preceding year. She was uncertain as to the format in which it would be available. **Dr. Ziemer** suggested they be made available electronically, if possible, or by hard copy if necessary.

Mr. Robert Presley indicated he was speaking with personnel at the Nevada Test Site relative to a tour while the Board is in Las Vegas in December. The tour will take an entire day and is being scheduled for the day following the meeting. Names and Social Security numbers will be needed for those wishing to participate. **Ms. Homer** offered to assist in that effort.

Items of particular interest for the December agenda were solicited. **Mr. Elliott** indicated NIOSH would put a travel task before the Board's contractor to facilitate a face to face meeting in Las Vegas. **Mr. Griffon** inquired into the possibility of a presentation on the IMBA program, which **Mr. Elliott** agreed to look into. It was suggested that any items that come to mind prior to November 15 when *Federal Register* notice has to go out, be provided to **Dr. Ziemer** or **Mr. Elliott**.

Future meeting times and sites were discussed. The Board agreed to meet in Augusta, Georgia on February 5th and 6th to coincide with the Health Physics Society meeting the next week and because of its proximity to the Savannah River Site. The timing allowed for review and possible approval of early deliverables in the support contract. Washington, D.C. was agreed to as a back-up location.

The week of April 19th was decided on for the following meeting, to be held in Richland, Washington for its proximity to the Hanford site. No specific dates were decided on.

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SITE PROFILE UPDATES

Dr. James Neton
NIOSH

Dr. James Neton provided the Board with an update on progress on TBD and site profile development. He reiterated the purpose of the documents, supporting dose reconstructors by providing site-specific information, helps minimize interpretation of data. With approximately 130 health physicists slated on dose reconstructions, the document helps provide consistency and is used much like a handbook. They are dynamic documents, under review whenever new information becomes available.

All completed TBDs may be viewed at the web site. Comments are encouraged and can be made to the NIOSH Docket Office. The Docket Office address is located at the introduction to the individual site profile.

Briefings are being arranged with union representatives to solicit input as each document is completed. A meeting is scheduled at the Savannah River Site on November 11. Arrangements are currently being made to visit Hanford. The six TBDs making up the site profile for Hanford have just been completed.

Team members on individual site profiles are now listed on the ORAU web site, along with their associated conflict of interest statements.

Fifteen DOE facility TBDs are under development in parallel, with targeted completion by end of the calendar year. Completion of those 15 documents will provide the ability to address approximately 77 percent of the claims currently pending at NIOSH.

Mr. Michael Gibson interrupted to ask how many health physicists and parties involved in development of site profiles were Q-cleared and how classified relevant data was being included in the TBDs. **Dr. Neton** replied NIOSH had three and ORAU had 15 to 20 Q-cleared individuals. Q-cleared individuals have reviewed data to determine applicability to the site profiles. Thus far no classified information has been discovered that needed to be included in dose reconstruction.

Dr. Neton noted an additional issue with UCNI data, which is not classified but similar to Privacy Act information. **Mr. Presley** clarified UCNI as the acronym for Unclassified Controlled Nuclear Information. **Mr. Elliott** added NIOSH had successfully worked with classification officers to provide data or information couched in a way that it could be used but not jeopardize national security.

Returning to the Mallinckrodt document, **Dr. Neton** noted the scope of the document was limited to aid in reconstruction of radiation doses to workers at the St. Louis downtown site only, specifically plants 1, 2, 4, 6, 6E, 7, and 7E. The time period addressed is from April 1942 through July 1958. Currently reserved, residual contamination in the 1959-1995 time period will also be covered in the document.

The introduction covers the Manhattan Engineering District asking Mallinckrodt Chemical Works to begin research on uranium refining and processing operations. That was April of 1942. Three months later, they were in production. Between 1942 and 1957 more than 50,000 tons of natural uranium products were processed.

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A full-scale health program was not started until 1948. Film badging began in late 1945, with urinalysis some time later. Both Mallinckrodt and the AEC performed periodic air sampling, including radon breath analysis. External dose records are missing from 1942-1945. Internal dose records are missing for the 1942-1947 period.

This section also establishes the context for interpretation of existing records, along with the basis upon which to determine missing doses for periods in which records are non-existent.

Dr. Neton explained the history of site use provided a summary chronology, with descriptions of the work performed in major plants and the safety problems and solutions noted. The section covers decontamination and surveys performed. It moves through the recycling performed commencing in 1957 and waste residues taken to the St. Louis Airport Storage Site.

The section describing the uranium refining process explains the basic process, and defines three specific periods of time of significance. They are the wartime period (April '42 to April '45), the early postwar period (May '45 to December '49), and the later postwar period (1950 to 1958). The section discusses other processes, the ores and other feed forms used, as well as residues and effluents.

The next section covered radiological characteristics, conditions, considerations, and available date. It described units, limits and recommendations. Radioactivity content and handling of the ore, uranium produces, and residues was discussed.

Internal dose considerations included particle size, solubility, composition and sampling methods. Also reviewed were airborne dust levels, respirator use, radon and surface contamination. Information and available data included urinalysis, breath radon analyses, WBC and lung counts.

External dose considerations included film badges, extremity dosimeters and occupational X-rays. Other areas of interest were number of workers, number of hours worked per week, job types and work areas.

Determination of radioactivity intakes and internal doses included assumptions, estimating intake using surrogate worker data and time-weighted daily average exposure data, as well as calculation of internal doses for missing periods or for comparison.

Determination of external doses was covered by general considerations unmonitored workers. Application of dose data from available film badge dose monitoring, external exposure geometries and photon energy

ranges was discussed

Discussion Points

- **Mr. Mark Griffon** queried whether there is any feeling for an inability to reconstruct dose for any subpopulation of worker at the Mallinckrodt site. **Mr. Neton** answered there was not.
- **Dr. James Melius** asked what happened if a worker had been employed at the other facilities, too. **Dr. Neton** replied that if a dose reconstruction based on Mallinckrodt alone took the claimant into the compensable range, it was completed. If it did not, the claim would have to wait for the TBD on the other facility to make a determination.
- **Dr. Roy DeHart** asked if any incidences of adverse events had been discovered through the document review. **Dr. Neton** answered that a few incidents were addressed in the document. Where documentation was available, they were characterized.
- **Dr. Genevieve Roessler** inquired how long the development process had taken. **Dr. Neton** reckoned some six to eight months.
- **Dr. Roessler** asked what part of total dose was assumed for the chest X-ray. **Dr. Richard Toohey** responded that since they were done at a hospital, it was presumed that both AP and lateral views were shot, and that they were given the typical exposures for the time.
- **Mr. Leon Owens** wondered what the mechanism was for incorporating an undocumented significant event in the '45-'49 time period that was mentioned in several claimant interviews and necessary for a claim to be compensable. **Dr. Neton** replied that corroboration and plausibility would factor into the event being considered and put into the claimant's dose.
- **Mr. Mark Griffon** asked how use of surrogate worker data was being validated. **Mr. Neton** indicated they would match as closely as possible. If you can't match, pick the next highest value to be found in the table.
- **Mr. Griffon** wondered if any past experts had been interviewed in the process. **Dr. Neton** indicated they had not.
- **Mr. Griffon** asked if the references would be posted on the web site. **Dr. Neton** replied that, to the extent that the Privacy Act would not be violated, that could be looked into.
- **Dr. James Melius** commented that in the future it would helpful to have reports to be discussed in a meeting available beforehand. He added he found it disconcerting that in a process taking eight to ten months, no attempt was made to consult experts. He asked what plans were to do that in the future. **Mr. Elliott** answered

that consultation was sought where needed, as in the Bethlehem Steel document. The wealth of information available at Mallinckrodt allowed them to proceed without that need. The first goal is to get the documents out. Comment is welcome.

Dr. Melius said he still had a question about whether NIOSH planned to hold meetings. **Mr. Elliott** reiterated that it was the plan to do so.

Dr. Melius commented he was presuming NIOSH was rejecting involvement by labor or other interested parties prior to publication. **Mr. Elliott** replied it was not being rejected; it will be sought where it is felt necessary and appropriate to put out a quality document.

Mr. Melius inquired where that was being done on the 15 documents in development. **Mr. Elliott** responded that he could not comment with specificity on each individual document and where they were in their development.

Dr. Melius offered that he found **Mr. Elliott**'s answer unsatisfactory since nothing was scheduled and there was no commitment. Noting that the conflict of interest issue had been raised in public comment, he opined that the development of a policy in that regard was imperative.

Dr. Paul Ziemer observed that the document was probably never going to be complete and every resource will never be tapped. But it has to be put out sometime, and there appeared to be a wealth of information to support the Mallinckrodt document. Other information will be added as it becomes available. While further refinement may be helpful and useful, this document has already helped to process claims.

Mr. Elliott agreed, noting that NIOSH was concerned at the time involved if a participatory process were adopted. This was considered more expeditious.

Mr. Griffon asked if claimant interviews had been used in development of the TBD. **Dr. Neton** responded that they were checked to make sure there was nothing inconsistent with what the TBD is saying.

Dr. Melius opined that responding to a web site is not an open public process, noting that the documents were going to be used to reject claims. **Mr. Elliott** clarified for **Dr. Melius** that the TBDs or site profiles were not used to reject claims. They are to support dose reconstruction. The dose is either compensable or not.

Mr. Elliott offered that individual comments had been heard and reacted to, but if there was Board consensus, he needed to hear that.

Ms. Wanda Munn reminded the Board of Dr. Till's recent appearance

before the Board in which he spoke of the need for establishing a policy of when the science one has is what one will use, and recognize what is the reality in terms of imponderables that cannot be defined clearly. Failure to do so creates more confusion.

Mr. Gibson observed the science of health physics was not being questioned, but rather the adequacy of records of people for whom a Federal agency has already gone on record to say they were improperly monitored.

A motion was made by **Dr. Melius** and seconded by **Mr. Griffon** that the Board recommend NIOSH develop a process for public and site expert participation and involvement in the development of site profiles, that this participation include both prior to publication on the web site and comment after initial publication. **Dr. Ziemer** opened the motion for discussion.

Board Discussion

Mr. Owens agreed with **Mr. Gibson**'s comment, adding that measurements don't mean anything to a lot of people, they just feel lied to. The site profile development process needs to be as transparent as possible.

Dr. Tony Andrade agreed with transparency, but noted measurements have everything to do with the process. Assuming are all records are false and untrue and that folks who ran a radiation protection organization would falsify such things is unconscionable. He pointed out one must start somewhere dispassionate, which has everything to do with the records. The starting point is what is on paper. Agreeing that a larger outreach effort to let people know they can comment is needed, **Dr. Andrade** asserted his belief that the process currently in place is appropriate.

Dr. Roessler queried **Dr. Melius** about specifically what he would have done differently and how he would have gone about it.

Dr. Melius responded that his motion was to develop a process, and he felt the process should be flexible and would have to be different for different sites. Speaking from a greater familiarity with the Savannah River Site, **Dr. Melius** noted there were several opportunities to seek information from other resources which were not taken in the development of that TBD. He stated he was trying to defer to NIOSH as much as possible to let them develop a program that doesn't hamper their progress, but at the same time gives people a chance for input.

Dr. Ziemer opined that NIOSH, its staff, the Board and all its

representative facets were after the same thing: A good quality product. What needed to be recognized is that what appears to be issues of being lied to reflects ignorance. The changing dose limits themselves reflect changes in knowledge of the biological effects of radiation. Mistakes were made by even some of the best professionals simply as a result of ignorance or lack of information. **Dr. Ziemer** went on to say that while there may have been instances of falsification, he believed they were few and far between. If specifics were known, they should be taken into consideration. The issue of getting input from the worker side should be respected and he felt NIOSH wants to accomplish that. If it needs to be formalized, that may be useful. **Dr. DeHart** offered his support of the motion, but wanted to make clear his belief that NIOSH has made a good faith effort to do the best they could with what they have. His support is because the issue is divisive. The need for worker and expert participation has been expressed and this is an opportunity to continue that participation. **Dr. DeHart** cautioned that it is a mistake to assume this will resolve or remove any issues. It will, however, provide NIOSH with one more step of protection as it moves forward.

Mr. Gibson commented he was not questioning the credibility of any particular rad professional, but knew of some in the complex who put production over safety. He likened it to having to represent union employees caught sleeping on the job; there are some out there.

Dr. Roessler observed that from her evaluation of the Mallinckrodt document, it was very well done. She felt the motion would give the Board direction in prioritizing when its support contractor began their work.

Ms. Munn indicated that while all sources of valuable information should be incorporated into the final document, she has observed that what happens with public hearings and wide open input prior to having something to work from is cumbersome and time-consuming for everyone. It has been her experience that it is most effective to have a document based on the best evidence that can be supported by record and have input to that if there are shortcomings or errors to it. **Ms. Munn** offered her opinion that the motion was incorrect procedurally.

Dr. Ziemer pointed out that the motion does not mandate how the process is to be carried out other than to ask that there be input The process could in fact be exactly what has occurred.

Dr. Ziemer further noted that the Board must recognize it is not a management board for NIOSH. If the motion passes, it simply reflects