

Overview of

ESTIMATING THE MAXIMUM PLAUSIBLE DOSE TO WORKERS AT ATOMIC WEAPONS EMPLOYER FACILITIES (ORAUT-OTIB-0004, Rev. 02)

Workers at Atomic Weapons Employer (AWE) facilities have the potential to be exposed to radiation from different sources. The Technical Information Bulletin (TIB), *Estimating the Maximum Plausible Dose to Workers at Atomic Weapons Employer Facilities* (ORAUT-OTIB-0004), provides guidance on how to estimate the maximum plausible dose to workers at Atomic Weapons Employers that handled uranium metal, but did not process thorium, radium, or uranium ores.

In cases where an experienced dose reconstructor, reviewing a claim before performing a dose reconstruction, can see that the worker's cancer is likely not caused by radiation in the work environment, the maximum plausible dose is assigned to the employee in an effort to intentionally overestimate the true dose received. This overestimating of received dose is claimant favorable and results in a higher calculated likelihood that a cancer was caused from work-related exposure. Cases cannot be compensated using this methodology; however, it helps to better allocate resources as it can show more quickly when the dose will fall short of being compensated.

SUMMARY OF FINDINGS RESULTING FROM THE TECHNICAL REVIEW

The technical contractor for the Advisory Board on Radiation and Worker Health (the Board) reviewed the TIB and produced the 11 findings summarized below:

Finding #1: Several sections are ambiguous and are not explicit on how to combine ingestion and inhalation doses.

Finding #2: The document is incomplete regarding required data.

Finding #3: Guidance provided is not consistent with that of several other procedures.

Finding #4: Some data in the TIB are inconsistent with data in another TIB.

Finding #5: For purposes of consistency with another procedure, this document should identify a maximum liver dose that was equal to the lung dose.

Finding #6: Guidance is not claimant favorable in instances where unknown parameters affect dose estimates, and in the breathing rate used to evaluate intake.

Finding #7: As the document does not provide data regarding assumptions for maximum levels of exposure, it is not possible to judge if estimates are claimant favorable.

Finding #8: The Technical Information Bulletin assumption that normal removal mechanisms reduce residual contamination at a specified rate does not appear to be claimant favorable and may be unrealistic.

Finding #9: The procedure assumes a given concentration of radioactive material in the air and justifies the choice based on incomplete data from an Atomic Weapons Employer facility; this choice may not necessarily be claimant favorable.

Finding #10: The procedure identifies a breathing rate that assumes a “light worker” scenario. This assumption may not be claimant favorable in some circumstances, and should be evaluated in more detail.

Finding #11: The guidance regarding ingestion should be updated according to the model in another TIB, *Estimation of Ingestion Intakes* (OCAS-TIB-009).

RESOLUTION OF FINDINGS

The National Institute for Occupational Safety and Health (NIOSH) responded to the findings as follows:

- (1) NIOSH agreed with Findings #1, #2, #4, #5, #6, #7, #9, and #11, and will address these issues in a new revision of the procedure.
- (2) For Finding #3, NIOSH believes there should be no expectation of consistency among all types of claims when overestimating dose, but agrees to remove a passage in the new revision to be consistent with ORAUT-OTIB-0005.
- (3) NIOSH disagreed with Finding #8, stating that data at some sites do indicate a faster removal.
- (4) NIOSH disagreed with Finding #10, stating that International Commission on Radiation Protection default recommendations should be used in the absence of more specific information, but committed to develop general guidance for addressing the breathing rate issue.

Findings #1, #3, #4, #5, #7, #8, #9, and #11 were adequately resolved in Revision 3 to the satisfaction of the Board.

Findings #2 and #6 were found to be only partially resolved in the newest revision and are currently in abeyance. NIOSH will develop general guidance to satisfy Finding #10.