



U.S. Department of Energy

~~Office of River Protection~~

P.O. Box 450  
Richland, Washington 99352

03-ORP-063

JUN 04 2003

Mr. Todd Martin, Chair  
Hanford Advisory Board  
1933 Jadwin Avenue, Suite 135  
Richland, Washington 99352

Dear Mr. Martin:

HANFORD ADVISORY BOARD (HAB) CONSENSUS ADVICE #146: TECHNETIUM (Tc-99) REMOVAL AT THE HANFORD WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP)

Thank you for your Consensus Advice #146, dated April 4, 2003, regarding Tc-99 removal at the WTP. I want to assure you the U.S. Department of Energy (DOE), Office of River Protection (ORP) remains committed to providing quality tank farm cleanup that is fully protective of human health and the environment.

My decision to terminate efforts to incorporate a Tc-99 removal system in the WTP is consistent with DOE's 1996 technical analysis<sup>1</sup> regarding tank waste pretreatment. That analysis indicated, to the satisfaction of the U.S. Nuclear Regulatory Commission<sup>2</sup> (NRC), Tc-99 removal was neither required (it is low level waste and not highly radioactive), nor economically practical. Even though the analysis and our agreement with the NRC indicated Tc-99 removal was not required, we did include Tc-99 removal in the WTP conceptual and preliminary design. The work done during design has again confirmed that Tc-99 removal is not a practical, cost-effective process. In summary:

- Our ability to remove Tc-99 from Hanford tank wastes has not improved. It would be a costly and speculative process;
- The amount of Tc-99 that would be in the LAW is less than we earlier thought -- approximately 25,500 curies (0.02% of the total tank radionuclide inventory);
- With a robust waste form, Tc-99 projected dose levels, even thousands of years in the future, are a small fraction of regulatory standards.

<sup>1</sup> Technical Basis for Classification of Low-Activity Waste from Hanford Site Tanks, WHC-SD-WM-TI-699, Rev. 2, dated September 1996.

<sup>2</sup> Letter from Carl J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, NRC, Washington, D.C., to Jackson Kinzer, Assistant Manager, Office of Tank Waste Remediation System, DOE-RL, "Classification of Hanford Low-Activity Waste Fraction," dated June 9, 1997.

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I am pleased to further share the technical bases behind my decision with the Hanford Advisory Board as you requested on pages one and two of HAB Consensus Advice #146. My responses to those questions are as follows:

- *What are the increased impacts to groundwater caused by elimination of Tc-99 pretreatment?*

While it appears true that Tc-99 may be the most significant of the radioactive materials in groundwater at some time thousands of years in the future, let's put that in perspective. Based on publicly available documents such as the 2001 Immobilized LAW (ILAW) Assessment, the projected dose from drinking water at 1000 years in the future is several orders of magnitude below drinking water standards with no Tc-99 removal. Projected dose levels prior to 1000 years are lower. Even with additional uncertainties factored in for longer projections, projected doses are still 1-3% of the drinking water standard at 10,000 years in the future with no Tc-99 removal. The reason, in part, is because the Tc-99 in the LAW will be at low concentrations; Class A low-level waste concentrations on average (lowest NRC low-level waste classification).

- *How will elimination of Tc-99 pretreatment impact the concentration of Tc-99 in various waste discharge and process streams? What are the consequences?*

The majority of the soluble Tc-99 will remain in the ILAW. A fraction of the Tc-99 is insoluble and will be vitrified with the HLW. We provided our estimated overall Tc-99 balance at the May 22, 2003, Tank Waste Committee meeting.

- *What are the impacts on permitting of removing Tc-99 pretreatment? Will permitting consequences and delays offset the cost savings of eliminating Tc-99 pretreatment?*

While the change will require a Resource Conservation and Recovery Act Permit modification, it should not impact the schedule under reasonably foreseeable circumstances. Bechtel National, Inc. (BNI) is tasked to prepare the request for permit modification.

- *What are the impacts of eliminating Tc-99 pretreatment on existing and future NRC incidental waste rulings?*

Tc-99 removal was not required by the existing WTP/LAW Incidental Waste Determination concurred in by the NRC (see the reference in footnote 2). That determination did not assume removal of Tc-99 from the Hanford tank waste. ORP will continue to provide the NRC with updates on our plans, current information, and progress, including my decision to abandon attempts to remove Tc-99 in the WTP.

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- *Are there other resins or technologies that, while not being quite as efficient as the current baseline, could still achieve significant Tc-99 removal and significant cost savings?*

We are not aware of cost-effective alternative technologies for Tc-99 removal. The abandoned approach was estimated to cost approximately \$30 million in capital costs and from \$100 million to over \$1 billion in life cycle operations costs. Tc-99 removal also creates other impacts, such as the routine disposal of spent Tc-99 resins at Hanford and personnel exposures associated with system operation and maintenance.

I respectfully disagree with the Board's advice to include Tc-99 removal in the WTP for the reasons discussed above. It is my responsibility as Manager of ORP to make timely decisions based on the best available information. My staff and I do so in a manner that is compliant with the Tri-Party Agreement and DOE Orders, meets applicable laws and regulations, is cost-effective, and is focused on being fully protective of human health and the environment.

In response to your last paragraph: ORP has fully briefed the State of Washington Department of Ecology and the U.S. Environmental Protection Agency on its decision and the basis for that decision in letters, transmitted documents, and face-to-face meetings and discussions.

If you have additional questions or comments, please feel free to contact me, or your staff may contact Greg Jones, (509) 373-4183.

Sincerely,

  
Roy J. Schepens  
Manager

ORP:

cc: See Page 4.

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cc:

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