

Office of Compensation Analysis and Support
Program Evaluation Plan

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Evaluation of the Impact of OTIB-0052, Construction Trade Workers

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RECORD OF ISSUE/REVISIONS

ISSUE AUTHORIZATION DATE	EFFECTIVE DATE	REV. NO.	DESCRIPTION
3/29/2007	3/29/2007	0	This document provides a plan to evaluate the impact of OTIB-0052 on previously completed Construction Worker Claims.

1.0 Description

In 2004, it was noted that some Construction Trades Workers (CTW) at various sites were unmonitored during the early years of the complex. It was believed that these workers may have been exposed to external radiation and/or internal contamination above ambient and environmental levels without adequate monitoring. To address this issue, ORAUT-OTIB-0052 (*Technical Information Bulletin: Parameters to Consider When Processing Claims for Construction Trade Workers*) was developed to provide guidance on assessing CTWs with inadequate monitoring (either internal or external).

2.0 Issue Evaluation

The issuance of ORAUT-OTIB-0052 on August 31, 2006 provided guidance for assessing CTWs that had unmonitored periods (for either internal or external exposures) during their employment.

An investigation of the Department of Energy (DOE) complex dosimetry records was conducted to determine the ratio of the external and internal annual doses received by monitored CTWs to those received by all other monitored workers (AMWs). In general, it was found that for the DOE complex the internal and external annual doses received by the CTWs were usually bounded by those received by the AMWs. Examination of the individual DOE sites indicated that in some instances, at some sites, the external annual doses received by the CTWs exceeded those of AMWs. In these instances, the observed ratios of CTWs to AMWs external doses were further examined. This resulted in the development of a favorable to claimant adjustment factor of 1.4, which will be applied by dose reconstructors to all unmonitored CTWs throughout the DOE complex. Guidance is provided for dose reconstructors on the use of this adjustment factor in OTIB-0052.

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Examination of dosimetry records throughout the DOE complex for internal dose indicated that only the Hanford site required adjustment. For the Hanford site, the intake rates in the Hanford coworker study should be multiplied by a factor of 2. Guidance is provided for dose reconstructors on the determination of internal dose. For all other sites, the appropriate unmonitored dose methods explained in the applicable TBD will be followed with no adjustment factor.

In order to efficiently implement this direction, external coworker study OTIBs were updated to reflect the doses to be assigned to CTWs when appropriate. Since the OTIB-0052 methodology only applies to the measured portion of the coworker doses (the total coworker doses have missed dose also taken in account), these OTIBs were updated to reflect the correct external coworker dose to assign to CTWs.

The following external coworker data studies were updated for this reason:

Site	Effective Date
OTIB-0021 X10 Ext Coworker	11/7/2006
OTIB-0026 K25 Ext Coworker	11/15/2006
OTIB-0030 Hanford Ext Coworker	11/7/2006
OTIB-0031 Paducah Ext Coworker	11/7/2006
OTIB-0032 SRS Ext Coworker	11/7/2006
OTIB-0040 Portsmouth Ext Coworker	11/7/2006

Although these OTIBs were not updated until November 2006 to reflect the OTIB-0052 methodology, dose reconstructors were already required to apply OTIB-0052 methods beginning August 31, 2006. Until the OTIBs were updated the following measures were applied:

1. If a claims was potentially non-compensable, the 1.4 factor was applied to the full external coworker dose. This would result in a slight overestimate (appropriate in a non-compensable claim) because the 1.4 factor does not apply to the missed dose portion of the coworker dose.
2. If a claim was potentially compensable, the 1.4 factor was not applied to the coworker dose. This would result in a slight underestimate (appropriate in a compensable claim) because the 1.4 factor should be applied to the measured dose portion of the coworker dose.
3. If the methods above did not yield a clear compensability decision, the claims were held until the appropriate coworker dose study was updated in November 2006.

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Based on these measures, this PEP covers all applicable PEPs for these coworker external dose studies.

3.0 Plan for Resolution or Corrective Action

Parameters for inclusion:

1. Job title fitting CTW at a DOE facility
2. Probability of Causation (PC) < 50%
3. Most recent version approved by OCAS on or prior to August 31, 2006
4. Unmonitored periods addressed in assessment

Steps for determining included claims (database search portion):

1. Electronically sort claims with appropriate job titles. This was conducted by searching both the NOCTS Job Title field and the submitted DR Reports for a list of keywords that can be found in Attachment A.
2. Select only those claims with PC<50%.
3. Remove all claims where the keyword search hit upon a keyword in an inappropriate data field (such as an EE that lived on Plumber Street).
4. Remove all claims where all employment was at AWE facilities.
5. Select only those claims that were approved by OCAS on or before August 31, 2006 – status based on the fact that OCAS reviewers were also using this direction starting on this date and any claim reviewed after that time would have been returned to ORAUT. Also removed any claims that have been returned for any reason and are presently in the DR process at any step prior to OCAS approval.

These criteria were used to generate the list of potentially affected claims (total = 4,546 claims).

The affects of OTIB-052 can be quantified to the point of allowing an additional selection criteria based on the original Probability of Causation of the claim. The additional selection criteria are:

- a. $PC \geq 33\%$ for claims with Hanford employment based upon the potential to double the dose (internal dose at Hanford is assigned with a factor of 2 per OTIB-0052) and the discussion below on PC.
- b. $PC \geq 40\%$ for claims without Hanford employment based upon the potential use of a factor of 1.4 for external dose and the discussion below.

The PC selection criteria values are based on the fact that the dose estimate is used to determine the Excess Relative Risk (ERR). The Probability of Causation (PC) is determined directly from the ERR. The relationship is:

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$$PC = [ERR/(1+ERR)]*100\%$$

From this equation it can be seen that an ERR of 1 is required to yield a PC of 50%. For a given scenario of time since exposure, age at diagnosis, type of cancer, type of radiation, etc., the ERR varies essentially linearly with dose. Therefore, it is possible to assess the change in PC on a particular case if the change in dose is known and it is the same for all sources of dose. This, of course, is not the case for the potential changes in dose due to the application of OTIB-0052 since either internal or external or both doses could be changed. Therefore, in the evaluation, the changes will be assessed as if the primary source of exposure to the individual organ of interest was the source that changes and was the only source of exposure. This will overestimate the magnitude of the change and produce a larger than necessary group of claims to evaluate further.

Based on the equation above, adjusting the ERR by a factor of 2 (for internal dose adjustment at Hanford), an original PC of 33.33% would now result in a PC of 50%. Thus, a lower selection criterion of 33% has been selected.

Based on the equation above, adjusting the ERR by a factor of 1.4 (for external dose adjustment at all sites), an original PC of 41.67% would now result in a PC of 50%. Thus, a lower selection criterion of 41% has been selected.

These criteria were used to reduce the list of potentially affected claims to 824.

The potentially affected claims can be further reduced with the following manual selection criteria:

1. Remove job titles that created a keyword hit but are not CTW (such as a hit for “maintenance” in “Mr. Xxxxx was a geologist who flew an airplane in support of the Geological Uranium Explorations Program. In this position the telephone interview indicates that he flew approximately 4 hours per day with the remainder of the day devoted to paperwork and aircraft maintenance.”
2. Select only those CTWs who had unmonitored periods that needed to be assessed
 - a. External monitoring – include if there is at least 1 year of continuous unmonitored time.
 - b. Internal monitored – no monitoring at all or insufficient monitoring for dose bounding purposes at the Hanford site, since Hanford is the only site where there is an adjustment factor for the internal coworker data and it cannot be ensured that any overestimating assumption was greater than twice the coworker dose that would have been assigned.

After the potential affected claims have been evaluated, a Program Evaluation Report (PER) will be written to summarize the results. As part of the report, claims that were not evaluated further due to the PC cut point will be reviewed to determine if they are

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also affected by another PER. The PER will contain additional analysis for these cases including additional evaluations if necessary.

4.0 References

1. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0021, *Technical Information Bulletin: External Coworker Dosimetry Data for the X-10 Site, Rev 01*, November 7, 2006.
2. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0026, *Technical Information Bulletin: External Coworker Dosimetry Data for the K-25 Site, Rev 00 PC-2*, November 15, 2006.
3. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0030, *Technical Information Bulletin: External Coworker Dosimetry Data for the Hanford Site, Rev 00 PC-1*, November 7, 2006.
4. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0031, *Technical Information Bulletin: External Coworker Dosimetry Data for the Paducah Gaseous Diffusion Plant, Rev 00 PC-2*, November 7, 2006.
5. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0032, *Technical Information Bulletin: External Coworker Dosimetry Data for the Savannah River Site, Rev 00 PC-1*, November 7, 2006.
6. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0040, *Technical Information Bulletin: External Coworker Dosimetry Data for the Portsmouth Gaseous Diffusion Plant, Rev 00 PC-1*, November 7, 2006.
7. ORAUT (Oak Ridge Associated Universities Team), ORAUT-OTIB-0052, *Technical Information Bulletin: Parameters to Consider When Processing Claims for Construction Trade Workers, Rev 00 PC-1*, January 16, 2007.