

Office of Compensation Analysis and Support
Program Evaluation Plan

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Revision No. 0

**Evaluation of the Impact of Changes to the Isotopic Ratios in for the
Paducah Gaseous Diffusion Plant**

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Subject Expert: TBD

Supersedes: None

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RECORD OF ISSUE/REVISIONS

ISSUE AUTHORIZATION DATE	EFFECTIVE DATE	REV. NO.	DESCRIPTION
03/21/2007	03/21/2007	0	This document provides a plan to evaluate the impact on previously completed Paducah dose reconstructions of utilizing newly developed isotopic ratios.

1.0 Description

October 25, 2006, Revision 01 of ORAUT-TKBS-0019-5, Occupational Internal Dose was issued as part of the biennial review process. During the biennial revision of this TBD section, the information provided in existing document was evaluated to ensure that the published isotopic ratios for transuranic (TRU) radionuclides meet the criteria of providing either an accurate or maximum dose estimate. The results of the evaluation indicated that the current ratios did **not** meet that goal. Information provided in existing references (particularly PACE and the University of Utah, 2000; BJC, 2000), as well as that found in a new reference was assessed with the result that new TRU isotopic ratios were developed and are included in the TBD as Tables 5-2 and 5-2a in the revised document.

On November 7, 2006 Revision 01 of ORAUT-TKBS-0019-4, Occupational Environmental Dose was issued. A revaluation of the source data for ORAUT-TKBS-0019-5 led to a revision to the TRU isotopic ratios (relative to uranium) for estimating dose from these radionuclides. In addition, the authors have been able to categorize these ratios according to specific processes and periods as described below in conjunction with ORAUT-TKBS-0019-5.

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2.0 Issue Evaluation

The new isotopic ratios will provide a bounding, yet reasonable estimate of internal dose due to TRU radionuclides present in recycled uranium. The new data is categorized according to specific plant areas shown below for both pre-1983 and post-1983 operations:

Pulverizer, Ash Handling, Green Salt Production
Converter Salvage Line
⁹⁹Tc/²³⁷Np Recovery
Balance of Plant (cascade operations/maintenance, etc)

In addition, ratios for ²⁴¹Am and plutonium isotopes (²³⁸Pu, ²⁴⁰Pu, ²⁴²Pu, and ²⁴¹Pu) were added. These changes will have the effect of increasing the dose estimates for claimants who worked in these operations from 1953 through the end of enrichment operations, with the exception of Balance of Plant Operations which will have lower dose estimates.

The changes to the ratios were included in the latest revision to ORAUT-TKBS-0019-4, *Environmental Dose* since this information is key to estimating the dose to individuals exterior to the process buildings but potentially exposed to effluents. Overall, the revised ratios will increase the estimated dose to claimants exposed to effluents from the identified operation from 1953 through the end of enrichment operations, with the exception of Balance of Plant Operations which will have lower dose estimates.

3.0 Plan for Resolution or Corrective Action

An initial selection of claims will be based on the following search criteria:

1. Probability of Causation (POC) less than 50%
2. Dose Reconstructions completed prior to November 7, 2006.

The TBD requires the dose reconstuctor to determine in which area the individual worked. Those determined to have worked in the area designated as the balance of the plant, will not require further evaluation since the dose would be reduced. This results in the additional manual criteria.

3. Determined to have worked in the "Balance of the plant".

Evaluation of the remaining claims will start with those having the highest original POC. As these claims are completed, it is possible that a point will be reach in which it is clear no additional claims will reach a POC of 50%. If this occurs, that point will be documented in the Program Evaluation Report and the remaining claims will not be evaluated. It is likely that this will require different points for the different "plant areas" and possibly other factors.