



ORAU TEAM Dose Reconstruction Project for NIOSH

Oak Ridge Associated Universities | Dade Moeller | MJW Technical Services

Page 1 of 13

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Concurrence: <u>Signature on File</u> John M. Byrne, Objective 1 Manager	Concurrence Date: <u>12/21/2010</u>
Concurrence: <u>Signature on File</u> Edward F. Maher, Objective 3 Manager	Concurrence Date: <u>12/21/2010</u>
Concurrence: <u>Signature on File</u> Kate Kimpan, Project Director	Concurrence Date: <u>12/21/2010</u>
Approval: <u>Signature on File</u> James W. Neton, Associate Director for Science	Approval Date: <u>01/03/2011</u>

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01/03/2011	00	New technical information bulletin to implement new DCAS guidance based on recent NIOSH interpretation of EEOICPA statute language. Incorporates formal internal and NIOSH review comments. Training required: As determined by the Objective Manager. Initiated by Elyse M. Thomas.

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
Acronyms and Abbreviations		4
1.0 Introduction		5
2.0 Guidance		5
3.0 Discussion		5
References		10

LIST OF TABLES

<u>TABLE</u>	<u>TITLE</u>	<u>PAGE</u>
1	Sites with known occurrences of occupational X-rays administered at locations other than the covered facility.....	6
2	Covered facilities that administered occupational X-rays on site, or for which no evidence exists that X-rays were taken off site.....	8

ACRONYMS AND ABBREVIATIONS

AEC U.S. Atomic Energy Commission

AWE Atomic Weapons Employers

CTW Construction Trade Workers

DCAS Division of Compensation Analysis and Support

DOE U.S. Department of Energy

EEOICPA Energy Employees Occupational Illness Compensation Program Act of 2000

HHS U.S. Department of Health and Human Services

NIOSH National Institute for Occupational Safety and Health

NUMEC Nuclear Materials and Equipment Corporation

OTIB ORAU team technical information bulletin

PORTS Portsmouth Gaseous Diffusion Plant

REEC Co Reynolds Electrical and Engineering Company, Inc.

SNL Sandia National Laboratories

SP Site Profile

TBD technical basis document

TIB technical information bulletin

U.S.C. United States Code

§ section or sections

1.0 INTRODUCTION

Technical information bulletins (TIBs) are not official determinations made by the National Institute for Occupational Safety and Health (NIOSH) but are rather general working documents that provide historic background information and guidance to assist in the preparation of dose reconstructions at particular sites or categories of sites. They will be revised in the event additional relevant information is obtained about the affected site(s). TIBs may be used to assist NIOSH staff in the completion of individual dose reconstructions.

In this document, the word “facility” is used as a general term for an area, building, or group of buildings that served a specific purpose at a site. It does not necessarily connote an “atomic weapons employer facility” or a “Department of Energy (DOE) facility” as defined in the Energy Employees Occupational Illness Compensation Program Act of 2000 [EEOICPA; 42 U.S.C. § 7384l(5) and (12)].

EEOICPA requires the assignment of external dose from medical X-ray examinations performed for occupational health screening and required as a condition of employment. Many DOE/AWE sites had their own medical clinics and equipment to perform medical X-ray screening of their workers. Sometimes, however, the DOE/AWE sites contracted with private physicians’ offices, clinics, or local community hospitals to provide this service to workers.

A recent NIOSH interpretation of the EEOICPA statute affects how X-ray dose should be assigned when the X-rays were taken at a site or location that is not defined under the statute as a covered facility. This includes the scenario in which X-rays were taken at offsite locations such as private physicians’ offices, clinics, or local community hospitals. The NIOSH interpretation is that the statute defines covered radiation as the radiation received by a covered employee at a covered facility during a covered time period (NIOSH 2010). Except in limited circumstances concerning residual radiation, only radiation that the employee received while at a covered facility can be included in dose reconstruction. Any site profiles stating or suggesting that offsite medical screening doses will be included will be revised.

2.0 GUIDANCE

If it is known that occupational medical X-ray dose was received at a location other than a covered facility (i.e., an offsite physician’s office, clinic, or local community hospital), it shall not be included in dose reconstruction. If there is doubt about where the X-ray exposure was received, dose reconstructors should assume that the dose was received at a covered facility.

3.0 DISCUSSION

Whether X-ray exposure was received at a covered facility is often discovered in the research process during the review and analysis of historical documentation for a particular covered site. This information is then included in the technical basis document (TBD) or Site Profile (SP) for that site. Table 1 is a summary of currently published TBDs/SPs that contain such historical information about X-rays administered to energy employees off site at locations other than the covered facility where they worked.

When historical documentation does not provide the needed information about where the occupational X-rays might have been taken, the energy employee claim file records might contain evidence that some X-rays were taken off site. For example, the X-ray request form might contain a private physician's, clinic's, or hospital's letterhead. This is not always an indication, because many sites contracted with private radiologists for radiological interpretation of the X-rays, even if the X-rays

were obtained on site, and the radiologist's report might be on the office letterhead. Dose reconstructors should consult the Project Principal Medical Dosimetrist if questions arise.

For most cases in which energy employee medical records are not provided, dose reconstructors should assume that any occupational medical X-ray exposure occurred at the covered facility where the energy employee worked.

The information in Table 1 relies on information in site TBDs, SPs, historical documents, and claim file records and includes all X-rays performed for screening. The new interpretation of the EEOICPA statute language and subsequent guidance will be incorporated into TBDs, SPs, and other applicable project documents as soon as these documents can be revised to include it.

Table 1. Sites with known occurrences of occupational X-rays administered at locations other than the covered facility.

Covered facility	Noncovered (offsite) location	Applicable dates for X-rays at Non-Covered Facilities	Reference
Ames Laboratory	"X-ray examinations of Ames Laboratory staff members were conducted at the Iowa State Student Health Center/College Hospital."	All	ORAUT 2009a, p. 22; Voss 1957; Koehn 1995
Battelle Columbus	"The Battelle claim records indicate that the chest fluoroscopy examinations were performed in a private physician's office."	All chest fluoroscopy	ORAUT 2010a, p. 16; Thomas 2010a
Extrusion Plant	"The 1970 appraisal specifically stated that X-ray examinations were made off the site at Ashtabula General Hospital." "X-ray examinations were performed at the RMI dispensary at some point after 1976 until 1996."	Before 1977 and after 1996	ORAUT 2007c, pp. 20-21; Hibbits and Pryor 1970; Jelinek 1971; Johnson 1976
Hanford Site	"All of the X-rays on Hanford workers appear to have been taken at the Kadlec Hospital in Richland from the time it opened in 1944 until 1956 This would have included construction workers because Kadlec Hospital was for many years the only place that could perform X-ray examinations"	1944 through 1955	ORAUT 2010b, p. 12; Kirklin 1969, p. 217; Cantril 1946, p. 7
Kansas City Plant	"In 1997, medical X-ray services were outsourced;..."	After 1997	ORAUT 2006a, p. 14; Todd 2004 (p. 1)
Lawrence Berkeley National Laboratory	In the early years before about 1964, workers had their physical exams (including X-rays) in their private physicians' offices "Doses for 1991 to 1995 are for the Picker machine, and for 1996 to the present are from ORAUT-OTIB-0006 ..., since employees have been sent off-site for X-rays since that time"	Before 1964 and after 1995	ORAUT 2010d, pp. 21-22; Parker 1963; Grondona 2010
Linde Ceramics	"Some of the claimant files contain data sheets from the Black Rock Clinic, where Linde X-rays were taken, that state the size to be 14- by 17-in. ..."	1943-1949	ORAUT 2009b, pp. 67-68; Author unknown 1951; Robinson 1950; Thomas 2010b

Covered facility	Noncovered (offsite) location	Applicable dates for X-rays at Non-Covered Facilities	Reference
Mallinckrodt	"The annual chest x-rays and presumably the pelvic x-rays were taken at the Barnes Hospital (the Washington University School of Medicine) ... and the x-ray records remained the property of the hospital"	All	ORAUT 2010g, p. 108; Quigley 1950; Mason 1955, pp. 2, 14
Nevada Test Site	"It appears that many of these x-rays were provided by private (contracted) facilities."X-rays performed as a result of workplace accidents were administered offsite, by private contractors in the early years before 1960". "For the downtown facility, REECo used a commercial radiologist company to provide this service [chest x-ray]."	Before 1960	ORAUT 2007g, pg. 12; DeMarre 2002
Nuclear Materials and Equipment Corporation	"NUMEC apparently did not have its own medical X-ray department during AEC operational years." "Even though there is no current evidence that routine medical X-rays were performed at NUMEC,..." "Because the medical X-rays for NUMEC employees appear to have been performed at a local clinic or hospital,..."	All	ORAUT 2010e, p. 39; Author unknown 1978; Cain 1964; Wieland 1981; Myers ca. 1983; Bovard 1961; Bovard 1962
Portsmouth Gaseous Diffusion Plant	"A conversation with a physician that worked at the PORTS medical center within this time frame [1954-1979] indicated that the employees went to three area hospitals for x-rays including the Southern Ohio Medical center during this time period for annual chest x-rays" PFG should be assumed to have been performed on-site. X-ray equipment was installed at Portsmouth in 1982.	1954–1981	ORAUT 2006b, p.9; Demopoulos 2003; Masters 1985; Thomas 2010c
Simonds Saw and Steel	"Tabershaw (1948) stated that the physical examinations were done at the Bewly Building in Lockport, New York, and that X-ray and laboratory examinations were done at the local hospital."	All	ORAUT 2005a, p. 15; Tabershaw 1948
West Valley	"Chest X-rays for West Valley workers have always been performed at an offsite location."	All	ORAUT 2007e, p. 51; Thomas 2010d; Thomas 2010e

Table 2 contains a list of covered facilities where it is known that occupational medical X-rays were taken on site or at another covered facility, according to historical documentation. Table 2 also contains sites that *might* have had occupational medical X-rays taken at an offsite location, but this cannot be demonstrated with certainty at present. Dose reconstructors should, therefore, include X-ray dose in dose reconstructions from the sites listed in Table 2, unless there is evidence in the claim file records that the X-rays were taken at a non-covered facility.

Table 2. Covered facilities that administered occupational X-rays on site, or for which no evidence exists that X-rays were taken off site.

Covered facility	Notes	Reference
Allied Chemical	"...and would have been done at Massac Memorial Hospital or perhaps a local doctor's office according to one employee..." No historical documentation found to support this statement	ORAUT 2007b, p. 20
Aliquippa Forge		
Argonne National Laboratory – East	Some performed at University of Chicago, but this is a covered facility. "However, persons receiving their annual x-ray examination at the University of Chicago..."	ORAUT 2006c, p. 7
Brookhaven National Laboratory		
Bridgeport Brass		
Chapman Valve		
Clarksville		
Fernald		
General Atomics	"A former GA nurse recalled that chest X-rays were required for beryllium workers and stated the X-ray examinations were conducted at La Jolla Radiology." No historical documentation found to support this statement	ORAUT 2008a, p. 46
Harshaw		
Idaho National Laboratory and Argonne National Laboratory – West	"Offsite facilities might have been contracted to perform the examinations."	ORAUT 2009d, p. 8
K-25 Plant		
Lawrence Livermore National Laboratory		
Los Alamos National Laboratory	Some might have been taken at the Los Alamos Hospital, which was likely the predecessor to the Los Alamos Medical Center (a covered facility) and appears to have been located on site.	ORAUT 2010c, p. 8
Mound Plant		
Oak Ridge National Laboratory		
Paducah Gaseous Diffusion Plant		
Pantex Plant		
Pinellas Plant		
Pacific Northwest National Laboratory	Same as Hanford	ORAUT 2007f, p. 5
Pacific Proving Ground		
Rocky Flats Plant		
S-50 Plant		
Stanford Linear Accelerator Center	No X-rays currently assigned	
Sandia National Laboratories		

Sandia National Laboratories, Livermore	"In the 1950s, the pre-employment set of X-rays may have been performed at SNL/NM or off the site in California." No historical documentation found to support this statement. "The X-ray machine equipment was removed from the site in approximately 1990" After 1990, x-rays performed at LLNL, a covered facility (McDowell-Boyer 2006)	ORAUT 2007d, p. 22; McDowell-Boyer 2006
Santa Susana Field Laboratory	"By 1998, all radiographic examinations were subcontracted to West Hills Hospital in West Hills, California." No historical documentation found to support this statement.	ORAUT 2008b, pp. 10, 13
Savannah River Site		
Superior Steel		
Tennessee Valley Authority		
Weldon Spring Plant		
W. R. Grace		
Y-12 Plant		

Dose reconstructions are also performed for sites for which no TBDs or SPs have been written. In reconstructing doses for these claims, dose reconstructors should use any available historical documentation or evidence in claim file records to assign X-ray dose in accordance with the guidance in this OTIB. For cases in which historical documentation of offsite X-ray doses has not been found, and energy employee medical records are not provided, dose reconstructors should assume in most cases that any occupational medical X-ray exposure occurred on site at the covered facility where the energy employee worked.

X-ray dose assignment for construction trade workers (CTW) should be the same as for other energy employees described in this OTIB. In other words, dose reconstructors should assume that CTW had X-rays taken on site at the covered facility where they worked, unless evidence shows that these X-rays were taken off site at a non-covered facility.

The guidance in this OTIB supersedes any guidance on this single issue of assignment of X-ray dose at covered facilities that might be found in the following documents or in TBDs and SPs issued before this OTIB:

- ORAUT-OTIB-0006, Rev.03 PC-1, *Dose Reconstruction from Occupationally Related Diagnostic X-Ray Procedures* (ORAUT 2005b)
- ORAUT-OTIB-0052, Rev.00 PC-1, *Parameters to Consider When Processing Claims for Construction Trade Workers* (ORAUT 2007a)
- ORAUT-PROC-0006, Rev. 01, *External Dose Reconstruction* (ORAUT 2006d)
- ORAUT-PROC-0061, Rev.03, *Occupational Medical X-Ray Dose Reconstruction for DOE Sites* (ORAUT 2010f)

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