



Department of Energy

9504965

Richland Operations Office
P.O. Box 550
Richland, Washington 99352

NOV 16 1995

95-FFTF-102

Mr. Mike Wilson
Nuclear Waste Program Manager
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Dear Mr. Wilson:

NUCLEAR ENERGY (NE) LEGACY PROGRAM BULK SODIUM MANAGEMENT AND APPLICABILITY
TO RCW 70.105 AND WAC 173-303

This letter is in response to a request made by Mr. Tom Tebb, of the State of Washington Department of Ecology (Ecology), during a status meeting on August 31, 1995, to inform Ecology of the proposed Hanford Site Sodium Management Plan revision, and to solicit their input. Mr. Tebb requested that the U. S. Department of Energy, Richland Operation Office (RL) provide Ecology with the basis for managing the NE Legacy sodium inventories as product material prior to final disposition. The information contained herein is consistent with the Hanford Site Sodium Management Plan, Revision 1, which was provided to Ecology by separate correspondence.

Beneficial uses are identified for all of the NE Legacy sodium inventories. A brief status of the planned management and disposition of this material is provided in Attachment 1, Nuclear Energy Legacy Program Sodium Management and Disposition. The NE Legacy Program continues to manage these sodium inventories as product material. In support of the management planning, a regulatory analysis was conducted to reaffirm that the NE Legacy radioactive and non-radioactive sodium, as identified in the Hanford Site Sodium Management Plan, would not fall under the definition of a solid waste and a hazardous waste regulated under RCW 70.105 and WAC 173-303. This analysis is provided in Attachment 2, Whitepaper On Regulatory Status of the Nuclear Energy Legacy Sodium.

We are requesting Ecology's determination regarding this analysis and conclusion, or that you please identify to us any concerns or issues you may have with the planned management and disposition of this material. The NE Legacy Program continues to make significant progress toward ultimate disposition of these sodium inventories and facilities. In accordance with RL and Ecology site streamlining policies, management of the NE Legacy sodium is both reasonable and cost efficient. We will continue on the path forward to manage and disposition these sodium inventories as delineated in the Sodium Management Plan.

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Mr. Mike Wilson, Ecology
95-FFTF-102

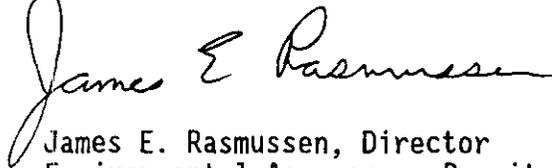
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We appreciate your attention to this matter. If you have any questions, please contact Mr. P. J. Krupin on (509) 372-1112.

Sincerely,



James E. Rasmussen, Director
Environmental Assurance, Permits
and Policy Division

TPD:RAA

Attachments (2)

cc w/attachs:
D. R. Sherwood, EPA
G. T. Tebb, Ecology

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Attachment 1

Nuclear Energy Legacy Program
Sodium Management and Disposition

The Nuclear Energy (NE) Legacy sodium inventory consists of approximately 54,000 gallons of non-radioactive sodium currently stored in a safe configuration in tanks and dormant test loops in the 100, 200, and 300 Areas, and approximately 41,000 gallons of slightly radioactive sodium safely stored in drums and tanks located in the 200 West Area. The locations and quantities of these sodium inventories are provided in Table 1. While not a part of the NE Legacy sodium, the largest inventory of sodium at the Hanford Site (approximately 260,000 gallons) is contained within various systems and vessels in the Fast Flux Test Facility (FFTF) complex.

An on-site use for the FFTF sodium has been identified by the Tank Waste Remediation System (TWRS) for caustic washing and is documented in the technical baselines for both the TWRS and FFTF Programs. In order to reduce the costs associated with both the FFTF Transition Project and the TWRS waste processing, the nearly 900 metric tons of FFTF sodium could be converted to sodium hydroxide and then used in the planned high level waste pretreatment process. In addition to reducing costs, this would result in a major waste minimization and chemical reuse achievement. The conversion would entail construction and operation of an FFTF Sodium Reaction Facility. Milestones have been established in the Tri-Party Agreement for the deactivation of FFTF, including management and disposition of the FFTF sodium. The sodium will be managed as product material for use at TWRS until an evaluation is completed in June 1998 to confirm the final sodium disposition and form. This assessment will be conducted in concert with a TWRS evaluation (Tri-Party Agreement Milestone M-50-03 due March 1998) which will define their tank waste pretreatment processes and needs. As indicated in Tri-Party Agreement Milestone M-81-02-T01, appropriate milestones and target dates will be established for construction and operation of the Sodium Reaction Facility based on the option selected.

The NE Legacy radioactive sodium (i.e., Hallam and SRE) was also identified by the TWRS program as viable for use by the pretreatment program. Two contingency disposition options are also being evaluated for this inventory, i.e., private sector conversion and off-site treatment at the Argonne National Laboratory-West sodium reaction facility. If cost and schedule benefits are found to exist, and funding can be identified, these alternate option(s) will be pursued. These evaluations should be completed in conjunction with the TWRS decision point on the high level waste tank pretreatment process by March, 1998. If the option to treat the Hallam and SRE sodium at the FFTF Sodium Reaction Facility is employed, this sodium inventory will follow the same disposition path as the FFTF sodium. The Hallam and SRE inventories could be included in the milestone and target dates that will be established for the FFTF Sodium Reaction Facility based on the disposition option selected, as specified in Tri-Party Agreement Milestone M-81-02-T01.

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Table 1
NE Legacy Sodium Inventories

NE LEGACY NON-RADIOACTIVE SODIUM FACILITIES

Facility	Configuration	Sodium Volumes (gallons)
1720-DR	1 Tank	4,600
221-T	2 Tanks/2 Delivery Lines	215
335	2 Tanks/2 Loops	160
335-A	1 Tank/Loop	670
337 Highbay	1 Tank/Loop	2,800
3718-M	1 Tank	42,000
TOTAL		50,445

NE LEGACY RADIOACTIVE SODIUM FACILITIES

Facility	Configuration	Sodium Volume (gallons)
2727-W/ Hallam Sodium	Tanks	34,300
SAM Storage Modules/ SRE Sodium	158 Drums	7,065
TOTAL		41,365

The NE Legacy non-radioactive sodium was placed on the Federal Excessing list in 1993 for procurement by the private sector. Multiple buyers placed bids for procurement of this inventory over a multi-year period. On April 7, 1994 the first shipment from the NE Legacy sodium inventory, consisting of 78 drums, was transferred off-site to a buyer. The remaining sodium is housed in tanks and piping systems requiring significant effort to repackage prior to off-site sales. Priority is being given to removal of the test loops prior to removal of the bulk sodium, in order to support a Cooperative Research and Development Act (CRADA) that has been established between U.S Department of Energy, Richland Operations Office (RL), Westinghouse Hanford Company (WHC), and LM Manufacturing of Marysville, WA (LM). LM is developing magnetohydrodynamic generators using a liquid metal as the moving conductor and WHC/RL is providing surplus material from Hanford, including the sodium piping and electrical and control equipment from the retired sodium test loops. Disposition of the bulk non-radioactive sodium will occur following removal of the test loops. The sodium buyers are aware of the time constraints associated with the sodium availability, and are agreeable to these conditions for the sale. Disposition of the bulk sodium and test loops is estimated to be complete in fiscal year 2001.

As indicated above, beneficial uses are identified for the NE Legacy sodium, and the NE Legacy Program continues to manage these sodium inventories as product material. In support of the management planning, a regulatory analysis was conducted to reaffirm that the NE Legacy radioactive and non-radioactive sodium, as identified in the Hanford Site Sodium Management Plan, would not fall under the definition of a solid waste and a hazardous waste regulated under RCW 70.105 and WAC 173-303. This analysis is provided in Attachment 2. Because the sodium is not abandoned, as explained in WAC 173-303-016(4), recycled, as explained in WAC 173-303-016(5), or considered inherently waste-like, as explained in WAC 173-303-016(6), it is not considered to be discarded and is therefore not a solid waste or a dangerous waste. The FFTF sodium is not included in this analysis and is being managed as product material pending the June 1998 decision point, as agreed upon in the fifth amendment to the Tri-Party Agreement.

The NE Legacy Program continues to make significant progress since the first issuance of the Sodium Management Plan toward ultimate disposition of these sodium inventories and facilities, including: disposal or reuse of miscellaneous chemical inventories within the associated facilities, approval of a *National Environmental Policy Act of 1969* (NEPA) Environmental Assessment for disposition of the sodium test loops and a Categorical Exclusion for disposition of the non-radioactive sodium located at 1720-DR and 3718-M, establishment of the CRADA, and actual removal and transfer of the first sodium test loop to LM. WHC and RL are continuing on the path forward to manage and disposition these sodium inventories as delineated in the Sodium Management Plan.

WAC 173-303-016(4) states:

"Materials are solid waste if they are abandoned by being:
(a) Disposed of, or
(b) Burned or incinerated; or
(c) Accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated."

ANALYSIS

Use of the sodium will not involve disposal, burning or incineration. The NE Legacy radioactive sodium may be used by TWRS, converted into sodium hydroxide, for use in caustic washing as part of the high level tank waste sludge pretreatment process. Two contingency disposition options also being evaluated for this inventory include private sector conversion and off-site treatment at the Argonne National Laboratory-West sodium reaction facility in order to determine if cost and schedule benefits warrant pursuing these alternate option(s). The NE Legacy non-radioactive sodium will be sold to off-site buyers for use in commercial applications that require elemental sodium. Because the sodium will be used in the future for a beneficial use, the sodium is not being accumulated, stored, or treated before or in lieu of being abandoned by being disposed of, burned, or incinerated. The sodium would not be considered abandoned unless and until a decision was made that the sodium could not be used. Therefore, the sodium is not considered to be "abandoned" as identified in WAC 173-303-016(4).

WAC 173-303-016(5) states:

"Materials are solid wastes if they are recycled - or accumulated, stored, or treated before recycling - as specified in (a) through (d) of this subsection."

WAC 173-303-016(5)(a) states:

"Used in a manner constituting disposal. Materials noted with a "*" in column 1 of Table 1 are solid wastes when they are:

(i)(A) Applied to or placed on the land in a manner that constitutes disposal; or (B) Used to produce products that are applied to or placed on the land or are otherwise contained in products that are applied to or placed on the land (in which cases the product itself remains a solid waste).

(ii) However, commercial chemical products listed in WAC 173-303-9903 or which exhibit any of the criteria or characteristics listed in WAC 173-303-090 or WAC 173-303-100 are not solid wastes if they are applied to the land and that is their ordinary manner of use."

Attachment 2

WHITEPAPER ON
REGULATORY STATUS OF THE
NUCLEAR ENERGY LEGACY SODIUM

ISSUE: Is the Nuclear Energy (NE) Legacy radioactive and non-radioactive sodium, as identified in the Hanford Site Sodium Management Plan, a solid waste and a hazardous waste regulated under RCW 70.105 and WAC 173-303.

FACTS: There are eight NE Legacy facilities located on the Hanford Site that house approximately 92,000 gallons of metallic sodium in a solid form. Approximately half of this inventory, located in the 2727-W facility and the South Alkali Metal (SAM) Storage Modules in the 200 West Area, contains trace quantities of radioactive constituents. All of the sodium was used as a heat transfer material. The chemical composition of the sodium was not changed during its use; i.e., it is still metallic, elemental sodium.

The NE Legacy radioactive sodium (i.e., Hallam and SRE) was identified by the TWRS program, along with the Fast Flux Test Facility (FFTF) sodium, as viable for use by the high level waste pretreatment program. Two contingency disposition options are also being evaluated for this inventory, i.e., private sector conversion and off-site treatment at the Argonne National Laboratory-West sodium reaction facility. If cost and schedule benefits are found to exist, and funding can be identified, these alternate option(s) will be pursued. A decision point should be reached by March, 1998, as to the final use and form for the NE Legacy radioactive sodium inventory in concert with the TWRS Tri-Party Agreement Milestone M-50-03 (due March 1998) which will define the TWRS tank waste pretreatment processes and needs. Bids have been received from the commercial sector for procurement of the NE Legacy non-radioactive sodium over a multi-year period. This sodium will be used in commercial applications that utilize elemental sodium.

APPLICABLE REGULATIONS: WAC 173-303-016, "Identifying solid waste".

WAC 173-303-016(3)(a) states:

"A solid waste is any discarded material that is not excluded by WAC 173-303-017(2) or that is not excluded by variance granted under WAC 173-303-017(5)."

WAC 173-303-016(3)(b) states:

"A discarded material is any material which is:
(i) Abandoned, as explained in subsection (4) of this section; or
(ii) Recycled, as explained in subsection (5) of this section; or
(iii) Considered inherently waste-like, as explained in subsection (6) of this section."

ANALYSIS

The sodium will not be applied to or placed on the land or will it be used to produce products or otherwise be contained in products that are applied to or placed on the land. The NE Legacy radioactive sodium may be converted into sodium hydroxide and used in caustic washing for tank waste sludge pretreatment. The NE Legacy non-radioactive sodium will be sold off-site for use by the commercial sector. Therefore, the sodium is not considered to be used in a manner constituting disposal.

WAC 173-303-016(5)(b) states:

"Burning for energy recovery. Materials noted with a "*" in column 2 of Table 1 are solid wastes when they are:

- (i) Burned to recover energy;
- (ii) Used to produce a fuel or are otherwise contained in fuels (in which cases the fuel itself remains a solid waste). However, commercial chemical products listed in WAC 173-303-9903 or which exhibit any of the criteria or characteristics listed in WAC 173-303-090 or WAC 173-303-100 are not solid wastes if they are themselves fuels."

ANALYSIS

The sodium will not be burned to recover energy or will it be used to produce a fuel or be otherwise contained in a fuel. The NE Legacy radioactive sodium may be converted into sodium hydroxide and used in caustic washing for tank waste sludge pretreatment. The NE Legacy non-radioactive sodium will be sold off-site for use by the commercial sector. Therefore, the sodium is not considered to be burned for energy recovery.

WAC 173-303-016(5)(c) states:

"Reclaimed. Materials noted with a "*" in column 3 of Table 1 are solid wastes when reclaimed."

WAC 173-303-016(5)(d) states:

- "(i) Accumulated speculatively. Materials noted with a "*" in column 4 of Table 1 are solid wastes when accumulated speculatively.
- (ii) A material is "accumulated speculatively" if it is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that-during the calendar year (commencing on January 1)-the amount of material that is recycled, or transferred to a different site for recycling, equals at least seventy-five percent by weight or volume of the amount of that material accumulated at the beginning of the period. In calculating the percentage of turnover, the seventy-five percent requirement is to be applied to each material of the

TABLE 1

Speculative accumulation 173-303- (5)(d)	Use constituting disposal	Energy recovery/ fuel	Reclamation	
	WAC 173-303- 016 (5)(a)	WAC 173-303- 016 (5)(b)	WAC 173-303- 016 (5)(c)	WAC 016
Spent materials	(*)	(*)	(*)	(*)
Commercial chemical products	(*)	(*)	_____	_____
By-products listed in WAC 173-303-9904	(*)	(*)	(*)	(*)
Sludges listed in WAC 173-303-9904	(*)	(*)	(*)	(*)
By-products exhibiting a characteristic 1 or criteria 2	(*)	(*)	_____	(*)
Sludge exhibiting a characteristic 1 or criteria 2	(*)	(*)	_____	(*)
Scrap metal	(*)	(*)	(*)	(*)

Note: The terms "spent materials," "sludges," "by-products," and "scrap metal" are defined in WAC 173-303-040.

1. The characteristics of dangerous waste are described in WAC 173-303-090.
2. The dangerous waste criteria are described in WAC 173-303-084 and 173-303-101 through 173-303-103.

same type (e.g., slags from a single smelting process) that is recycled in the same way (i.e., from which the same material is recovered or that is used in the same way). Materials accumulating in units that would be exempt from regulation under WAC 173-303-071 (3)(n) are not to be included in making the calculation. (Materials that are already defined as solid wastes also are not to be included in making the calculation.) Materials are no longer in this category once they are removed from accumulation for recycling, however."

WAC 173-303-040 states:

"Commercial chemical product or manufacturing chemical intermediate" refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient."

ANALYSIS

The metallic sodium is a chemical substance which is manufactured for commercial use and consists of the commercially pure grade, or technical grades of the chemical that are produced or marketed. The metallic sodium with trace quantities of radionuclides is a formulation in which the sodium is the sole active ingredient. Therefore, the sodium is considered to be a commercial chemical product and is not identified in column 3 or 4 of Table 1 with a "*" and is not a solid waste if reclaimed or accumulated speculatively.

WAC 173-303-016(6) states:

"Inherently waste-like materials. The following materials are solid wastes when they are recycled in any manner:

- (a) Dangerous Waste Nos. F020, F021 (unless used as an ingredient to make a product at the site of generation), F022, F023, F026, and F028.
- (b) The department will use the following criteria to add wastes to (a) of this subsection:
 - (i)(A) The materials are ordinarily disposed of, burned, or incinerated; or
 - (B) The materials contain toxic constituents listed in WAC 173-303-9905 and these constituents are not ordinarily found in raw materials or products for which the materials substitute (or are found in raw materials or products in smaller concentrations) and are not used or reused during the recycling process; and
 - (ii) The material may pose a substantial hazard to human health or the environment when recycled."

ANALYSIS

The sodium is not identified in WAC 173-303-9904 as having dangerous waste numbers F020, F021, F022, F023, F026, or F028. The sodium has also not been identified by Ecology as an "inherently waste-like material". Because the sodium is not identified in WAC 173-303-016(6) and has not been specifically identified by Ecology, it does not meet the definition of an "inherently waste-like material".

FINAL CONCLUSION:

Because the sodium is not abandoned, as explained in WAC 173-303-016(4), recycled, as explained in WAC 173-303-016(5), or considered inherently waste-like, as explained in WAC 173-303-016(6), it is not considered to be discarded and is therefore not a solid waste or a dangerous waste.