Preliminary Draft
For the Mound Work Group Review

MOUND INTERNAL DATA ADEQUACY AND COMPLETENESS ISSUE STATUS REPORT

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Record of Revisions

Revision Number	Effective Date	Description of Revision
0 (Draft)	10/04/2010	Initial issue

1.0 INTRODUCTION

Upon release of *Mound Internal Dosimetry Data Adequacy and Completeness* (SC&A 2010), questions were raised regarding the resolution status of all matrix items associated with Mound internal dosimetry. At the request of the Mound Work Group, SC&A has reviewed several earlier papers to determine which issues have been resolved or closed, which open concerns merit further consideration in the Special Exposure Cohort (SEC) review, and which issues are relevant to the Site Profile and the dose reconstruction process, rather than the SEC evaluation.

The review encompassed internal dosimetry concerns from the *Mound Composite Matrix* (SC&A 2008), five SC&A papers presented to the Work Group in 2009 (SC&A 2009a–2009e), and the most recent paper (SC&A 2010). A complete list of reference documents is provided in Section 3.0. A brief description was prepared for each major discussion point in the 2009 internal dosimetry papers, and notations were made to indicate the matrix item, resolution status, and discussion of the issue in SC&A 2010. The open items that were not covered in SC&A 2010 were reviewed for their pertinence to the SEC evaluation or the Site Profile.

Results of this review are tabulated in Section 2.0. Table 1 lists the remaining open SEC issues that were not thoroughly discussed in SC&A 2010. Table 2 lists several issues raised in the context of the SEC review that are applicable to the Site Profile.

2.0 ISSUE STATUS

Table 1: Open SEC Issues Not Addressed in SC&A 2010

SC&A Document/Reference	Issue Description	Matrix Item
SC&A 2009a, Section 3.1	Uncertainties and low recovery for Polonium bioassay procedures	11
SC&A 2009a, Section 3.2 Partial coverage in SC&A 2010 (gross alpha and anion exchange)	Thorium bioassay data o Uncertainties and concerns regarding analytical methods prior to 1970. No specific procedure 1959–1967. o Procedures not evaluated for effectiveness or plausibility. o Radium daughter analysis of limited value – cannot assume equilibrium. o Thorium urinalysis and modeling. o Unusual forms of thorium (YY).	11
SC&A 2009a, Section 3.3	Use of surrogate radionuclides in the absence of isotope-specific bioassay data o Pa-231 determination from Th-227 and Ra-223. o Ac-227 and Th-228 determination from differential decay of radium daughters.	11
SC&A 2009a, Section 3.5 Partial coverage in SC&A 2010 (isotopes, lack of data, gross alpha). Solubility and procedure issues are not covered in detail.	Uranium bioassay adequacy o Multiple isotopes and compounds of varied solubility were handled. o Uncertainty regarding procedure.	11
SC&A 2009a, Section 3.7 Brief mention in SC&A 2010	Price-Anderson Amendments Act – remaining issues o Lacked capability to monitor for all radionuclides present. o Lacked radiological characterization data and appropriate guidance for supervisors and HPs to assess bioassay needs. RWP bioassay requirements did not include all isotopes of concern for the work activity. o Failed to obtain, analyze, and/or obtain vendor analysis of bioassay samples in timely manner. Potential for missed dose if follow-up cannot be confirmed. [Absorbed from Matrix Item 21.]	11
SC&A 2009b, Section 3.6	Other radionuclide data (SC&A data comparison) o ~95% of data found for selected individuals was collected in 1990 and later. Pre-1990 results included uranium, thorium, and curium. o Majority of pre-1990 results not available in MESH. o Data comparison was difficult – units and radionuclides did not always match (e.g., monitoring daughter to evaluate parent). o Volume corrections were not possible in many cases.	12

Table 1: Open SEC Issues Not Addressed in SC&A 2010

SC&A Document/Reference	Issue Description	Matrix Item
SC&A 2009c, Section 4.6	Secondary/Other radionuclide data (MJW evaluation) 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.	12
SC&A 2009c, Section 4.0	Tritium logbooks are missing for 1976 and 1977 (MJW evaluation) o HTO dose data are available in MESH; the raw bioassay data are missing. o Can't apply NIOSH model for estimating tritide dose without the bioassay data.	12
SC&A 2009d SC&A 2009e, Section 3.3	o Interpretation of tritium bioassay data and exposure to stable metal tritides. o Unresolved concerns regarding feasibility of dose reconstruction for STCs. o Can't appreciate scope of tritium program without classified references.	6
SC&A 2009a, Section 3.6 SC&A 2009d	Tritium bioassay data adequacy o Don't have algorithm for early dose calculations. o Compounds other than HTO were apparently not considered in bioassay.	6, 11

Table 2: Site Profile Issues

SC&A Document / Reference	Issue description
SC&A 2009b, Section 3.1	Plutonium data comparison – some gaps in all sources Need to check all sources to get complete history for individual
SC&A 2009b, Section 3.2	Polonium data comparison – some gaps in all sources Need to check all sources to get complete history for individual
SC&A 2009b, Section 3.3	Fecal bioassay data: o Few results in PURECON – poor overlap w/logbooks. o Majority of data is missing from individual exposure files. o Most data are available in logbooks or could be estimated from urine bioassay, but may not be accessible to personnel performing dose reconstruction.
SC&A 2009b, Section 3.4	Tritium (HTO) data comparison: o Two individuals from SC&A's data completeness evaluation had bioassay data that were not reflected in MESH tritium dose data; one of these individuals had positive results. o Extent of problem is unknown, because a comprehensive data comparison has not been completed.
SC&A 2009b, Section 3.5	In-vivo data – database is incomplete

3.0 REFERENCES

SC&A 2008. *Mound Composite Matrix*, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. February 2008.

SC&A 2009a. *Mound Internal Dosimetry Data Adequacy*, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. April 2009.

SC&A 2009b. *Mound Internal Dosimetry Data Completeness*, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. April 2009.

SC&A 2009c. *Mound Internal Dosimetry Data Quality Assurance*, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. April 2009.

SC&A 2009d. *Response to Modeling of Intakes for Special Tritium Compounds, Revision 0*, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. April 2009.

SC&A 2009e. *Mound Roadmap Response*, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. December 2009.

SC&A 2010. *Mound Internal Dosimetry Data Adequacy and Completeness*, Preliminary Draft for the Mound Work Group Review, SC&A, Inc., Vienna, Virginia, and Saliant, Inc., Jefferson, Maryland. May 2010.