

Office of Compensation Analysis and Support
Program Evaluation Report

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Revision No. 0

Construction Trades Workers

Page 1 of 7

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RECORD OF ISSUE/REVISIONS

ISSUE AUTHORIZATION DATE	EFFECTIVE DATE	REV. NO.	DESCRIPTION
11/28/2007	11/28/2007	0	New document to determine which previously completed claims require evaluation for the effect of ORAUT-OTIB-0052 on the completed dose reconstruction.

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 issued on 8/31/2006 to provide guidance on assessing exposure to CTWs with inadequate monitoring (either internal or external).

2.0 Issue Evaluation

OTIB-0052 provides a means of estimating the dose to unmonitored Construction Trades Workers at DOE sites that may have been exposed to radiation at levels greater than environmental levels. This document multiplies by 1.4 the external dose determined from a co-worker study. At Hanford, the internal dose is also adjusted by using a 2.0 multiplier on the monitored worker's internal intakes.

A number of DOE sites did not yet have an external co-worker study published when OTIB-0052 was issued. Since dose reconstructions for claims at these sites completed prior to the issuance of OTIB-0052 could not have used external co-worker values, there is no change to these claims as a result of the issuance of OTIB-0052. The sites that had external co-worker studies issued prior to 8/31/2006, and must be evaluated under this PER, are listed in the table below.

Office of Compensation Analysis and Support Program Evaluation Plan	Document Number: OCAS-PER-014
Effective Date: 11/28/2007 Revision No. 0	Page 2 of 7

DOE Sites with an External Co-worker model issued prior to 8/31/2006

	First published co-worker	
	Date	Document
Hanford	3/23/2005	ORAUT-OTIB-0030
Pacific Northwest National Laboratory	3/23/2005	ORAUT-OTIB-0030
Kansas City Plant	5/31/2005	ORAUT-TKBS-0031
Los Alamos National Laboratory	5/10/2005	ORAUT-TKBS-0010-6
Pantex Plant	7/27/2006	ORAUT-TKBS-0013-6
Portsmouth Gaseous Diffusion Plant	7/29/2005	ORAUT-OTIB-0040
Savannah River Site	5/31/2005	ORAUT-OTIB-0032
Weldon Spring Plant	6/24/2005	ORAUT-TKBS-0028-6
Oak Ridge National Laboratory (X-10)	12/29/2004	ORAUT-OTIB-0021
Y-12 Plant	9/9/2004	ORAUT-OTIB-0013

Note: Hanford internal co-worker study (ORAUT-OTIB-0039) first issued after external co-worker study.

Although four additional sites had external co-worker studies published prior to OTIB-52, they are not included in the table above for the reasons stated below.

Paducah

OCAS-PER-013 requested the return of all Paducah claims completed prior to 11/7/2006. A new dose reconstruction will be completed for these claims using all current methodology.

Rocky Flats

OCAS-PER-021 requested the return of all claims completed prior to 8/17/2007. A new dose reconstruction will be completed for these claims using all current methodology.

Mallinckrodt

OCAS-PER-015 requested the return of all claims completed prior to 7/31/2007. A new dose reconstruction will be completed for these claims using all current methodology.

K-25

OCAS-PER-011 included OTIB-0052 considerations in that PER.

3.0 Plan for Resolution or Corrective Action

A search of the claims from the sites in the table above was conducted to determine which claims may be those of Construction Trades Workers. The NOCTS Job Title, as well as the original dose reconstruction report, was searched for any of the key words listed in appendix A. Those that were selected only because the word appeared in an inappropriate field were removed. For example, if the claim was selected only because the word “plumber” appeared in the address (Plumber Street), the claim was removed

Office of Compensation Analysis and Support Program Evaluation Plan	Document Number: OCAS-PER-014
Effective Date: 11/28/2007 Revision No. 0	Page 3 of 7

from the list of selected claims. Only those claims with a probability of causation (PC) less than 50%, that are currently at the Department of Labor and whose dose reconstruction was approved prior to 8/31/2007 were included.

These search criteria resulted in 977 potentially affected claims being selected.

The effect of OTIB-0052 on changing a compensation decision for previously completed dose reconstructions can be evaluated by examining the Probability of Causation (PC) on a case by case basis. The use of PC as a screening criterion is based on the fact that the dose estimate is mathematically proportional to the Excess Relative Risk (ERR). As shown below, the probability of causation is determined directly from the ERR as:

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

From this equation, it can be seen that an ERR of 1.0 would result in a PC of 50% and an ERR of 0.818 would result in a PC of 45%¹. It can also be seen that, for a given case, the effect on PC of a known increase or decrease in dose can be mathematically determined using only the original PC and this equation.

For ORAUT-OTIB-0052, the effect is to increase the external dose 1.4 (also and increase of 2.0 for internal dose at Hanford). Although the exact effect can only be determined on a case by case basis, it is clear that the maximum amount that the dose would increase for any of these cases is a factor of 1.4 (2.0 for Hanford).

Using the PC equation above, it can be calculated that, ORAUT-OTIB-0052 can not raise the PC to 45% if the original PC was at or below 36.8% (29.0% at Hanford). Because of this, a PC at or below this value is used as a screening criterion to determine which cases can not increase to greater than 45% PC when OTIB-0052 is applied. This criterion can not be applied to cases that are affected by other technical program changes. It should also be noted that this is a conservative analysis in that it assumes the factor of 1.4 applies to all doses, including internal dose. In a revised dose reconstruction, this increase obviously would not be applied to these other doses. Therefore, this screening criterion will conservatively identify a population of claims larger than the population that will actually have an increase in PC to greater than 45%.

¹ A PC of 45% was selected because any claim that could exceed this value would be required to have 30 IREP runs with 10,000 iterations per run.

Office of Compensation Analysis and Support Program Evaluation Plan	Document Number: OCAS-PER-014
Effective Date: 11/28/2007 Revision No. 0	Page 4 of 7

The 977 potentially affected claims will be reviewed to determine if they are affected by OTIB-0052. The following criteria will be used:

1. External Co-Worker dose assigned. If no external co-worker dose was assigned (also internal at Hanford), there is no OTIB-0052 adjustment to be made and the claim is not affected by OTIB-0052.
2. Verify the claim is a Construction Trades Worker. Since the key word search could not verify the context of the word, it is possible that some claims were included that should not have been. If the claim is not that of a Construction Trades Worker, the claim is not affected by OTIB-0052.
3. Determine if the probability of causation is less than the PC trigger value (36.8% or 29.0% for Hanford claims). If the PC is less than this value, the PC can not increase to 45% because of this change alone and a new dose reconstruction is not necessary.
4. If the claim is below the PC trigger value and a construction trades worker that was assigned co-worker dose, verify no other PERs affect the claim. If there is no increase in dose based on other PERs, the claim does not need a new dose reconstruction.

NIOSH will provide DOL with the list of 977 claims, as well as a determination on each claim as to whether a new dose estimate is required. Documentation, that includes a dispositive statement which explains the basis as to why each claim was or was not determined to require a new dose reconstruction, will be provided to DOL and included in each case file.

Office of Compensation Analysis and Support Program Evaluation Plan	Document Number: OCAS-PER-014
Effective Date: 11/28/2007 Revision No. 0	Page 5 of 7

Attachment A

Search criteria for NOCTS database and DR Reports search

CTWTitles[0,0] = " carp";
CTWTitles[0,1] = "Carpenter";

CTWTitles[1,0] = " heavy eq";
CTWTitles[1,1] = "Heavy Equipment Operator";

CTWTitles[2,0] = " plumb";
CTWTitles[2,1] = "Plumber";

CTWTitles[3,0] = " pipef";
CTWTitles[3,1] = "Pipe Fitter";

CTWTitles[4,0] = " millw";
CTWTitles[4,1] = "Millwright";

CTWTitles[5,0] = " ship";
CTWTitles[5,1] = "Shipping";

CTWTitles[6,0] = " skill";
CTWTitles[6,1] = "Skilled Labor";

CTWTitles[7,0] = " laborer";
CTWTitles[7,1] = "Laborer";

CTWTitles[8,0] = " black";
CTWTitles[8,1] = "Blacksmith";

CTWTitles[9,0] = " linem";
CTWTitles[9,1] = "Lineman";

CTWTitles[10,0] = " boil";
CTWTitles[10,1] = "Boiler";

CTWTitles[11,0] = " brick";
CTWTitles[11,1] = "Brick Layer";

CTWTitles[12,0] = " tile";
CTWTitles[12,1] = "Tile";

CTWTitles[13,0] = " metal w";

CTWTitles[13,1] = "Metal Worker";

CTWTitles[14,0] = " crane";
CTWTitles[14,1] = "Crane Operator";

CTWTitles[15,0] = " paint";
CTWTitles[15,1] = "Painter";

CTWTitles[16,0] = " mason";
CTWTitles[16,1] = "Plaster or Cement Mason";

CTWTitles[17,0] = " sheetm";
CTWTitles[17,1] = "Sheetmetal Worker";

CTWTitles[18,0] = " maint";
CTWTitles[18,1] = "Maintenance";

CTWTitles[19,0] = " truck";
CTWTitles[19,1] = "Truck Driver";

CTWTitles[20,0] = " weld";
CTWTitles[20,1] = "Welder";

CTWTitles[21,0] = " rigger";
CTWTitles[21,1] = "Rigger";

CTWTitles[22,0] = " plast";
CTWTitles[22,1] = "Plasterer";

CTWTitles[23,0] = " cement";
CTWTitles[23,1] = "Cement Mason";

CTWTitles[24,0] = " electrician";
CTWTitles[24,1] = "Electrician";

CTWTitles[25,0] = " insulators";
CTWTitles[25,1] = "Insulator";

CTWTitles[26,0] = " asbestos";
CTWTitles[26,1] = "Asbestos";

CTWTitles[27,0] = " teamster";

CTWTitles[27,1] = "Teamster";

CTWTitles[28,0] = " machinist";

CTWTitles[28,1] = "Machinist";

CTWTitles[29,0] = " radiographer";

CTWTitles[29,1] = "Radiographer";

CTWTitles[30,0] = " iron w";

CTWTitles[30,1] = "Iron Worker";