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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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August 24, 1998

Mr. Donald W. Edwards
British Nuclear Fuels, Inc.
1835 Terminal Drive, Suite 220
Richland, WA 99352



Dear Mr. Edwards:

Re: Review of British Nuclear Fuel's Annotated Outlines for the Tank Waste Remediation System Facility Performance Test Plan, the Quality Assurance Project Plan for the Performance Test, and the Risk Assessment Work Plan

Enclosed are comments from the Washington State Department of Ecology (Ecology) on the above-referenced documents. Please note that these documents were reviewed as draft outlines. The level of review for the final products will be much more involved. Please let me know if you would like to meet to discuss the enclosed comments.

In preparing the risk assessment documents, Ecology recommends that various stakeholder groups also be included in preliminary reviews. Ecology has had positive experiences when including stakeholders early on in the planning process. I would like to discuss such interactions with you in more detail.

If you have any questions, please contact me at (509) 736-5715.

Sincerely,

Laura Ruud
Nuclear Waste Program

cc: Cathy Massimino, EPA
Neal Brown, USDOE
Jeff Short, USDOE
Kayle Boomer, BNFL
Lee Bostic, GTSD

Mary Lou Blazek, OOE
Administrative Record: TWRS/BNFL Privatization



**Comments on TWRS Privatization Project
Revised Annotated Outline Risk Assessment Work Plan
Dated July 16, 1998 (BNFL-TWP-OTL-004, Draft A)**

Page, Paragraph	Comment
p. v	The Acronym list might be expanded into a Glossary of terms.
p. 4, para 3	Please provide a brief rationale for proposing a deterministic risk modeling and excluding a probabilistic assessment.
p. 6, Table 4-1	Provide a basis for assigning the specified hypothetical operating times and relative emission rates.
p. 6, para 3	Note that treating the unknown total organic carbon as carcinogenic organics is a conservative approach that should be noted in the associated uncertainty analysis of COPCs (section 4.6).
p. 6, para 5	Although plant uptake modeling is mentioned, it is not given follow-up explanation, similar to air dispersion and soil accumulation modeling. At a minimum, Appendix A equations for plant uptake modeling should be cited.
p. 7, para 3	<p>Specify where and how radionuclide decay and ingrowth of daughter products will be accounted for with the modeling.</p> <p>For converting radionuclide concentration (activity) to dose, RESRAD is specified. Would there be value in comparing this method with the HEAST slope factor approach?</p>
p. 8, para 5	It is stated that the soil accumulation equation is provided below. It appears to be in Appendix A. Please clarify. With the exception of TCDD, where in the equation is radiological and biological decay accounted for (since the equation soil loss constant is specified only for TCDD)? A different set of equations for soil concentration is specified in recent draft EPA guidance on risk assessment for combustion facilities.
p. 9, para 4	Why not evaluate air dispersion modeling results before deciding on whether or not to quantitatively evaluate a subsistence fisher scenario?
p. 9, para 6	<p>Other sources of toxicity benchmark data might include EPA National Center for Environmental Assessment (NCEA) subchronic and chronic data and Agency for Toxic Substances Disease Registry (ATSDR) chronic and intermediate Minimal Risk Levels (MRLs). A variety of acute data might also be used (e.g., CalEPA acute reference exposure levels [RELs], ATSDR acute MRLs, American Industrial Hygiene Association [AIHA] Level 1 Emergency Response Planning Guidelines, American Conference on Governmental Industrial Hygienists [ACGIH] threshold limit value [TLV] time-weighted averages [TWAs]).</p> <p>Toxicity equivalency factors (TEFs) are also available for dioxin-like (coplanar) PCBs (Ahlborg et al, 1994).</p> <p>Note that evaluating all Cr as Cr+6 is a conservative approach. You might see ATG's discussion of the Cr+3/Cr+6 ratio in their recent risk assessment.</p> <p>Specify how Pb, Hg, and non-dioxin-like PCBs will be assessed.</p>

p. 10, Table 4-2	Napier (1997) is not in the references. Should this be DOE-RL (1998)? Why is Gable Mountain selected as a receptor location for the Native American worst case and plausible current land use scenarios?
p. 11, Table 4-3	For radionuclides, concentration (activity) in air, soil, and biota should be expressed in pCi (rather than mg). Note that chemical acute toxicity data are typically expressed in ppm or mg/m ³ .
p. 12, para 1	Additivity should be based on common mode of action (not common target organ per se).
p. 12, para 2	Hazard indices should be segregated by mode of action.
p. 12, para 3	Please describe how background risks might be determined.
p. 12, para 5	Please explain how the SLRA might address the impact of various uncertainties in a quantitative manner.
p. 12, para 7	You should include the Hanford Site Risk Assessment Methodology (USDOE, 1995) and Guidelines for Ecological Risk Assessment (EPA, 1998).
p. 13, para 1	Allow the dispersion model to show very low concentrations at the river, rather than making this statement without model results.
p. 13, para 5	<p>The use of terminology "Policy Assessment" may not be entirely appropriate, since this terminology is more closely affiliated with risk management than risk assessment. Although decision criteria are policy decisions, I would avoid the use of "policy" terminology here.</p> <p>Note that EPA (1998) guidance on eco risk assessment has changed terminology from "measurement endpoint" to "measure of effect." The latter is defined as "a change in an attribute of an assessment endpoint or its surrogate in response to a stressor to which it is exposed."</p> <p>Why not include "Policy Goal #3" too in Table 4-5 (without "policy" terminology)?</p>
p. 14, Table 4-4	EPA (1997) and EPA (1998) are not listed uniquely in References.
p. 15-16, Table 4-5	Information in this table is presented in a repetitive style. I would suggest that a new table (or text) be created where decision criteria are not repeated, assessment and measurement endpoints are presented in a more efficient manner, and "policy" terminology is deleted.
p. 17, para 1	Please specify values to be assigned to temporal and area use factors.
p. 17, para 2	Delete the first sentence. It is not logical, since RME can be the max concentration (as you define it in the next sentence).
p. 17, para 6	You should allometrically adjust benchmarks for wildlife species based on body weight ratio (e.g., Sample et al, 1996).
p. 17, para 7	Note that the denominator in the BAF term includes all exposure media (i.e., abiotic media plus food). Also, BAF=1.0 as a default is not necessarily conservative for lipophilic chemicals.
p. 17, para 8	The World Health Organization (WHO, 1997) has developed TEFs for dioxin-like compounds for fish and birds, as well as humans/mammals.

p. 18, Table 4-6	Please describe the HAZWRAP (1994) database. What is the data source for surface water to animal BAF (or more appropriately BCF)?
p. 19, para 1	Please provide more information on the Effect Range-Low (ER-L) sediment benchmarks.
p. 19, para 2	USDOE's Oak Ridge National Lab (ORNL) is a good source of ecotoxicity data. There should be some discussion of radionuclide eco benchmarks in relation to terrestrial and aquatic receptors (e.g., various proposals for 1 rad/day or 0.1 rad/day, etc.).
p. 19, para 3	It seems you are needlessly dividing the hazard quotient (HQ) method into two steps. HQ is simply exposure data/effects data, coupled to a decision rule. In this case, the decision rule says if $HQ > 0.25$, the hazard is not acceptable. There should only be one exposure number and one benchmark number (not two of each as you indicate), unless you are comparing distributions.
p. 20, Table 4-7	I believe "disposition" should be "deposition" under "Type of Data." Deposition on animals is more commonly referred to as "dermal contact," and "inhalation" for plants is more appropriately described as "air to plant transfer." Due to the data gap in eco inhalation benchmark data, it may not be possible to assess eco hazard from inhalation exposure. Units for radionuclides are typically specified in dose (rad), rather than activity (pCi). Radionuclide units have been (inadvertently) omitted for aquatic receptors. Note that in order to calculate HQ, units for exposure data need to be expressed or converted into the same units as effects data. References for data sources should be more specific.
p. 21, para 2	Hazard index should be 0.25 (not 0.5) for human noncarcinogens, according to EPA risk assessment guidance for combustion facilities.
p. 23, para 1	I believe a FRA will be required, although its scope will be defined by results of the performance test (PT), as indicated on p. 2.

**Comments on TWRS Privatization Project
Annotated Outline Quality Assurance Project Plan
For the Performance Test
Dated July 16, 1998 (BNFL-TWP-OTL-003, Draft A)**

	General Comment
#1	Laboratory QA information should be included, e.g., How will holding times be ensured? How will the data be defensible?
#2	Discuss laboratory accreditation, e.g., state accreditation, national environmental lab accreditation.
#3	Include information on performance evaluation programs that will be followed by the contract laboratory.
#4	Include radiochemistry information on the COC list.

**Comments on TWRS Privatization Project
Annotated Outline Performance Test Plan
Dated July 16, 1998 (BNFL-TWP-OTL-002, Draft A)**

#1	Include information on radiochemistry.
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