:

There are situations where the claimant is a survivor and does not know much about their deceased relative's work history. In those cases, the dose reconstructors often rely on co-worker data or a co-worker's affidavit to determine the deceased worker's radiation dose.



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Question:

What is the criterion to be a survivor claimant? Does the child have to have been under 21 at the time of their relative's death?

Grady Calhoun:

No, there are no age limitations in Subtitle B.

Jack Fix:

It is important to note here that the way the law is drafted, the claimant is always given the benefit of the doubt during the dose reconstruction. Any time there is missing data, a dose is applied in an effort for the process to remain claimant-favorable. The idea is that if there is a potential for an award, all measures are taken to assist in that effort.

Mark Lewis:

There is contact information in your packet for the regional Department of Labor Resource Center in Paducah, Kentucky. Anyone from the Kansas City Plant who needs to file a claim should contact them.

Mr. Fix said that the information packet provided at the beginning of the meeting contains important information, including the Site Profile, the presentation, and information on the dose reconstruction process, as well as the web site address to view the information online.

Mr. Fix explained that the purpose of the meeting is to present the Kansas City Site Profile. At the introductory meeting on September 15, 2004, union officials from the plant gave the Outreach Team information that was then included in the Site Profile. Since the site profile development is an evidentiary process, the information is researched and often incorporated into the site profile. Although the Kansas City Site Profile is now complete, it is a "living document," which means that the document can be modified when new information comes to light that proves relevant to dose reconstruction.

Mr. Fix gave the attendees a list of items that were brought up at the September 15, 2004 meeting that impacted the Site Profile (see Attachment A). The fourth item, regarding a 1989 incident where guards were exposed to promethium-147, is a very good example of worker input to the site profile. This incident involved a response by multiple agencies including the Missouri Department of Health, the Environmental Protection Agency, and the DOE offices in Kansas City and Albuquerque. The incident was highly visible, and homes and cars were checked for radiation since some workers tracked contamination into their homes. The investigation resulted in a 385-page report that concluded that there was no positive intake – the radionuclide promethium-147 is a very low energy beta-emitting nuclide. The incident is noted in the site profile.

EEOICPA includes guidelines for compensation under two Subtitles. Although Subtitle B of the Act provides for compensation for radiation-induced cancers, berylliosis and some silicosis claims, only the radiation claims involve NIOSH. The program involves interaction between three government agencies – the Department of Labor, the Department of Energy and NIOSH. A fourth agency, the National Cancer Institute (NCI), developed radiation risk models that are the central components of the computer program used by dose reconstructors to determine the likelihood that the claimant's cancer is related to radiation.



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NIOSH created OCAS to provide oversight for the dose reconstruction process. Due to the large scope of the project, a team of contractors headed by Oak Ridge Associated Universities (ORAU) was brought on board to assist with the dose reconstructions and other associated tasks.

The DOL has forwarded 18,476 cases to OCAS for radiation dose reconstruction. Of those cases, 10,421 dose reconstructions have been completed. The other cases are in various stages of the process – claimant interviews, gathering radiological records from DOE, etc. – and more than 4,000 dose reconstructions are either in process or under review.

The DOL has received 50,000 cases for compensation. Awards have been made to 10,872 claimants, totaling an estimated \$1.25 billion.

Mr. Calhoun interjected that some claimants may be eligible to file EEOICPA claims under both Subtitles B and E. Claimants who are not compensable under Subtitle B may still be awarded a claim for Subtitle E (for illnesses related to toxic chemical exposure). Mr. Calhoun said he understands that there are many toxic chemicals in use at the site, and that, in all likelihood, more claims for Subtitle E will be filed by Kansas City Plant workers than for Subtitle B. Subtitle E compensates for diseases such as diabetes, asthma, skin conditions, and many other illnesses that may be caused by exposure to toxic chemicals.

Comment:

I have often wondered about this skin condition I have. I used trichloroethylene often in my work. That is something to think about. I have multiple illnesses that might be linked to chemicals that I may have been exposed to here at the plant.

Grady Calhoun:

It is important to file a claim if you have any of the covered illnesses. Medical expenses are paid from the date the claim is filed. If you know of anyone who may be eligible, encourage them to file at the DOL Resource Center. The contact information is in the presentation folder.

The Kansas City Plant Site Profile is a collection of site-specific information that is used as guidance in claimants' dose reconstructions. The document identifies the radioactive materials present at the site, as well as work practices, safety programs, dosimetry programs, workplace hazards, types of radiological instrumentation, and other statistical information that is necessary to make dose estimates for workers. The Site Profile Team was established in May 2004. The Site Profile has been approved and can be viewed on the OCAS web site:

<http://www.cdc.gov/niosh/ocas/ocastbds.html#kcplant>. It is a "living document" that can be revised as new information becomes available.

The Site Description describes the facilities and processes at the Kansas City Plant (KCP) from beginning of the Atomic Energy Commission (AEC) operations in 1949 through present day. Although it is not highly visible in the nuclear weapons complex, it is a world-class analytical laboratory facility. This facility has been instrumental in the accurate design and fabrication of nuclear weapons in the United States. Its major role in the nuclear weapons program is the manufacturing of the non-nuclear components of the devices. Most of the radiation at the plant is from sealed radionuclide sources or radiation generating devices such as X-rays or neutron radiography that were used to examine the integrity of the components, so the radiation risk at KCP is relatively low.



Comment:

I see the comment about depleted uranium in your presentation handout. We continued to use the lathes that were used to machine the depleted uranium long after 1971. They were supposed to have cleaned them, but they just washed the lathes with water. Some time later – I cannot recall exactly when, probably in the late 1970s or early 1980s – they put up curtains that went from floor to ceiling, sent in workers wearing fully encapsulated suits, and removed a section of the cement floor along with approximately 6 to 8 feet of soil under the floor and disposed of it all. There would still be some risk of exposure to anyone working in this area.

Jack Fix:

The assumptions in the Site Profile for exposure to the depleted uranium go beyond the period – there is certainly the possibility of some exposure. Workers in the area where the depleted uranium was processed were supposed to have urinalysis twice a year.

Response:

I worked in that area for about 20 years. We didn't have any tests to check us for uranium exposure.

Jack Fix:

If you worked in those areas – this depends on what you put in a claim – even if you were never tested, you would be assigned an internal dose from depleted uranium based on where you worked. The dose is based on the data collected for monitored radiation workers from 1959 through 1971. We develop statistical profiles based on the 95% confidence interval – the most likely ... If you are a non-monitored radiological worker with a potential for exposure we would give you that dose.

Response:

The reason I say that... quite a few of the people that worked in that area have passed away. In the period between 1959 and 1971 when they were handling the depleted uranium, there were either 27 or 29 inspectors that inspected those parts. By the late 1980s, 23 of them had died. *To the other attendee:* There was one remaining inspector – I don't know if you remember him – but they moved him from Department 20 Inspection to another area because his arms were “all ate up” (sic). If he is still living, he probably would be a great source of information. (*Name withheld*) was also another one that worked over there.

Jack Fix:

This might be a good topic to identify and send to NIOSH, which initiates an investigative process for the site profile team. The short answer, though, is that these workers will be assigned a dose if there is any reason to believe that they were exposed – all the way up to 1990 I think is when we stopped assigning dose because of the multi-agency review of the promethium-147 incident. They examined many areas in the investigation of that incident. We have confidence that if there was depleted uranium around prior to that, it was not found after 1989 when the investigation took place. We have 3 classes to which we assign dose: monitored radiological workers, non-monitored radiological workers, and non-monitored non-radiological workers. We assign doses to each category even if there may be no evidence that they received a dose. I am not certain why the depleted uranium was handled at KCP, but it was a very important activity. We have both urinalyses and laboratory air sampling results.



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The occupational medical dose has been assigned to workers based on the history of the use of medical X-rays at the site. The DOE did not keep radiological records, but NIOSH assigns a dose for work related X-rays. All the details about the types of equipment are not available, but handwritten records have been found on the exterior of personnel medical folders indicating what types of devices were used. NIOSH assumes one X-ray per year per worker until 1994 and every five years thereafter. If records are not available for an employee, a default value for the medical dose is assumed in an effort to be favorable to the claimant.

There is no evidence of any environmental radiological exposure at the Kansas City Plant in any historical record that the team has examined. This has caused some dilemma, because there is no data. The Missouri Department of Health has no data, and it does not appear that any other agency does. Major studies have been done, but none of them have identified any environmental radiological exposure. Notwithstanding, we have assumed a default ambient radiation dose for non-monitored, non-radiological workers who may have inadvertently received low-level exposures. For that reason, two changes to the Site Profile are under way: one for external radiation exposure and another for potential intakes of depleted uranium. These changes are related to the worker concern for the promethium-147 incident in 1989. Although no impact was identified, a dose has been assigned to ensure that the potential exposure is not underestimated.

NIOSH assumes certain “buckets” of dose where there is no information in a worker’s records. Besides the medical and environmental doses, these “buckets” include calculated default values for internal dose and external dose based on information available for monitored radiation workers. There is a fifth “bucket” – referred to as “missed dose” – for incidents of “zero” readings in a monitored radiological worker’s dosimetry record. The NIOSH program is proactive in looking at these incidents of “missed dose.” The potential dose is calculated and added into the worker’s radiation dose.

The only documented intakes for internal dose are from the depleted uranium that was the primary source of exposure from 1959 to 1971, and after 1997 when a new program was initiated. We have copies of the purchase orders for the depleted uranium. We have data from many thousands of urinalyses over the period of time. A detection level has been assumed since one has not been stated, so intakes are assigned based on three categories of workers: monitored radiological workers, non-monitored radiological workers, and non-monitored non-radiological workers.

External radiation doses at KCP are very low-level exposures, mostly from the diagnostic equipment used to examine the components – the neutron radiographs...

Comment:

I totally disagree with that. Tons of chemicals have been dumped in the back lots and in the lagoons – dirt has been hauled off. It is not radiological, but...

Question:

Is NIOSH aware that many dump truck loads of dirt have been hauled off site to Alabama?

Grady Calhoun:

Did this result from chemical problems or radiological problems?



Response:

We are under the impression that it was chemically related. That is why I am surprised about the environmental impact. I know the groundwater has been affected.

Grady Calhoun:

The Site Profile does not deal with the chemical contamination.

Jack Fix:

I tried to stress the word “radiological.” There is a lot of chemical impact here and surveillance is being done routinely for chemical impact, but not for radiation. Several extensive reports have been written regarding this subject, but the surveillances do not include radiation.

Question (to the other attendee):

If I’m not mistaken, wasn’t there still some radiological material over in the building with the HiPr (High Power Laboratory)? What is the name of that building? The one with the 4-foot to 6-foot thick walls?

Response:

The Test Cells?

Response (first speaker):

Yes, that is it. There is a big safe in there that was supposed to have some radiological material.

Response:

A lot of times, they would bring units in from the field and we used Geiger counters for telemetry.

Response (first speaker):

I thought there were some “balls” over there...

Mark Lewis:

Sources?

Response (first speaker):

I am not sure what they were. They were in this safe – I could go in the safe for specific purposes – things were on a “need to know” basis. But other folks talked about things... If you listen to some of the old-timers, they have stories about things being buried around here – still buried around here.

Jack Fix:

As I mentioned before, if you have any specific topic that you think we should look into, we can check it out.

Response (first speaker):

Many of these old-timers have passed on; some of them started working in the early 1950s. I remember what these people said – some of the places they talked about – but most of what I could tell you is only hearsay. I have nothing to substantiate what I am saying, except that I heard it from somebody else. These are not small things...

Jack Fix:

This is an evidentiary process, really the only process that is available to us. We tried to examine every record we could get our hands on. If there are specific topics – specific circumstances or incidents – we would certainly treat every one of those very seriously and see what we could find about them.



Response (first speaker):

I suggest that you talk to (*name withheld*) if he is still alive.

Response (second speaker):

We will send him your way.

Question:

If a worker has a negative result from their Beryllium test, and they have cancer what do they do next? The beryllium process is very frustrating. It is a farce.

Response (from the other attendee):

Yes, it is frustrating. I am waiting for the results of my second beryllium test and I haven't been thinking about some of these other illnesses you were talking about – diabetes, asthma, skin conditions – and I am sitting here thinking “Hey, I have all those.” Years ago, when trichloroethylene was widely used as a cleaner for lots of things. . .

Response (first speaker):

When I first started working here, one of my first assignments was wiping down all the stainless steel in my workstation with trichloroethylene and then throwing the rag away. And I had to do the same thing every evening when I was done with my shift. Six years later, it was considered too “bad” to use.

Response (second speaker):

If you got that stuff on your hands, it would turn them white. Now they act like they never heard of it. Tri what?

Jack Fix:

If you look at the list of potential carcinogens, and you go back and compare the chemicals you used as a young worker, there are so many things that make you wonder how you could still be alive.

Mark Lewis:

Do you have a retiree group here that meets regularly?

Response:

Yes.

Mark Lewis:

Talking with them could yield a lot of potentially useful information – one memory could trigger another.

Response:

All that will do is stir up a lot of things that you cannot document, and then we will have the same issues as we do with the beryllium testing process. When beryllium came to town, everybody was going to jump right on it. We have 18 cases confirmed and nobody has been compensated yet. It is like “I've heard this for the last 30 years when I worked at the bottom of the hill.” There is a real credibility issue with all of this.

Mark Lewis:

Beryllium compensation is made under Subtitle B, but not in our work scope.



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Response:

Two women from our union drove to Denver with their documentation to try to get their cases expedited. They came back with nothing.

Mark Lewis:

The LPTs (lymphocyte proliferation tests) are coming back positive and there have been no payments. Is that correct?

Response:

It is a long, drawn out process. It is kind of like Social Security – it's there, but try to get it.

Jack Fix:

As Grady said earlier, we are talking about radiation.

Response:

As your research shows, we have very little documentation of high radiation exposure here. I haven't seen four dosimeters in the whole plant my entire career. If you are not recording it, it is not there. "Prove it."

Response:

The lathes I talked about earlier have been sold, but we used them for years. They removed that floor and took it out of here – that is a fact.

Jack Fix:

We look at distributions. We prepared distributions for all years for which depleted uranium urinalysis monitoring was done here at KCP. We assume that the non-monitored workers with a potential for exposure received the same dose as those who were monitored. We assign a dose to the non-monitored worker with a potential for exposure based on the 95 percent level. This process should provide a realistic claimant favorable estimate of the potential intake to these workers. That is one reason we prepare site profiles – to document who was monitored and who probably should have been. Monitoring here was spread throughout many different occupational classes and done in various laboratories. There appears to have been a very comprehensive program. We recognize that for many years, it was not considered necessary to monitor workers who received less than ten percent of the annual dose levels, so only workers who exceeded that were monitored.

KCP provided us with a database of all of the recorded doses for air monitoring for all years of operation. We analyzed that data and came up with statistical profiles for external radiation exposure. The dosimetry used at KCP was state-of-the-art, comparable to any other system. We looked at the exchange frequency and estimated a "missed" dose.

Mr. Fix concluded that the Site Profile Team used all records that were available to them to write the document and attempted to make it comprehensive to the best of their abilities. He acknowledged that the workers at the plant had valuable knowledge that may not have been included in the Site Profile. NIOSH and ORAU encourage input from the workers at the site to achieve this end. Information and suggestions for revisions to the document can be sent directly to NIOSH using the contact information included in the presentation. Other information on the EEOICPA program can be found on the NIOSH web site at this address:

<http://www.cdc.gov/niosh/ocas>.



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Question:

Is all the Site Profile information on the compact disc you provided?

Jack Fix:

The disc contains the current Site Profile. It is also on the OCAS web site we talked about earlier.

Response:

Thank you. I would like to review the process. If a worker comes to me and tells me she has cancer – not beryllium disease – what is the next step?

Grady Calhoun:

She should file a claim for Subtitle B for cancer through the DOL Resource Center, and they will initiate the process I described earlier in the presentation. The worker only has to show proof of the medical diagnosis. DOL will verify employment. Then the case is forwarded to NIOSH for the dose reconstruction.

Response:

She should use the Paducah number to contact them. Is that correct?

Mark Lewis:

Yes, she can use the toll-free number on the sheet we provided to you. She can file during the call.

Response:

What if she thinks her cancer was caused by chemicals?

Grady Calhoun:

She should tell them that she wants to file under both Subtitles B and E.

Response:

And Subtitle E is the one for chemical exposure. Correct?

Grady Calhoun:

Yes.

Mark Lewis:

Since you have a retirees' group, do you think it would be possible to get them together for a risk-mapping session?

Response:

Since additional information could benefit the Site Profile, if you are willing to take their input we would be more than willing to contact the President of our retirees' group to put the word out. They are from the cold war days and may be reluctant to talk.

Mark Lewis:

That is why I am here as a labor liaison.

Response:

There are so many who are gone now that could have provided a wealth of information. You would be amenable to come into a retirees' meeting?

Mark Lewis:

If it would help the Site Profile and we had an invitation to the meeting, we could do it – with approval from the Worker Outreach Team Leader and NIOSH. They have not said “No” yet.



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Jack Fix:

The challenge we face is trying to find out if there are circumstances where there is a situation and an outcome. It has been very hard to come up with “smoking gun” documentation. If you take a group of workers and say, “What is the likelihood that someone in a group of people has been harmed?” what will be your outcome? A risk study in Lyons, France analyzed 600,000 workers from fifteen countries. They did not come up with any higher risk estimates that those used for current radiation protection standards. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) classifies ionizing radiation as a weak carcinogen, and the scientific evidence is that radiation is still a weak carcinogen. Some people, under some circumstances, are more susceptible to it than others. If there is a possible doubt for a person, then we want to give them as much dose as possible.

Comment:

For a science that is not exact, we have good soldiers. They said for years “You can’t talk about what you do,” and people around here thought we made washing machines. You have good soldiers who don’t talk about it. Who is to say that these illnesses did not come from working here? Think about all the military personnel that were there when the government did the first nuclear tests. They were told that there was no harm. By the time that the government finally admitted that there were hazards, most of them were dead. The same thing happened here.

Jack Fix:

That is really who these studies are looking at – the older people because the studies are based on the mortality rates. The idea in this program is that every amount of radiation is hazardous.

Response:

I just wish that some of these guys were still around to tell their stories.

Mr. Lewis thanked the union representatives for meeting with the team. The meeting concluded at 2:15 p.m.

Attachments:

Attachment A: Worker Outreach/TopHat Concern-Response Review for the Kansas City Plant
September 15, 2004 Kansas City Plant Site Profile Meeting



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Attachment A: Worker Outreach/TopHat Concern-Response Review for the Kansas City Plant September 15, 2004 Kansas City Plant Site Profile Meeting

Concern No.	Concern	Response Resolution	Result in Change to Site Profile?	Reference to Site Profile Change
1.	The medical department at the Kansas City Plant changed over the years. At one time, chest x rays were standard procedure at the plant, but later the medical department at the Kansas City Plant suggested that workers get x rays from their own personal doctors.	The KCP Site Profile assumes that the precise history of chest x-rays to KCP workers is not known. It is understood from KCP medical staff that KCP has never asked workers to obtain occupational x-rays from their personal physician. Workers were however referred to an offsite imaging clinic for work-related x-rays beginning in the fall of 1997. However, in the Site Profile in section 3.1, "Dose Reconstruction," it is recommended that "If there is no reasonable information in the claim documentation, dose reconstructors should assume an annual posterior-anterior (PA) radiographic chest X-ray for each claimant's employment period from 1949 to 1990." Further, it is recommended that the estimated dose from medical X-rays before 1964 use higher dose default values as stated "dose reconstructors should use the default values in Tables 3.3-1 and 4.0-1 of ORAU (2003b) for chest X-rays." The approach to assume that chest x-rays were taken each year, if there is no information to the contrary, and to assign a conservative estimate of the dose per examination will result in an over-estimate of the actual worker medical x-ray dose.	Yes, Based on a July 2, 1993 audit finding, the change from annual x-rays was made during mid-year 1993.	Propose changing section 3.1 "Dose Reconstruction" recommendations as follows: 1) item c, change wording from "to 1990" to "through June 1993" 2) add new item d stating that chest x-rays, unless there is other information, assume that x-rays were received for each 5-year period beginning July 1993.
2.	X rays for beryllium monitoring were performed outside of the Kansas City Plant facility.	Please see the response for item #1. KCP practices to examine workers potentially exposed to beryllium are not considered in the KCP Site Profile with the exception that it is intended to include the dose received from KCP occupational health organization directed chest x-rays, as well as any other occupational related chest-x-rays since 1990 in addition to the recommendations to estimate occupational dose from x-rays from 1949 to 1990.	Yes	See item #1



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3.	Guards employed at the Kansas City Plant went everywhere at the site but were not told the amount of danger involved in their work or what types of chemical and radiation sources they could be exposed to.	For radiation exposures addressed in the KCP Site Profile, it is understood that KCP has followed policies to monitor all workers with a potential for significant radiation exposure relative to established radiation protection guidelines. For the early years, Atomic Energy Commission guidelines were to monitor workers who could exceed 10% of the respective skin, organ and whole body dose guidelines. Similar policies have apparently been followed in later years.	No	
4.	After an incident at the Kansas City Plant when promethium was released and maintenance workers tracked the promethium home, the plant wanted the exposed workers to bring their cars inside of the plant so that they could be checked for radiation. For security reasons, the guards had to search the cars that were brought in. The guards were never told about the possibility of radiation being inside the cars.	A relatively large report (384 pages) of an extensive investigation of the Pm-147 contamination on February 10, 1989 was prepared and published September 1989. According to this report, the Department of Energy, Environmental Protection Agency and the Missouri Department of Health, Radiological Health Division were notified of this incident, and the efforts to assess the extent of exposure and contamination of facilities and personnel. A DOE team of investigators arrived at KCP on February 14 to assume technical management of the situation. Based on what eventually were determined to be false-positive bioassay results, the homes of 4 KCP workers were inspected and some contamination was found. There were undoubtedly many activities to identify the cause and extent of this contamination. Pm-147 is a relatively low-energy 100% beta emitting nuclide (e.g., maximum energy of 224.7 keV, average energy of 62 keV) with a half-life of 2.6 years. The primary concern with this type of nuclide would be direct skin contamination and intake. The report addresses the chronology of steps, and the results, to examine potential exposure and contamination.	No	
5.	Kansas City Plant guards were not a part of the monitoring program.	Please see response to item #3.	No	
6.	The few workers that were aware that the cars that were possibly	Based on the presence of AEC technical inspectors for this incident, and the apparent	No	



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	contaminated with promethium argued with management at the Kansas City Plant regarding the decision of having guards search the cars and possibly being exposed themselves. But the decision was made to bring the cars in and have the guards search the cars.	involvement of Missouri radiological health professionals, it is assumed that all significant potential worker exposure was considered. Considering the number of persons involved in the investigation and the diverse employment of these persons, it is difficult to imagine that a significant exposure potential was over-looked.		
7.	Kansas City Plant workers need to know about the sources of exposure that were at the Kansas City Plant.	This is indeed important. Preparation of the KCP Site Profile focused on an examination of the types of radiation that could result in KCP worker exposures. The TBD includes a summary of inventories of radiation sources and potential environmental releases. It was concluded that the primary sources of potential exposures involved the numerous industrial radiation generating devices used for examination and process control, and the work with depleted uranium.	No	