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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

7601 W. Clearwater, Suite 102 • Kennewick, Washington 99336 • (509) 546-2990

December 9, 1993



Mr. Paul Beaver  
U.S. Environmental Protection Agency  
712 Swift Boulevard, Suite 5  
Richland, WA 99352

Re: MTCA and 200 BP-1 Radionuclide Cleanup Levels

Dear Mr. Beaver:

Until the Washington State Department of Ecology (Ecology) or the Washington State Department of Health (DOH) issues some official guidance, there is a need to develop some interim guidance for determining Model Toxics Control Act (MTCA) related radionuclide cleanup levels for Hanford site operable units. I propose the following as interim guidance for use in the *200-BP-1 Operable Unit Feasibility Study (200-BP-1 FS)* to determine radionuclide cleanup levels which will be considered compatible with the intent of MTCA. This is not intended to set a precedent, but to expedite remediation of the unit.

MTCA should be retained as an applicable or relevant and appropriate requirement for radionuclide cleanup levels since it does have guidelines addressing carcinogenic contaminants. All radionuclides are listed by the U.S. Environmental Protection Agency (EPA) as Group A - Human Carcinogens. It is this carcinogenic aspect of radionuclides that EPA's *Risk Assessment Guidance for Superfund Vol.1 (RAGS)* states is the risk driver, and may be used as the sole basis for assessing radiation related human health risks. *The Hanford Site Baseline Risk Assessment Methodology (HSBRAM)* concurs by stating that "... for Hanford baseline risk assessments, it is recommended that only carcinogenic effects be routinely evaluated for radionuclides, as carcinogenesis is the predominant adverse human health effect."

It is also evident that the MTCA equations were not designed to establish radionuclide cleanup levels. However, it should be acceptable to incorporate the basic MTCA guidelines for carcinogens with risk equations from EPA or Tri Party Agreement accepted guidance documents such as RAGS and HSBRAM.



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There are several guidelines that must be incorporated into the risk based radionuclide cleanup levels before they can be accepted as compatible with the intent of MTCA. Some are general and apply to all pathways of exposure. Others apply only to a specific pathway.

The generally applicable MTCA carcinogenic guidelines are:

- Risk level for the sum of all carcinogenic substances and the sum of all pathways must not exceed 1E-05.
- Risk levels for all pathways and all contaminants are considered to be additive unless adequately justified by scientific research as determined by Ecology.
- EPA's "integrated risk assessment system" (IRIS) is specified as the preferred source for carcinogenic potency factors.
- If carcinogenic potency factors are not available in IRIS, then slope factors from *Health Effects Assessment Summary Tables* (HEAST) may be used.
- Proposed DOH equations may be used if compatibility to MTCA is demonstrated.
- The more stringent of any applicable state or federal regulations shall apply.

Radionuclide contaminant cleanup levels for groundwater must incorporate the following criteria:

- The duration of exposure shall be 30 years.
- Intake shall be 2 liters per day.

MTCA soil related guidelines to be incorporated are:

- Frequency of contact shall be 0.5.
- Ingestion shall be 100 milligrams/day.

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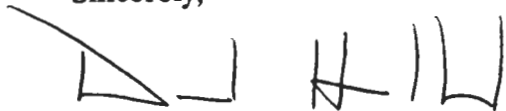
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- Soil cleanup levels shall not exceed 100 times the groundwater cleanup level without adequate justification as determined by Ecology.

Ecology is willing to consider approving the use of an equation adapted from either RAGS or DOH for the purposes of the 200-BP-1 FS, if it can be shown to comply with MTCA guidelines as outlined above. This includes the equation Golder Associates used if the issues of reproducing the calculations and compatibility are resolved.

If you have any questions, please contact me at (509) 736-3027.

Sincerely,

A handwritten signature in black ink, appearing to read "D Holland". The signature is written in a cursive, somewhat stylized font.

David Holland, Unit Manager  
Nuclear and Mixed Waste Management Program

DH:sl

cc: Paul Pak, USDOE  
Mark Buckmaster, WHC  
~~Richard Carlson, WHC~~

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Subject: MTCA AND 200 BP-1 RADIONUCLIDE CLEANUP LEVELS

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