Draft

ADVISORY BOARD ON RADIATION AND WORKER HEALTH

National Institute for Occupational Safety and Health

DRAFT REVIEW OF ORAUT-OTIB-0079: *GUIDANCE ON ASSIGNING OCCUPATIONAL X-RAY DOSE UNDER EEOICPA FOR X-RAYS ADMINISTERED OFF SITE*

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Prepared by

Harry Pettengill, PhD
Stephen F. Marschke

S. Cohen & Associates
1608 Spring Hill Road, Suite 400
Vienna, VA 22182

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Disclaimer

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Task Manager: _____ Date: _____ Stephen F. Marschke	Supersedes: N/A
Project Manager: _____ Date: _____ John Stiver	Reviewers: Stephen Marschke John Stiver

Record of Revisions

Revision Number	Effective Date	Description of Revision
0 (Draft)	01/25/2013	Initial issue.

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ABBREVIATIONS AND ACRONYMS

ABRWH	Advisory Board on Radiation and Worker Health
AWE	Atomic Weapons Employer
CFR	Code of Federal Regulations
DCAS	Division of Compensation Analysis and Support
DOE	(U.S.) Department of Energy
EEOICPA	Energy Employees Occupational Illness Compensation Program Act of 2000
IG	Implementation Guideline
NIOSH	National Institute for Occupational Safety and Health
ORAUT	Oak Ridge Associated Universities Team
OTIB	ORAUT Technical Information Bulletin
PIC	pocket ionization chamber
SC&A	S. Cohen and Associates (SC&A, Inc.)
TLD	thermoluminescent dosimeter

1.0 INTRODUCTION

This review of ORAUT-OTIB-0079, *Guidance on Assigning Occupational X-Ray Dose under EEOICPA* [Energy Employees Occupational Illness Compensation Program Act of 2000] *for X-rays Administered Off Site*, Revision 00, dated January 3, 2011, was prepared by Harry Pettengill and Stephen Marschke.

1.1 PURPOSE OF TECHNICAL INFORMATION BULLETIN

The purpose of ORAUT-OTIB-0079 is stated as:

> *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 off site 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 off site medical screening doses will be included will be revised.*

The NIOSH interpretation of which sources of radiation are to be included in dose reconstructions performed under EEOICPA is provided in DCAS-IG-003, *Radiation Exposures Covered for Dose Reconstructions under Part B of the Energy Employees Occupational Illness Compensation Program Act* (NIOSH 2010). SC&A has not been charged with reviewing DCAS-IG-003.

2.0 ORAUT-OTIB-0079 REVIEW

OTIB-0079 states:

> *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.*

The basis for this statement is given as DCAS-IG-003, *Radiation Exposures Covered for Dose Reconstructions under Part B of the Energy Employees Occupational Illness Compensation Program Act* (NIOSH 2010), which states the following regarding occupational medical x-ray exposure:

> *At many DOE* [and AWE] *facilities, physical examinations were required as a condition of employment. Some of these examinations included the use of medical screening x-rays. In accordance with 42 C.F.R. pt. 81, external doses received from occupational x-ray screening procedures, which were provided to the energy employee as a condition of employment and were performed at a covered facility, are included in dose reconstructions. X-rays performed for diagnostic or therapeutic reasons, however, are excluded. Screening x-rays are systematic examinations performed on asymptomatic people without history, complaint, physical findings, or physician evaluation. Diagnostic x-rays are examinations of people who already have suspicious signs or symptoms of a potential condition performed after physician evaluation.* (NIOSH 2010, Section 2.3)

SC&A recognizes that in our role as the Advisory Board's technical support contractor, we do not comment on DCAS' interpretations of EEOICPA, which would require legal rather than technical expertise. Additionally, DCAS' interpretation of EEOICPA is not contained within OTIB-0079, the subject of this review; rather it is contained within DCAS-IG-003, which SC&A has not been requested to review. Based on the DCAS-IG-003 interpretation of EEOICPA, as articulated in OTIB-0079, SC&A has no technical findings for OTIB-0079.

2.1 ORAUT-OTIB-0079 REVIEW CHECKLIST

The approach used to perform our review of OTIB-0079 follows the SC&A procedures provided in SC&A 2009. In brief, SC&A identified seven objectives (including 26 sub-objectives) in its protocol to the Advisory Board, which form the basis for conducting the review. OTIB-0079 was rated as to how well it met each sub-objective using a rating system of 1 through 5, corresponding to the following answers: 1=No (or Never), 2=Infrequently, 3=Sometimes, 4=Frequently, 5=Yes (or Always).

For our review of OTIB-0079, the completed review checklist is provided as Table 2.1-1. As Table 2.1-1 shows, SC&A has given OTIB-0079 the highest rating in each applicable category, and has no technical comments.

Review Objective 1.4

ORAUT-OTIB-0079 contains a list of sites with known occurrences of occupational x-rays administered at locations other than the covered facility (i.e., OTIB-0079, Table 1), as well as a list of covered facilities that administered occupational x-rays on site, or for which no evidence exists that x-rays were taken off site (i.e., OTIB-0079, Table 2).

In order to determine that OTIB-0079 is "consistent with all other procedures that are part of the hierarchy of procedures employed by NIOSH for dose reconstruction" (i.e., Review Objective 1.4), SC&A reviewed and confirmed the information provided in OTIB-0079 Tables 1 and 2 against the information provided in the reference source documents.

Table 2.1-1: ORAUT-OTIB-0079 Review Checklist

Document No.: ORAUT-OTIB-0079	**Effective Date: 01/03/2011**
Document Title: Guidance on Assigning Occupational X-ray Dose Under EEOICPA for X-Rays Administered Off Site	
Reviewer: Harry J. Pettengill / Stephen F. Marschke	

No.	Description of Objective	Rating 1-5*	Comments
1.0	**Determine the degree to which the procedure supports a process that is expeditious and timely for dose reconstruction.**		
1.1	Is the procedure written in a style that is clear and unambiguous?	5	
1.2	Is the procedure written in a manner that presents the data in a logical sequence?	N/A	
1.3	Is the procedure complete in terms of required data?	N/A	
1.4	Is the procedure consistent with all other procedures that are part of the hierarchy of procedures employed by NIOSH for dose reconstruction?	5	See comments.
1.5	Is the procedure sufficiently prescriptive in order to minimize the need for subjective decisions and data interpretation?	5	
2.0	**Determine whether the procedure provides adequate guidance to be efficient in instances where a more detailed approach to dose reconstruction would not affect the outcome.**		
2.1	Does the procedure provide adequate guidance for identifying a potentially high probability of causation as part of an initial dose evaluation of a claim?	5	
2.2	Conversely, for claims with suspected cumulative low doses, does the procedure provide clear guidance in defining worst-case assumptions?	N/A	

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No.	Description of Objective	Rating 1-5*	Comments
3.0	**Assess the extent to which the procedure accounts for all potential exposures and ensures that resultant doses are complete and based on adequate data in instances where the POC is not evidently clear.**		
3.1	Assess quality of data sought via **interview**:	----	
3.1.1	Is scope of information sufficiently comprehensive?	5	
3.1.2	Is the interview process sufficiently flexible to permit unforeseen lines of inquiry?	N/A	
3.1.3	Does the interview process demonstrate objectivity and is it free of bias?	N/A	
3.1.4	Is the interview process sensitive to the claimant?	N/A	
3.1.5	Does the interview process protect information as required under the Privacy Act?	N/A	
3.2	Assess whether the procedure adequately addresses generic as well as **site-specific data** pertaining to:	----	
3.2.1	Personal dosimeters (e.g., film, TLD, PICs)	N/A	
3.2.2	In vivo/In vitro bioassays	N/A	
3.2.3	Missing dosimetry data	N/A	
3.2.4	Unmonitored periods of exposure	5	
4.0	**Assess procedure for providing a consistent approach to dose reconstruction regardless of claimants' exposures by time and employment locations.**		
4.1	Does the procedure support a prescriptive approach to dose reconstruction?	5	
4.2	Does the procedure adhere to the hierarchical process as defined in 42 CFR 82.2?	5	
5.0	**Evaluate procedure with regard to fairness and giving the benefit of the doubt to the claimant.**		
5.1	Is the procedure claimant favorable in instances of missing data?	5	
5.2	Is the procedure claimant favorable in instances of unknown parameters effecting dose estimates?	5	
5.3	Is the procedure claimant favorable in instances where claimant was not monitored?	5	
6.0	**Evaluate procedure for its ability to adequately account for the uncertainty of dose estimates.**		
6.1	Does the procedure provide adequate guidance for selecting the types of probability distributions (i.e., normal, lognormal)?	N/A	
6.2	Does the procedure give appropriate guidance in the use of random sampling in developing a final distribution?	N/A	

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No.	Description of Objective	Rating 1-5*	Comments
7.0	**Assess procedure for striking a balance between the need for technical precision and process efficiency.**		
7.1	Does the procedure require levels of detail that can reasonably be accounted for by the dose reconstructor?	N/A	
7.2	Does the procedure avoid levels of detail that have only limited significance to the final dose estimate and its POC?	N/A	
7.3	Does the procedure employ scientifically valid protocols for reconstructing doses?	N/A	

* Rating System of 1 through 5 correspond to the following: 1=No (Never), 2=Infrequently, 3=Sometimes, 4=Frequently, 5=Yes (Always). N/A indicates not applicable

3.0 CONCLUSIONS

As requested by the Advisory Board (through its Subcommittee on Procedures Review), SC&A has performed a review of ORAUT-OTIB-0079 in accordance with our review protocol (SC&A 2009) and has identified no findings.

REFERENCES

42 CFR 81, 2002. *Guidelines for Determining the Probability of Causation Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule, Federal Register/Vol. 67, No. 85/Thursday, May 2, 2002.

NIOSH 2010. *Radiation Exposures Covered for Dose Reconstructions under Part B of the Energy Employees Occupational Illness Compensation Program Act*, DCAS-IG-003, Rev. 01. National Institute for Occupational Safety and Health, Division of Compensation Analysis and Support, Cincinnati, Ohio. October 5, 2010.

ORAUT 2011. *Guidance on Assigning Occupational X-Ray Dose under EEOICPA for X-rays Administered Off Site*, ORAUT-OTIB-0079, Rev. 00. Oak Ridge Associated Universities Team, Oak Ridge, Tennessee. January 3, 2011.

SC&A 2009. *A Protocol for the Review of Procedures and Methods Employed by NIOSH for Dose Reconstruction*, SCA-TR-PR2009-0001, Rev. 3. SC&A, Inc., Vienna, Virginia. November 16, 2009.