20030227004

AD-A273 136

UMENTATION PAGE

Form Approved
OMB No. 0704-0188

(2)

tion is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, pleting and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this educing this burden, to Washington Headquarters Services, Directorate for information Operations and Reports, 1215 Jefferson , and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
02/25/91	

4. TITLE AND SUBTITLE
PROPOSED AMENDMENT TO THE FINAL DECISION DOCUMENT FOR THE HYDRAZINE BLENDING AND STORAGE FACILITY INTERIM RESPONSE ACTION (IRA H)

5. FUNDING NUMBERS

6. AUTHOR(S)

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
HARDING LAWSON ASSOCIATES

8. PERFORMING ORGANIZATION REPORT NUMBER
91253R01

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
ROCKY MOUNTAIN ARSENAL (CO.). PMRMA

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)
THIS DOCUMENT IS A PROPOSED AMENDMENT TO: 88329R02

14. SUBJECT TERMS
BENCH TESTING, PILOT-SCALE TESTING

15. NUMBER OF PAGES

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED			

Standard Form 298 (Rev 2-89)

PROPOSED AMENDMENT TO THE FINAL DECISION DOCUMENT FOR THE HYDRAZINE BLENDING AND STORAGE FACILITY INTERIM RESPONSE ACTION (IRA H)
February 25, 1991

1. SECTION 4.0, PAGE 21

Add the following after the last paragraph on page 21:

Bench-/Pilot-Scale Testing Program

From April through August 1989, a bench-/pilot-scale testing program was conducted to evaluate whether qualified manufacturers of ultraviolet (UV)/chemical oxidation equipment could reduce the concentrations of hydrazine fuel compounds (hydrazine, monomethyl hydrazine [MMH], and unsymmetrical dimethyl hydrazine [UDMH]) and n-nitrosodimethylamine (NDMA) in the wastewater to action levels identified in the Final Decision Document. A secondary objective of this testing program was to generate design and operational information for use during the full-scale startup program.

Each of three vendors performed several preliminary treatability runs using hydrazine wastewater from tank US-4. Analytical testing of both untreated and treated wastewater was performed by an independent laboratory to evaluate treatment efficiency of the UV/chemical oxidation equipment. After the preliminary runs were completed, each vendor conducted a final treatability run that served as the basis for evaluation of its performance and selection for application at the Hydrazine Blending and Storage Facility (HBSF). The results of the final treatability runs indicate that concentrations of the hydrazine fuel compounds and NDMA were reduced to below levels that could be reliably detected by existing analytical methods and served as the basis for proceeding with a full-scale startup testing program.

A UV/hydrogen peroxide treatment system was selected on the basis of analytical results from the final treatability runs and other evaluation criteria considered, including capital and projected operating costs, potential for generation of a hazardous offgas, ease of installation and operation, experience, delivery time, and anticipated response and support service.

Full-Scale Startup Testing Program

From September through December 1989, the U.S. Department of the Army (Army) constructed the hydrazine wastewater treatment facility (WWTF) at the HBSF for full-scale startup operations. The hydrazine WWTF consists of the UV/hydrogen peroxide reactor, a recycle tank and chiller, hydrogen peroxide and pH adjustment systems, and several treated wastewater storage tanks.

During January 1990, samples were collected from various depth intervals in the tanks and from the in-ground concrete sump to adequately characterize the chemical constituents in hydrazine wastewater. The highest concentrations of hydrazine fuel compounds and NDMA were detected in samples from

tank US-4; therefore, wastewater from this tank was treated during full-scale startup testing.

During the period between completion of the bench-/pilot-scale testing program and initiation of full-scale startup testing, attempts to improve the performance and reliability of methods developed for analysis of NDMA and the hydrazine fuel compounds in wastewater continued. As a result of these efforts, the reliability of analytical detection limits established during the bench-/pilot-scale testing program increased.

From January through May 1990, 9920 gallons of hydrazine wastewater were treated during full-scale startup testing at the hydrazine WWTF. The UV/chemical oxidation treatment system was operated in a batch mode, with an average of 1100 gallons treated per each of nine batches. Operating conditions were varied and monitored during wastewater treatment to optimize destruction of hydrazine fuel compounds and NDMA. An air-monitoring program evaluating air concentrations of the hydrazine fuel compounds, NDMA, and volatile organic compounds (VOCs) in the WWTF was conducted to assess (1) the integrity of the UV/chemical oxidation treatment system and (2) the potential exposures to personnel during wastewater treatment and facility maintenance activities.

Results of the full-scale startup testing program indicate (1) concentrations of the hydrazine fuel compounds could be reduced to below levels that could be reliably detected by the improved analytical methods in 14 to 16 hours of treatment, and (2) the concentration of NDMA could be reduced to 5 μg/l in 30 to 35 hours of treatment.

Subsequent to completion of the full-scale startup testing program, methods and laboratories were certified in accordance with the Program Manager for Rocky Mountain Arsenal (PMRMA) certification program for NDMA, hydrazine, MMH, and UDMH. Under the PMRMA certification program, certified reporting limits (CRLs) are established for each compound to determine the lowest sample concentration that may be reliably detected. CRLs achieved for each compound are as follows:

Analyte	Certified Reporting Limit (μg/l)	Decision Document Action Level (μg/l)	Technology-Based Action Level (μg/l)
NDMA	0.042	TBD*	5
Hydrazine	9.9	2.5	9.9
MMH	7.5	20	7.5
UDMH	25	25	25

* To be determined after further testing (as close to 0.0014 μg/l as possible)

These CRLs were adequate to verify the achievement of the Decision Document action levels for UDMH and MMH. A technology-based action level of 9.9 μg/l was established for hydrazine on the basis of analytical method

development and certification of hydrazine in water. A technology-based action level of 5 μg/l was established for NDMA on the basis of treatment results demonstrated in the startup testing program. The technology-based action levels established for NDMA and the hydrazine fuel compounds indicated in the table would apply to full-scale operations.

In response to a request from the PMRMA, the U.S. Army Environmental Hygiene Agency (AEHA) performed a health risk assessment to evaluate the potential health risks associated with the proposed discharge to the RMA Sewage Treatment Plant (STP) of hydrazine wastewater treated to 5 μg/l of NDMA. AEHA's findings were published in a study released to PMRMA on October 22, 1990 (AEHA, 1990). Results of the risk assessment indicated that potential carcinogenic risks from all pathways were equal to or less than 1E-6. That is, exposures resulting from this discharge plan would be expected to result in no more than one excess cancer in a population of one million. Therefore, discharge to the STP meets EPA requirements for an acceptable health risk.

Revision to Preferred Treatment and Disposal Alternatives

On December 11, 1990, the RMA Steering and Policy Committee (SAPC), chaired by the U.S. Environmental Protection Agency (EPA), ruled that the disposal alternative identified in the Decision Document (i.e., RMA STP) was no longer valid. Although the AEHA risk assessment indicated an acceptable health risk for the disposal alternative, the EPA would not issue a National Pollutant Discharge Elimination System (NPDES) permit to allow disposal of the treated wastewater at the RMA STP. The permit was denied because of the inability to certify analysis of NDMA to a level low enough to prove that UV/chemical oxidation treatment had achieved the Ambient Water Quality Criteria of 0.0014 μg/l for NDMA. The chairman of the SAPC directed that an evaporation pond and the Basin F incinerator be reviewed as disposal alternatives for wastewater pretreated at the hydrazine WWTF.

After evaluation, the Army rejected an evaporation pond as the preferred disposal alternative because the Army does not, in general, favor returning to basins for disposal. The Army also evaluated and subsequently rejected the Basin F incinerator as the preferred disposal alternative because it is viewed as a retreatment of pretreated water. The Army concluded no viable options exist for disposal of hydrazine wastewater treated via UV/chemical oxidation.

Therefore, the Army reevaluated the original four final treatment alternatives specified in the Decision Document. A summary follows:

1. Ozone/UV light - no acceptable disposal method
2. Hydrogen peroxide/UV light - no acceptable disposal method
3. Evaporation pond - rejected as a treatment alternative, based on the rationale for rejection as a polishing step
4. Incineration - if accomplished offsite, safety concerns with transport of wastewater and some cost considerations

Per a recommendation from the EPA and the Colorado Department of Health, the Army concluded that future availability of the Basin F incinerator at RMA may render onsite incineration a viable alternative for treatment and disposal of the hydrazine wastewater. The hydrazine wastewater could be transferred to Pond A and incinerated with the Basin F liquids in the proposed submerged quench incinerator (SQI). A high degree of destruction of hydrazine fuel compounds and NDMA is expected via incineration. Because of technical feasibility and protection afforded human health and the environment, incineration with the Basin F liquids in the submerged quench incinerator was selected as the preferred treatment and disposal alternative for the hydrazine wastewater.

2. SECTION 5.0, PAGE 25

Add the following after the June 1988 entry on the bottom of page 25:

Date	Event
October 1988	Army issued the Final Decision Document for the Interim Response Action at the Rocky Mountain Arsenal Hydrazine Blending and Storage Facility, completed by Ebasco
April 14, 1989	Contract for design and startup testing for the HBSF IRA awarded by the Army
May 1990	Full-scale startup testing at the hydrazine WWTF completed by Harding Lawson Associates (HLA)
October 30, 1990	Army issued a Health Risk Assessment (AEHA, 1990) conducted by AEHA for two options for disposal of UV/chemical oxidation-treated wastewater; the assessment indicated potential carcinogenic risks from all pathways were equal to or less than 1E-6, and therefore discharge to the RMA STP would meet EPA requirements for an acceptable health risk.
November 1990	Army notified the Organizations and State (OAS) of plans to treat the hydrazine wastewater to 5 μg/l and dispose the treated water to the RMA STP.
December 11, 1990	SAPC ruled that the RMA STP is no longer a valid disposal option.
December 14, 1990	Army notified OAS of program changes resulting from SAPC's ruling.
January 7, 1991	Army issued the Draft Final Implementation Document for Decommissioning (Phase I), which addressed decontamination, dismantling, and disposal activities at the HBSF, and the Draft Final Treatment Report, which documented the bench-/pilot-scale testing and full-scale startup testing programs.

3. SECTION 6.0, PAGE 26, PARAGRAPH 1

Delete paragraph 1 on page 26, and replace it with the following:

Treatment of hydrazine wastewater and precipitation runoff stored in the 44,000-gallon in-ground concrete sump and tanks US-3 and US-4, and treatment of wastewater generated during the IRA to identified action levels. The preferred method of treatment and disposal is onsite incineration. The hydrazine wastewater stored at the HBSF will be transferred to Pond A in Section 26 of RMA, where Basin F liquids are held. The hydrazine wastewater and Basin F liquids mixture will be incinerated in a submerged quench incinerator according to the plan and schedule for the Basin F IRA.

4. SECTION 8.0, PAGE 34

Add the following section immediately after Section 8.3.1.3:

8.3.1.4 DESTRUCTION OF WASTEWATER IN THE BASIN F LIQUID INCINERATION SYSTEM

Individual emissions standards and monitoring requirements for incineration of wastewater from the HBSF in the Basin F liquid treatment facility will be established in accordance with procedures identified in the Final Decision Document for the Interim Response Action, Basin F Liquid Treatment, Section 9.2.2.

5. SECTION 8.0, PAGE 40

Add the following section immediately after Section 8.3.3.4:

8.3.3.4.1 TRANSPORTATION OF WASTEWATER ONSITE FROM THE HBSF TO POND A

The transfer of the wastewater currently stored at the HBSF to Pond A for subsequent treatment through the Basin F Liquid Treatment IRA will be accomplished by tank trucks. The wastewater will be transferred from the tanks in which it is currently stored at the HBSF directly to the tank trucks and transported to Pond A. The wastewater will then be placed directly from the tank trucks into Pond A. Since this activity will take place entirely onsite, the administrative requirements of 40 CFR Part 262 are neither applicable nor relevant and appropriate to this activity.

Due to the extremely short distance of the onsite transport (2 to 3 miles), the only markings considered appropriate for this operation are signs for the tank trucks involved in the operation that will indicate the vehicles are transporting hazardous materials.

6. SECTION 9.0, PAGE 43

Delete paragraphs 1 and 2 of Section 9.0 and replace with the following:

Implementation and completion of the HBSF IRA is based on the following milestones:

Date	Milestone
March 5, 1991	Public meeting regarding this Amendment to the Final Decision Document
March 6, 1991	Issue the Final Implementation Document for Decommissioning (Phase I)
March 7, 1991	Begin Phase I decommissioning activities
March 12, 1991	Comments regarding Amendment to the Final Decision Document due to the Army[1]
March 27, 1991	Issue amended Final Decision Document
April 17, 1991	Issue Draft Final Implementation Document for Treatment and Disposal (Phase II); begin 15-day comment period
May 4, 1991	Comments on the Phase II Implementation Document due to the Army[1]

[1] 15-Day comment periods and response periods are assumed for the amended Decision Document and the Phase II Implementation Document.

If events occur that necessitate a schedule change, the change will be incorporated in accordance with the discussion in Section XXII, paragraph 22.15, of the Federal Facility Agreement.

7. SECTION 11.0, PAGE 45

Add the following to the reference list:

Federal Facility Agreement, Docket No. CERCLA VIII-89-13.

Harding Lawson Associates, 1991, Draft Final Implementation Document for Decommissioning (Phase I), HBSF IRA Implementation, January 7.

Harding Lawson Associates, 1991, Draft Final Treatment Report, HBSF IRA Implementation, January 7.

U.S. Army Environmental Hygiene Agency, 1990, Draft Final Health Risk Assessment Study No. 39-26-L961-90, Hydrazine Wastewater Treatment.

Facility, Rocky Mountain Arsenal, Commerce City, Colorado, July to October 1990, October 22.

Woodward-Clyde Consultants, 1990, Final Decision Document for the Interim Response Action Basin F Liquid Treatment, Rocky Mountain Arsenal, Version 3.2, May.