

**NIOSH Response to SCA's January 12, 2012 Memo Report on
Adequacy and Completeness of Mound Internal Dosimetry**

May 29, 2012

On January 12, 2012, Joseph Fitzgerald of SC&A issued a memo titled, "Adequacy and Completeness of Mound Internal Dosimetry – Work Group Issues". This memo summarized SC&A's view of the status of internal dosimetry issues under discussion by the Mound Working Group (MWG). At its meeting on April 10, the MWG requested that NIOSH respond to this memo. That response is contained in this document.

SC&A's memo contained the following recommendation:

"SC&A recommends that the Work Group accept the NIOSH SEC Evaluation Report conclusion that it can reconstruct internal doses after 1959 (with the exception of radon, thoron, and their daughter products covered by the existing SEC class) with sufficient accuracy, notwithstanding the identified outstanding questions that remain to be resolved as identified in Attachment 1. This recommendation is also qualified by the outstanding SEC relevant questions that remain regarding thorium, polonium, and tritides that have been identified."

However, in Table 1 of their memo, SC&A also characterized the following issues as having a status of "open". The interpretation of these two apparently conflicting conclusions is not clear to NIOSH. We have responded below to each item SC&A characterized as remaining open in Attachment 1 of their memo. In the table below, we have reproduced those issues SC&A assigned an open status (those SC&A recommended closed are not reflected in the table below). We have added a column to the table to provide the NIOSH assessment of each issue.

This is a working document prepared by NIOSH or its contractor for use in discussions with the ABRWH or its Working Groups or Subcommittees. Draft, preliminary, interim, and White Paper documents are not final NIOSH or ABRWH (or their technical support and review contractors) positions unless specifically marked as such. This document represents preliminary positions taken on technical issues prepared by NIOSH or its contractor.

NOTICE: This report has been reviewed to identify and redact any information that is protected by the Privacy Act 5 USC §552a and has been cleared for distribution.

SC&A Document / Reference	Issue description	Proposed Current Status	NIOSH Assessment (5-7-12)
SC&A 2009a, Section 3.2 Partial coverage in SC&A 2010 (gross alpha & anion exchange)	Thorium bioassay data <ul style="list-style-type: none"> ○ Uncertainties and concerns regarding analytical methods prior to 1970. No specific procedure for 1959–1967. ○ Procedures not evaluated for effectiveness or plausibility. ○ Radium daughter analysis of limited value – cannot assume equilibrium. ○ Thorium urinalysis and modeling. ○ Unusual forms of thorium (YY). 	Open (thorium being reviewed by NIOSH)	NIOSH agrees that the thorium-232 issue remains open. However, since January 12 when SC&A issued this memo, NIOSH has provided a thorium dose-reconstruction document (in April 2012), and SC&A responded on May 2, 2012. NIOSH is currently evaluating SC&A’s response.
SC&A 2009b, Section 3.6	Other radionuclide data (SC&A data comparison) <ul style="list-style-type: none"> ○ ~95% of data found for selected individuals was collected in 1990 and later. Pre-1990 results included uranium, thorium, and curium. ○ Majority of pre-1990 results not available in MESH. ○ Data comparison was difficult – units and radionuclides did not always 	Open	NIOSH responded in detail to these concerns in its November, 2009 report, <i>NIOSH Evaluation of Data Adequacy and Completeness Issues at the Mound Laboratory</i> , and again in its August 2011 report, <i>NIOSH Evaluation of Data Adequacy and Completeness Issues at the Mound Laboratory</i> . Section 3.6 of SC&A’s 2009 report discusses several radionuclides (i.e., Th-227, Th-228, Th-230, Th-232), uranium (i.e., U-232, U-233, U-234, U-235, U-238), Ra-226, Cm-242, Cm-244, Ac-227, Pu-242, Am-241, Bi-207, Bi-210, Co-60, Cs-137, Sr-90. NIOSH has addressed each of these in their 2009 and 2011 reports, and in our

This is a working document prepared by NIOSH or its contractor for use in discussions with the ABRWH or its Working Groups or Subcommittees. Draft, preliminary, interim, and White Paper documents are not final NIOSH or ABRWH (or their technical support and review contractors) positions unless specifically marked as such.

This document represents preliminary positions taken on technical issues prepared by NIOSH or its contractor.

NOTICE: This report has been reviewed to identify and redact any information that is protected by the Privacy Act 5 USC §552a and has been cleared for distribution.

	<p>match (e.g., monitoring daughter to evaluate parent).</p> <ul style="list-style-type: none"> o Volume corrections were not possible in many cases. 		<p>April, 2012 report on Th-232 dose reconstruction.</p>
SC&A 2009c, Section 4.6	<p>Secondary/Other radionuclide data (MJW evaluation)</p> <ul style="list-style-type: none"> o Some results were not associated with a name, social security number, or HP number. o Results with no units. o Result attributed to 2 or 3 different radionuclides. o Information was poorly documented, often approximate at best. o Questionable use of surrogate bioassay. o Inconsistent / conflicting interpretation. o Insufficient data to determine need for Phase II assessment. 	Open	<p>NIOSH has already responded to these issues in our August, 2011 paper (NIOSH Response 12)</p>
SC&A 2009c, Section 4.0	<p>Tritium logbooks are missing for 1976 and 1977 (MJW evaluation)</p> <ul style="list-style-type: none"> o HTO dose data is available in MESH; the raw bioassay data is missing. o Cannot apply NIOSH model for estimating <u>tritide</u> dose without the bioassay data. 	Open	<p>NIOSH is currently in the process of adding a SEC class through the 83.14 process for January 1, 1975 through December 31, 1976. The bioassay data for 1977 are not missing (SRDB# 74280).</p>

This is a working document prepared by NIOSH or its contractor for use in discussions with the ABRWH or its Working Groups or Subcommittees. Draft, preliminary, interim, and White Paper documents are not final NIOSH or ABRWH (or their technical support and review contractors) positions unless specifically marked as such.

This document represents preliminary positions taken on technical issues prepared by NIOSH or its contractor.

NOTICE: This report has been reviewed to identify and redact any information that is protected by the Privacy Act 5 USC §552a and has been cleared for distribution.

SC&A 2009d, SC&A 2009e, Section 3.3	<ul style="list-style-type: none"> ○ Interpretation of tritium bioassay data and exposure to stable metal tritides. ○ Unresolved concerns regarding feasibility of dose reconstruction for STCs. ○ Cannot appreciate scope of tritium program without classified references. 	Open (addressed in Issue #6)	NIOSH agrees that the tritide issue remains open. However, since January 12 when SC&A issued this memo, NIOSH has provided a response dated March 30, 2012.
SC&A 2009a, Section 3.6, SC&A 2009d	<p>Tritium bioassay data adequacy</p> <ul style="list-style-type: none"> ○ Do not have algorithm for early dose calculations. ○ Compounds other than HTO were apparently not considered in bioassay. 	Open	NIOSH agrees that the tritide issue remains open. However, since January 12 when SC&A issued this memo, NIOSH has provided a response dated March 30, 2012. No algorithm for early tritium dose calculations is necessary, since NIOSH has the tritium bioassay logbooks.

This is a working document prepared by NIOSH or its contractor for use in discussions with the ABRWH or its Working Groups or Subcommittees. Draft, preliminary, interim, and White Paper documents are not final NIOSH or ABRWH (or their technical support and review contractors) positions unless specifically marked as such.

This document represents preliminary positions taken on technical issues prepared by NIOSH or its contractor.

NOTICE: This report has been reviewed to identify and redact any information that is protected by the Privacy Act 5 USC §552a and has been cleared for distribution.