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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

91-PPB-374

FEB 20 1991

FEB 28 1991

Mr. J. P. Sainsbury
U.S. Environmental Protection Agency
Region 10, MS HW-093
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Sainsbury:

ANNUAL NOTIFICATION OF CONTINUOUS RELEASES OF AMMONIA AND AMMONIUM HYDROXIDE THAT ARE ABOVE THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT REPORTABLE QUANTITY VALUES

Enclosed is the CY 1990 Annual Notification of Continuous Releases of Ammonia and Ammonium Hydroxide. None of these continuous releases, which occurred at the Department of Energy's chemical processing and waste management facilities at the Hanford Site, exceeded the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) reportable quantity (RQ) values. This notification is being provided in accordance with the provision of the CERCLA, Section 103(f)(2), and the guidance included in the final rule, Reporting Continuous Releases of Hazardous Substances, dated July 24, 1990.

CERCLA Section 103(f)(2) requires that, in addition to the annual notification, changes in the continuous releases of hazardous substances must be reported to the governing Region of the Environmental Protection Agency. During CY 1990, the Department of Energy's Hanford Site substantially reduced its emissions of ammonia and ammonium hydroxide because the Plutonium-Uranium Extraction Facility (PUREX) and the 242-A Evaporator/Crystallizer did not process ammonia-bearing wastes. Emissions from the 241-AP and 241-AW Tank Farms were reduced because those facilities stored but did not receive new ammonia-bearing wastes.

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If you have any questions, please call T. P. Pietrok of my staff on (509) 376-9628 or FTS 444-9628.

Sincerely,

R. D. Izatt, Director
Environmental Restoration Division
Richland Operations Office

ERD:TPP

R. E. Lerch, Manager
Environmental Division
Westinghouse Hanford Company

Enclosure

cc w/encl:
P. T. Day, EPA-X
[redacted]
R. F. Stanley, Ecology

ENCLOSURE
Pages 1 - 5

ANNUAL NOTIFICATION REPORT OF CONTINUOUS RELEASES OF AMMONIA AND AMMONIUM HYDROXIDE FOR CALENDAR YEAR 1990

Hanford Site

Facilities Managed by the

Department of Energy - Richland Operations Office

Richland, Washington

January 1991

1.0 Introduction

This report presents the annual notification of continuous releases of hazardous substances in excess of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Reportable Quantity (RQ) values at the nuclear processing and waste management facilities managed by the U. S. Department of Energy-Richland Operations Office (DOE-RL) at the Hanford Site. This notification is provided in accordance with the provisions of the CERCLA, Section 103(f)(2), for releases which are continuous and stable in quantity and rate.

2.0 Annual Release Summary for Calendar Year (CY) 1990

As stated in the final continuous releases regulation dated July 24, 1990, the discussion of changes in continuous releases in CY 1990 will include the following items:

1. Name and identity of the hazardous substances
2. The basis for asserting continuity and stability of quantity and rate
3. Inclusive dates and number of times the releases exceeded an RQ value
4. Number of statistically significant increases
5. The amount of the mean release and largest release

The first written notification of ammonia and ammonium hydroxide releases in excess of the RQ values under CERCLA Section 103(a) was provided to the U. S. Environmental Protection Agency (EPA), Region 10, and the State of Washington Department of Ecology (Ecology) in an October 1, 1987 letter. The initial notification of continuous releases was issued to the EPA on January 20, 1988. (A copy of this notification was also sent to the Washington Department of Ecology.) An assertion for continuity and stability of rate was included in the January 20, 1988 notification. As required in the EPA final rule, this annual notification of decreased emissions is being made within 30 days of the day of the initial continuous release notification to reflect the changes in emissions during CY 1990.

The summary of CY 1990 releases is presented in the paragraphs below.

1. *The name/identity of the hazardous substance, the CASRN for the substance, the media affected (e.g., atmosphere, soil column), and the annual quantity released.*

   Response:

   This information is presented in Table 1. The Plutonium-Uranium Extraction Plant (PUREX) is a nuclear fuel processing facility. The 241-AP Tank Farm, the 241-AW Tank Farm, and the 242-A Evaporator/Crystallizer are discrete but interconnected waste management facilities.

Table 1. Continuous CERCLA Release Descriptions and Annual Quantity Release Data for Calendar Year 1990[a]

Release Point	Facility	Release Media	Continuous Release Substance[b]	Annual Release Quantity kg (lb)
PUREX Ammonia Scrubber Waste Concentrator Exhaust	PUREX	Atmosphere	Ammonia	0 (0)
241-AP Tank Farm Primary Exhaust	241-AP Tank Farm	Atmosphere	Ammonia	420 (925)
241-AW Tank Farm Primary Exhaust	241-AW Tank Farm	Atmosphere	Ammonia	1,155 (2,542)
242-A Evaporator/Crystallizer Process Condensate	242-A Evaporator/ Crystallizer	Soil Column	Ammonia	0 (0)
242-A Evaporator/Crystallizer Process Condensate	242-A Evaporator/ Crystallizer	Soil Column	Ammonium Hydroxide	0 (0)

[a]CERCLA is an abbreviation for the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

[b]The Chemical Abstracts Service Registry Number (CASRN) for ammonia is 7664417, and the CASRN for ammonium hydroxide is 1336216.

Fuel decladding operations were not conducted at PUREX during CY 1990; therefore, no ammonia waste was generated. The 242-A Evaporator/Crystallizer did not process any PUREX ammonia-bearing waste during CY 1990; therefore, no ammonia waste was generated. The two tank farms continued operation during CY 1990, storing PUREX ammonia-bearing waste.

2. *The Basis for Asserting Continuity and Stability of Quantity and Rate.*

Response:

The basis for continuity of releases from the PUREX Plant is that ammonia releases are continuous during the regularly occurring cladding removal operation, a batch process. The basis for continuity of the releases from the 241-AP Tank Farm and the 241-AW Tank Farm is that the releases are continuous without interruption or abatement during storage and transfer of PUREX ammonia-bearing waste. The basis for continuity of releases from the 242-A Evaporator/Crystallizer is that releases of ammonia occur during concentration of PUREX ammonia-bearing waste. The 242-A Evaporator/Crystallizer is a continuous, intermittent process that ceases and recommences on a scheduled basis.

The basis for stability in quantity and rate is that the releases are predictable during normal operations. This has been established by the amount of ammonia generated at PUREX, vapor/liquid equilibrium data, process knowledge, effluent treatment and controls, and effluent release data. Ammonia releases are higher, as predicted, when the 242-A Evaporator/Crystallizer is concentrating PUREX ammonia-bearing waste. Because some of the tanks at the 241-AW Tank Farm serve as feed and receiver tanks for the 242-A Evaporator/Crystallizer, releases from the 241-AW tank farm are also higher, as predicted, during concentration of PUREX ammonia-bearing waste.

3. *The inclusive dates and the number of times the amount of the release during any 24-hour period exceeded the RQ value in CY 1990.*

Response:

Table 2 shows that no releases from any of the release points described above exceeded the final 45.4-kg (100-lb) ammonia RQ or the final 454.5-kg (1000-lb) RQ for ammonium hydroxide. The only emissions of ammonia were those in reduced quantities that occurred at the 241-AP and 241-AW Tank Farms from storage of ammonia-bearing waste. No ammonium hydroxide was emitted from the 242-A Evaporator/Crystallizer during the calendar year.

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Table 2. Continuous CERCLA Release Summary for Calendar Year 1990[a]

Release Point	Substance	CERCLA RQ kg (lb)[b]	Number of Occurrences Above RQ Value[c]	Mean Release kg (lb)[d]	Largest Release kg (lb)	Number of Statistically Significant Increases
PUREX Ammonia Scrubber Waste Concentrator Exhaust	Ammonia	44.5 (100)	0	0	0	0
241-AP Tank Farm Primary Exhaust	Ammonia	44.5 (100)	0	1.1 (2.5)	2.8 (6.2)	0
241-AW Tank Farm Primary Exhaust	Ammonia	0	0	3.2 (7)	7 (14.3)	0
242-A Evaporator/ Crystallizer Process Condensate	Ammonia	44.5 (100)	0	0	0	0
242-A Evaporator/ Crystallizer Process Condensate	Ammonium Hydroxide	454.5 (1,000)	0	0	0	0

[a]All quantities are amounts per 24-hour periods.
[b]CERCLA is an abbreviation for the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.
[c]In Calendar Year 1990, the Reportable Quantity limits were not exceeded.
[d]Mean release is the annual quantity divided by the number of operating days in Calendar Year 1990.

4. *The number of times statistically significant increase occurrences were reported to the National Response Center.*

Response:

In the final rule promulgated on July 24, 1990, a statistically significant increase was defined as any release of a hazardous material that exceeds the upper bound of the reported normal range. The normal range is defined to include all the releases of a hazardous substance reported or occurring over any 24-hour period under normal operating conditions during the preceding year.

No statistically significant increases occurred in CY 1990 from the 241-AP and 241-AW Tank Farms. Emissions from these two facilities were reduced from those of CY 1989.

5. *The amount in pounds or kilograms of the mean release and the single largest release in CY 1990.*

Response:

This information is presented in Table 2 for each release point.

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