SC&A's Review of Rocky Flats Plant Technical Basis Document Revisions and Issues

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SC&A's review of RFP revised TBDs

- SC&A evaluated the latest revised Rocky Flats Plant (RFP) technical basis documents (TBDs) for resolution of findings and observations identified in SC&A's 2005 site profile review
- SC&A's December 3, 2021, evaluation report addressed:
  - **Resolved issues:** SC&A's 2005 findings and observations resolved by revisions to the RFP TBDs and for which closure by the work group is recommended
  - **Unresolved issues:** SC&A's 2005 findings and observations that remain to be addressed by NIOSH
  - **New issues:** Arising from SC&A's 2021 review of the revised TBDs
- NIOSH responded to SC&A's 2021 review on July 22, 2022

SC&A's issues for TBD-2, "Site Description," resolved by revised TBDs

- SC&A finds that all previous TBD-2 issues have been addressed in rev. 02
- Rev. 02 is more comprehensive in scope and depth and includes more details on site closure and decommissioning (SC&A's observation 1), as well as information about specific operations and their operational timelines, including recycled uranium and uranium-233 (SC&A's observation 2)
- SC&A recommends closure of finding 8 (inadequate information about recycled uranium), based on updated treatment of the issue in the internal dose TBD-5
- SC&A recommends that TBD-2 be revised to be consistent with TBD-5
- NIOSH plans to address this recommendation in future TBD revisions
- SC&A concurs with NIOSH's response and plans to review such future revisions

SC&A's issues for TBD-3, "Occupational Medical Dose," resolved by TBD revision

- TBD-3 finding 5 was about radiation exposure from occupationally necessitated medical x-ray
- SC&A finds all remaining issues for finding 5 have been addressed and resolved in rev. 03 of TBD-3 and recommends closure
- General review of rev. 03 did not identify any new findings
- *New issue:* SC&A identified some incorrect tables listed on page 2 of the revised TBD-3
  - NIOSH plans to address these errors in future TBD revisions
  - SC&A concurs with NIOSH's response and plans to review such future revisions

SC&A's finding 9 for TBD-4, "Environmental Dose," resolved by TBD revision

- TBD-4 finding 9 was about inadequacies in addressing potential environmental exposure from routine and ambient airborne releases and resuspension of contaminated soil
- SC&A finds that rev. 03 of TBD-4 resolves finding 9:
  - NIOSH has provided better justification of its basis in available site monitoring data
  - NIOSH has added more specific information and guidance about the contribution of resuspension of soil contaminants for occupational environmental exposures
- SC&A recommends closure of this finding

SC&A's other issues for TBD-4 resolved by TBD revision

- SC&A found rev. 03 of TBD-4 addresses other remaining issues:
  - Observation 3: Use of the RATCHET air dispersion model
  - Consideration of potential environmental dose reconstruction issues stemming from the 1989 FBI investigation
- SC&A recommends closure of these issues

SC&A's findings 1 and 2 for TBD-5, "Occupational Internal Dose," resolved by TBD revision

Finding 1

- TBD-5 finding 1 was that NIOSH's suggested use of urine bioassay minimum detectable amount (MDA) values appears low
- SC&A finds that TBD-5 rev. 03 resolves this issue and recommends closure

Finding 2

- TBD-5 finding 2 was that the TBD lacks definitive direction in some instances
- SC&A finds that TBD-5 rev. 03 resolves this issue and recommends closure

New SC&A TBD-5 issue about MDA units

- SC&A finds that table B-11, page 104, lacks units for the minimum detectable amount (MDA) values for americium-241; it appears that it should specify the unit of nanocuries
- NIOSH plans to edit TBD-5 to add units for MDA values
- SC&A concurs with NIOSH's response and will review the revised TBD-5 when available

SC&A's finding 7 for TBD-5 resolved by TBD revision

- TBD-5 finding 7 was that TBD-5 should include recommendations for ingestion intakes or direct reference to the appropriate ingestion-intake-related document.
- NIOSH response:
  - TBDs are designed to contain site-specific guidance. The selection of intake pathway is a generic issue to all sites and is therefore covered in ORAUT-OTIB-0060, "Internal Dose Reconstruction" (2018).
  - There is no site-specific scenario identified in this finding that would warrant the TBD to provide site-specific guidance. Therefore, no changes to TBD-5 are recommended.
- SC&A accepts NIOSH's clarification and recommends closure of TBD-5 finding 7.

SC&A's observation 4 for TBD-5 about wound dose model resolved

- SC&A's observation 4 noted that while the approach in TBD-5 is claimant favorable for cited organs, a more claimant-favorable approach for lymph nodes and skin cancers may be available in the 2003 model by Guilmette and Durbin
- NIOSH noted in the revised TBD that guidance in ORAUT-OTIB-0022 references this model
- NIOSH's response satisfied SC&A's observation

SC&A's finding 3 for TBD-6, "Occupational External Dose," resolved by TBD revision

- TBD-6 finding 3 was concerned with the interpretation of NTA film data for workers who were not included in the NDRP
- Rev. 03 of TBD-6 addresses this finding by use of neutron-to-photon ratios, coupled with use of available coexposure data
- SC&A recommends closure of this finding

SC&A's finding 4 for TBD-6 resolved by TBD revision

- TBD-6 finding 4 was concerned with treatment of personal dosimeter placement and angular dependence
- Rev. 03 of TBD-6 addresses this finding by analysis of angular dependence of the monitoring devices
- SC&A recommends closure of this finding

SC&A's finding 6 for TBD-6 resolved by TBD revision

- TBD-6 finding 6 was concerned with potential calibration errors, technology deficiencies, and possible data integrity issues that could have contributed to missed dose
- Rev. 03 of TBD-6 addresses these issues
- SC&A recommends closure of this finding

SC&A's finding 10 for TBD-6 resolved by TBD revision

- TBD-6 finding 10 was concerned with hand and wrist doses
- Rev. 03 of TBD-6 addresses these extremity doses
- SC&A recommends closure of this finding

SC&A's finding 11 for TBD-6 resolved by TBD revision

- TBD-6 finding 11 was concerned with the potentially significant doses from industrial x-ray and neutron generators used for research and development and nondestructive work
- Rev. 03 of TBD-6 addresses these issues
- SC&A recommends closure of this finding

New SC&A issue about neutron dose factors in TBD-6

- SC&A observes that NIOSH needs to clarify the reason for the change in neutron dose multiplier factors listed in table 6-16 of TBD-6 rev. 03 compared to table 6-14 of rev. 00
- NIOSH responded that these multiplier factors were updated based on guidance in ORAUT-OTIB-0055 (2006), which was issued after TBD-6 rev. 00 (2004)
- SC&A concurs with NIOSH's response and recommends closure

New SC&A issue about neutron LOD values in TBD-6

- SC&A observes that the reason for recommending a limit of detection (LOD) value of 226 millirem (mrem) in table 6-18 and table 6-19 needs clarification
- NIOSH response for LOD equation for 1962 and 1963:
  - LOD = Blank + 1.65 × sqrt(Blank)
  - Value of “Blank” is calculated by the equation Blank = 100 × (16/10), which results in 160 mrem
  - Therefore, LOD value should be 160 + 1.65 × sqrt(160) or 181 mrem (instead of 226 mrem)
- NIOSH will correct the LOD value for 1962 and 1963 in table 6-18 in future revisions to TBD-6
- SC&A concurs with NIOSH’s response and will review future revisions

New SC&A issue about references for LOD values in TBD-6

- SC&A observes that references for recommended photon, neutron, and beta LOD values for 2004 and 2005 are needed
- NIOSH responded that future TBD-6 revisions will provide references for the LOD values for 2004 and 2005
- SC&A concurs with NIOSH's response and will review the revision when available

New SC&A editorial items about missing or incorrect references in TBD-6

- SC&A finds that the following references were used in the text but were not listed in the reference section on pages 64–69:
  - Page 10: Sebelius (2013)
  - Page 11: NIOSH (2013)
  - Page 94: NIOSH (2006)
- The caption for table C-8 given in the list of tables at the bottom of page 93 should use the phrase “uranium workers,” not “plutonium workers”
- NIOSH indicates that future revisions of TBD-6 will correct the references and fix the caption for table C-8
- SC&A concurs with NIOSH’s response and will review the revision when available

Summary of SC&A's review of RFP TBD revisions and issues

- SC&A found that the revised TBDs addressed most (but not all) of SC&A's 2005 findings and observations about the original TBD
- SC&A found that NIOSH addressed some of the other open issues from SC&A's December 2021 review of the RFP TBDs in its July 2022 response to SC&A's December 2021 review and recommends closure as noted in this presentation
- SC&A concurs with NIOSH's responses on remaining items and will review changes made in future revised TBDs when available

Questions?