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**PROGRAM MANAGER
FOR ROCKY MOUNTAIN ARSENAL**

U.S. ARMY
MATERIEL COMMAND

— COMMITTED TO PROTECTION OF THE ENVIRONMENT —

**Amendment to the Final
Decision Document
for the Interim Response Action at the
Rocky Mountain Arsenal
Hydrazine Blending and Storage Facility**

August 9, 1991
Contract Number DAAA15-88-D-0021
Task IPA H Phase I (Delivery Order 0003)

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Harding Lawson Associates

93-28768



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GREYSTONE ENVIRONMENTAL SERVICES, INC.
840-2101

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TECHNICAL SUPPORT FOR ROCKY MOUNTAIN ARSENAL

**Amendment to the Final
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for the Interim Response Action at the
Rocky Mountain Arsenal
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**August 9, 1991
Contract Number DAAA15-88-D-0021
Task IRA H Phase I (Delivery Order 0003)**

**Rocky Mountain Arsenal
Information Center
Commerce City, Colorado**

**PREPARED BY
Harding Lawson Associates**

PREPARED FOR

PROGRAM MANAGER FOR ROCKY MOUNTAIN ARSENAL

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THIS DOCUMENT COMPLIES WITH THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969.

THE INFORMATION AND CONCLUSIONS PRESENTED IN THIS REPORT REPRESENT THE OFFICIAL POSITION OF THE DEPARTMENT OF THE ARMY UNLESS EXPRESSLY MODIFIED BY A SUBSEQUENT DOCUMENT.

AMENDMENT TO THE FINAL DECISION DOCUMENT FOR THE
HYDRAZINE BLENDING AND STORAGE FACILITY
INTERIM RESPONSE ACTION (IRA H)
August 9, 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) light/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 rinsewater 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 rinsewater from tank US-4. Analytical testing of both untreated and treated rinsewater was performed by an independent laboratory to evaluate treatment efficiency of the UV light/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 rinsewater 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 rinsewater. The highest concentrations of hydrazine fuel compounds and NDMA were detected in samples from

tank US-4; therefore, rinsewater 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 rinsewater 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 rinsewater were treated during full-scale startup testing at the hydrazine WWTF. The UV light/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 rinsewater 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 light/chemical oxidation treatment system and (2) the potential exposures to personnel during rinsewater 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 $\mu\text{g/l}$ 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:

<u>Analyte</u>	<u>Certified Reporting Limit ($\mu\text{g/l}$)</u>	<u>Decision Document Action Level ($\mu\text{g/l}$)</u>	<u>Technology-Based Action Level ($\mu\text{g/l}$)</u>
NDMA	0.042	*	5
Hydrazine	9.9	2.5	9.9
MMH	7.5	20	7.5
UDMH	25	25	25

- * The Decision Document did not specify an action level; under the original preferred alternative, this level was to be determined after further testing.

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 rinsewater 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 draft 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 October 1988 Final 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 rinsewater 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 light/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 rinsewater pretreated at the Hydrazine WWTF.

After evaluation, the Army rejected an evaporation pond as the preferred disposal alternative for the UV light/chemical oxidation-treated rinsewater because there is no need to create an additional surface impoundment on RMA and because of potential air emissions. The Army also evaluated and subsequently rejected the Basin F incinerator as the preferred disposal alternative for the UV light/chemical oxidation-treated rinsewater because of the schedule impacts and significant cost associated with a second treatment of pretreated water. The Army concluded no viable options exist for this IRA for disposal of hydrazine rinsewater treated via UV light/chemical oxidation.

Therefore, the Army reevaluated the original four final treatment alternatives specified in the October 1988 Final 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 disposal method after hydrogen peroxide/UV light treatment
4. Incineration - if accomplished offsite, safety concerns with transport of rinsewater and some cost considerations

Based on guidance from the SAPC on December 11, 1990, the Army investigated whether the future availability of the Basin F incinerator at RMA may render onsite incineration a viable alternative for treatment and disposal of the hydrazine rinsewater. The hydrazine rinsewater 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 will occur via incineration. The Army performed a risk assessment of incineration of the hydrazine rinsewater with the Basin F liquids in the SQI and made the assessment available to the Organizations and State (OAS) and the general public. The results of the assessment show this treatment and disposal alternative to be protective of human health and the environment. Based on these factors, the Army concluded that this was the preferred alternative.

Because of technical feasibility, schedule impacts, 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 rinsewater in lieu of treatment via UV light/chemical oxidation and disposal to the RMA STP.

2. SECTION 5.0, PAGE 25

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

<u>Date</u>	<u>Event</u>
October 1988	Army issued the <u>Final Decision Document for the Interim Response Action at the Rocky Mountain Arsenal Hydrazine Blending and Storage Facility</u> , 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 draft Health Risk Assessment (AEHA, 1990) conducted by AEHA for two options for disposal of UV light/chemical oxidation-treated rinsewater; 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 OAS of plans to treat the hydrazine rinsewater 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 <u>Draft Final Implementation Document for Decommissioning (Phase I)</u> , which addressed decontamination, dismantling, and disposal activities at the HBSF, and the <u>Draft Final Treatment Report</u> , which documented the bench-/pilot-scale testing and full-scale startup testing programs.
February 25, 1991	Army issued a proposed amendment to the Final Decision Document recommending transfer of the hydrazine rinsewater to Pond A and incineration of the rinsewater/Basin F liquids mixture in the SQI in lieu of treatment via UV/chemical oxidation and disposal to the RMA STP as the preferred treatment and disposal alternative.
March 5, 1991	Army conducted a public meeting to discuss the proposed amendment to the Final Decision Document for the HBSF IRA.
March 18, 1991	Army issued the <u>Final Implementation Document for Decommissioning (Phase I)</u> for decontamination, dismantling, and disposal of the HBSF.
March 27, 1991	Extended period for comments regarding the proposed amendment to the Final Decision Document closes.

3. SECTION 6.0, PAGE 26, PARAGRAPH 1

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

The HBSF Interim Response Action will involve:

1. Treatment of hydrazine rinsewater and precipitation runoff stored in the 44,000-gallon in-ground concrete sump and tanks US-3 and US-4, and treatment of rinsewater generated during the IRA to identified action levels. The preferred method of treatment and disposal is onsite incineration. The hydrazine rinsewater stored at the HBSF will be transferred to Pond A in Section 26 of RMA, where Basin F liquids are held. Adequate capacity is available in Pond A. The hydrazine rinsewater 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 Rinsewater in the Basin F Liquid Incineration System

Individual emissions standards and monitoring requirements for incineration of rinsewater 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 Rinsewater Onsite from the HBSF to Pond A

The transfer of the rinsewater 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 rinsewater 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 rinsewater 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:

<u>Date</u>	<u>Milestone</u>
August 1, 1991	Begin Phase I decommissioning activities
August 9, 1991	Issue the <u>Amendment to the Final Decision Document for HBSF IRA</u>
August 9, 1991	Issue the <u>Draft Implementation Document for Rinsewater Transfer (Phase II)</u>

September 10, 1991	Comments regarding the <u>Draft Implementation Document for Rinsewater Transfer (Phase II)</u> due to the Army
September 20, 1991	Issue the <u>Final Implementation Document for Rinsewater Transfer (Phase II)</u>
10 weeks after issuance of the Final ID for Rinsewater Transfer (Phase II)	Complete transfer of rinsewater

If events occur that necessitate a milestone 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, Final Implementation Document for Decommissioning (Phase I), HBSF IRA Implementation, March 18.

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.

RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
COMMENTS REGARDING THE PROPOSED AMENDMENT TO THE FINAL DECISION
DOCUMENT FOR THE HYDRAZINE BLENDING AND STORAGE FACILITY (HBSF)
INTERIM RESPONSE ACTION (IRA)

February 25, 1991

GENERAL COMMENTS

General Comment No. 1

EPA has requested previously (refer to EPA letter to Mr. Don Campbell, dated July 27, 1990) that a risk assessment be performed on the potential incineration of the hydrazine wastewaters in the Basin F incinerator and the risks posed in the transfer and transport of the hydrazine wastewaters. Such information is still needed to judge the proposed change, as described in the cover letter.

Response

The U.S. Department of the Army (Army) has performed a risk assessment of incineration of the hydrazine rinsewater with the Basin F liquids in the submerged quench incinerator (SQI) and has made the assessment available to the Organizations and State (OAS) and the general public.

General Comment No. 2

As described in the cover letter, resolution of applicability of LDR issues is necessary before a decision can be made on the proposed amendment.

Response

The Army and EPA have discussed and resolved land disposal restriction (LDR) issues as they impact this IRA.

General Comment No. 3

The proposed decision to incinerate the hydrazine wastewater in the Basin F submerged quench incinerator (SQI) rather than treat it using UV/chemical oxidation, may be a reasonable approach. However, the length of time required to treat the Basin F liquid is of concern because it is currently projected to be longer than the life of the tanks that are holding the liquid. EPA is concerned that the addition of the hydrazine wastewater to Pond A will extend the time for treatment and increase the possibility that the tanks will deteriorate before all of the liquid has been treated.

Response

Although the overall time to treat all liquids may increase by 15 operational days, no impact to the life of the tanks is expected because the hydrazine rinsewater will be transferred to Pond A. In any situation, the Basin F liquids in the tanks will be transferred to the SQI for treatment before the liquids in Pond A are treated.

SPECIFIC COMMENTS

Specific Comment No. 1

Page 3, you may wish to provide response to the EPA and State of Colorado comments on the AEHA health risk assessment for the proposed discharge to the RMA sanitary sewer for completeness of the administrative record.

Response

The Army agrees that issuance of responses to comments regarding the U.S. Army Environmental Hygiene Agency (AEHA) Draft Health Risk Assessment is appropriate. Responses will be issued August 1991.

Specific Comment No. 2

Page 3, the text states: "The Army concluded no viable options exist for disposal of hydrazine wastewater treated via UV/chemical oxidation." This statement was used in reference to the elimination of pretreatment of the hydrazine wastewater prior to placement in an evaporation pond or in the Basin F liquids Pond A for incineration. Costs may have prohibited the pretreatment of the liquid but either of these options would likely be a viable alternative for the treated liquid.

Further, the potential use of the evaporation pond was not for "disposal" but for evaporation of a pretreated waste stream. That would likely be technically and regulatorily acceptable since the photolysis of the gaseous hydrazine and NDMA would further act to destroy the contaminants.

Response

The Army agrees that, in general, an evaporation pond or incineration would be technically viable alternatives for disposal of hydrazine rinsewater treated via ultraviolet (UV) light/chemical oxidation. An evaporation pond was considered an undesirable alternative because there is no need to create an additional surface impoundment at Rocky Mountain Arsenal (RMA) when Pond A already exists. Incineration following UV light/chemical oxidation treatment was not a preferred disposal alternative because of the significant cost and schedule impacts associated with two treatment processes and, therefore, was considered not viable for this IRA. The text has been amended.

Specific Comment No. 3

Page 4, first paragraph. It should be stated specifically that incineration is recommended in place of UV/chemical oxidation, rather than as a polishing step as discussed in the previous paragraphs.

Response

The text has been amended.

Specific Comment No. 4

Page 5, Section 8.3.3.4.1, Transportation of Wastewater Onsite from the HBSF to Pond A: Please provide, in the Implementation Document, details for the transfer of the HBSF wastewaters to

Pond A. Specifically, please detail the air monitoring, personnel monitoring and level of protection to be worn during this work, and a contingency plan for such events as spills or air releases.

Response

Details of the transfer of the hydrazine rinsewater from the HBSF to Pond A will be provided in the Final Implementation Document for Rinsewater Transfer (Phase II).

RESPONSES TO STATE OF COLORADO COMMENTS REGARDING THE
PROPOSED AMENDMENT TO THE FINAL DECISION DOCUMENT FOR THE
HYDRAZINE BLENDING AND STORAGE FACILITY (HBSF)
INTERIM RESPONSE ACTION (IRA)
February 25, 1991

COVER LETTER

Response

Issues addressed by the State of Colorado (the State) in its cover letter are repeated in the comment sections and will be addressed below for ease of understanding.

GENERAL COMMENTS

General Comment No. 1

As you are aware, the State has consistently maintained that both the Hydrazine Blending and Storage Facility (HBSF) and the Basin F hazardous waste management units are subject to regulation under the Colorado Hazardous Waste Management Act (CHWMA) and implementing regulations; therefore, any treatment, storage, or disposal of hazardous wastes from these two units must be in compliance with pertinent regulations under 6 CCR 1007-3, sections 260 through 268.99 and 100. The State is submitting these comments to facilitate sound decision-making irrespective of the current jurisdictional disagreements. Submission of these comments, however, cannot be construed as a waiver of the State's legal arguments.

Response

Based on the District Court of Colorado's ruling on August 8, 1991, regarding Resource Conservation and Recovery Act (RCRA) jurisdiction, Rocky Mountain Arsenal (RMA) is not subject to State of Colorado RCRA jurisdiction.

General Comment No. 2

On January 22, 1991, the RMA parties attended a special RMA Committee meeting to discuss the implementation of the HBSF Interim Response Action (IRA). At that meeting the Army presented its proposal to change its preferred alternative from UV/oxidation to incineration in the Basin F liquids submerged quench incinerator (SQI). The State responded to the Army's proposal by enunciating two major concerns: 1. a thorough evaluation of Land Disposal Restrictions (LDRs) must be undertaken prior to transfer of the liquids into Pond A; 2. a thorough risk assessment must be performed to determine the incremental risk that would be associated with the new selected remedy. The Army, at that meeting, promised to address both of those concerns. Unfortunately, preliminary discussions regarding LDRs, though helpful, have not resolved our questions, and a risk assessment still has not been conveyed to the parties. Without a clear determination that the transfer of liquids will not violate LDRs, and incineration of the wastewater will not cause the Basin F Liquids incinerator to exceed a hazard index of one, and an excess cancer risk of one in a million, the State cannot concur with the Army's proposed amendment.

Response

Comment noted. See response to State General Comment No. 3 regarding specific land disposal restriction (LDR) issues.

General Comment No. 3

Land Disposal Restrictions: There remain a number of unresolved issues related to LDR compliance:

- a. *Does the hydrazine liquid contain greater than 1% total organic carbon and greater than 1% total suspended solids? If so the treatment standards for "nonwastewater apply". For n-nitrosodimethylamine (NDMA) this standard is incineration; therefore, the liquids could not be stored or disposed of outside of the HBSF until they were incinerated. Preliminary communications from the Army have indicated that the liquids do fit the regulatory definition of wastewater; however, this fact must be documented in the record.*

Response

The hydrazine rinsewater contains less than 1 percent total organic carbon and less than 1 percent total suspended solids. Documented analytical results are available.

- b. *Wastewater containing NDMA must be treated to a level of .4 mg/l. (55 FR 22603) Available data indicate that this level is exceeded at least in Tank US-3. Could the wastewater be treated to an acceptable level using additional chemical treatment with hypochlorite solution? If so, this fact should be document for the record. It should be noted that these levels must be achieved through treatment, not dilution. See 6 CCR 1007-3, Section 268.3.*

Response

The 0.4 milligram per liter (mg/l) treatment level cited by the State for n-nitrosodimethylamine (NDMA) is not applicable to the hydrazine rinsewater. It applies to NDMA waste coded as P082 in 40 Code of Federal Regulations (CFR) 261.33 which applies to discarded commercial chemical products, off-specification species, container residues, and spills from such materials.

- c. *Was all of the liquid treated with sodium (or calcium) hypochlorite solution before being stored in the two tanks and the sump? Review of historical documents did not appear to be conclusive on this issue. We understand that this Army believes such treatment took place; however, this fact must be clearly documented for the record. If all liquids were not so treated, transfer would violate treatment standards for hydrazine and unsymmetrical dimethyl hydrazine.*

Response

Historical documents indicate the rinsewater in tanks US-3, US-4, and the in-ground sump was treated with a hypochlorite solution.

- d. *It appears that other chemicals in the hydrazine liquid are subject to LDRs, and the Army has not satisfied the treatment standards for those liquids. For example:*

CHART A

<u>Analyte</u>	<u>Tank US-3</u> <u>(ug/l)</u>	<u>Tank US-4</u> <u>(ug/l)</u>	<u>In-Ground</u> <u>Sump (ug/l)</u>	<u>Wastewater</u> <u>Treatment</u> <u>Standard</u> <u>(ug/l)</u>
Chloroform	3000 - 4750	96.6 - 106	ND	46
1,1-Dichloroethane	96 - 570	3.66 - 3.89	ND	59
Methylene chloride	2600 - 12,000	61 - 110	ND	89
Toluene	5.09	ND	96 - 680	80
Aniline	1200 - 1460	1500-6400	ND	810

Response

The U.S. Department of the Army (Army) disagrees with the State's LDR analysis. The only waste code that applies to the hydrazine rinsewater is U133 because hydrazine was the only process chemical being manufactured at the HBSF. None of the potential waste codes identified for the additional compounds in the rinsewater cited by the State is applicable because these compounds do not meet the requisite definition contained in 40 CFR 261.33 for those codes. As indicated in the response to State General Comment No. 3.b, according to Section 261.33, the chemical must be a (1) discarded commercial chemical product, (2) off-specification species, (3) container residue, or (4) spill residue from such materials for the codes to apply.

- e. *If the Army has determined that LDRs are not applicable to the other compounds in the liquids, it must explain the rationale upon which this conclusion is based. Also, a determination of whether those treatment standards are relevant and appropriate must then be made. EPA guidance on this subject is contained in Superfund LDR Guide #7, 9347.3-08FS (1989)*

Response

See response to State General Comment No. 3.d. Also, the Army has determined the waste codes, and therefore, the treatment standards, are not relevant and appropriate. Based on the guidance contained in Superfund LDR Guide #7, the HBSF rinsewater is not sufficiently similar to the material subject to the identified waste codes to warrant application of the waste codes. LDR Guide #7 states that a constituent by constituent analysis is not necessary for relevant and appropriate determinations, rather a general comparison of the waste constituents and matrices is useful. There is not a close match between the waste constituents of the HBSF rinsewater and that of the identified listed wastes. LDR Guide #7 uses an example of "very high concentrations of a predominantly liquid waste indicative of industrial waste streams" to demonstrate general similarity. In the case of the rinsewater, only very low concentrations of any of these compounds are present, usually in the part per billion level and not above a few parts per million in any of the current holding facilities. This makes this rinsewater very dissimilar to waste streams contemplated by the waste codes. It is also important to note that the transfer of the rinsewater to Pond A is not final disposal but storage for future disposal by incineration, an appropriate technology, making the goal of the transfer somewhat dissimilar from that contemplated in establishing the identified waste codes.

General Comment No. 4

Noting that the transfer of hydrazine liquids to Pond A would probably violate LDRs, the State, at the January 31 meeting, suggested that the Army investigate other methods of storing and feeding the hydrazine liquids into the SQI. In particular, the State proposed that the Army investigate the following:

- a. storage of the liquids in portable tanks located within the HBSF unit;*
- b. storage of the liquids in their current tanks after the integrity of those tanks was ensured through testing;*
- c. transfer of liquids to the SQI from current or probable tanks through direct line feeding or via tanker trucks into the SQI system.*

We have not heard whether such alternatives were investigated, and if so, what were the Army's findings. It was also agreed that the Army would investigate the historical treatment of the liquids, and all four parties would further research the implications of LDRs and re-convene in person or by phone to discuss their findings. As stated above, although brief telephone conversations did transpire, the LDR issues were never resolved.

Response

The three alternatives listed were considered, but would lead to significant delays in the decommissioning of the HBSF, or increase the cost of the decommissioning significantly. These disadvantages are not offset by increased protection of human health, welfare or the environment. Therefore, none of these alternatives were selected. Also, see response to U.S. Environmental Protection Agency (EPA) General Comment No. 2 and State General Comment No. 3 regarding LDRs.

General Comment No. 5

On February 4, 1991, the State received voluminous materials support the Army's risk assessment for the Basin F incinerator. Review and concurrence with the approach taken in that document is necessary since the Army stated that it would use the same methodology to assess risks associated with incineration of the hydrazine liquids. Comments on that risk assessment will be transmitted as soon as possible. We are still awaiting receipt of a revised risk assessment for the new preferred alternative for treatment and disposal of the hydrazine liquids. This risk assessment should evaluate risks associated with any transportation and storage as well as treatment and disposal of the HBSF liquids.

Response

See response to EPA General Comment No. 1.

General Comment No. 6

At the January 22 meeting, State representatives expressed concern regarding SQI destruction efficiencies for hydrazine-related compounds, and the possibility that exposure of hydrazine to the oxidizing environment of the incinerator would result in breakdown into the more hazardous NDMA. It was agreed that the Army would investigate other sites that have incinerated hydrazine-

related compounds to determine destruction efficiencies and emission rates. We have not been informed whether this survey was ever conducted, and if so, what the results were.

Response

A response from one commercial site indicated a destruction and removal efficiency of greater than 99.9999 percent would be expected for water with the quality of the hydrazine rinsewater.

General Comment No. 7

The risk assessment for the preferred alternative must include calculations of air emission which will be escaping from the vents on Pond A cover. Two years ago, when the Army was first designing the Pond A cover, the State urged the Army to install vent controls on all of the Basin F management units. See, for example, letter from David Shelton to Don Campbell dated April 4, 1989. At an RMA Committee Meeting held on March 9, 1989, Ed Berry of the PMO stated that vent controls would not be installed; however, monitoring of emissions would be conducted, and risks calculated to determine whether such controls would be necessary. Review of recent air monitoring data from the Basin F units indicate that insufficient monitoring has been done to calculate an emission rate or determine representative concentrations. Therefore, the State reiterates its request that the Army comply with Air Pollution Control Division Regulation 7 and install vent control systems on these units as soon as possible.

Response

The four vents at Pond A are vertically mounted ball valves. In the event of a release, the 1-inch polyethylene balls are forced upward by the vapor flow, and vent the vapors to the atmosphere. To date, no releases have been observed. Vapors in the vent tubes and the ambient air surrounding the vents have been sampled. While the vapors in the vent tubes contain detectable concentrations of contaminants, no contaminants have been detected in the ambient air near the vents. In the absence of releases, a valid risk assessment would be difficult to perform without reliance on unverifiable assumptions. The Army does not believe the installation of vent controls is necessary nor required under these circumstances. Air Pollution Control Division Regulation No. 7 is neither applicable nor relevant because it is to be implemented only when the source has the potential to emit 100 tons or more of volatile organic compounds (VOCs) per year. Clearly, Pond A does not have this capability.

General Comment No. 8

The issue of disposal of precipitation collected at the Basin F management units has not yet been resolved. Disposal of such liquids in Pond A will further limit the capacity of Pond A to store additional liquids. Has the Army predicted the amount of liquids which will need to be transferred from the leachate collection system, leak detection systems, and possibly precipitation accumulation from the other Basin F units, for the next several years until the units are closed? Has it determined that sufficient capacity exists to store all of those liquids as well as the 300,000 gallons of HBSF liquids and still retain 3' freeboard? - If so, please share those calculations with the parties.

Response

The Army is not aware of any requirement to maintain 3 feet of freeboard. Two feet of freeboard is required for uncovered Resource Conservation and Recovery Act (RCRA) surface impoundments subject to wind and wave action; Pond A has a hypalon cover. Pond A has adequate capacity, as shown in the following calculations:

Capacity with 2 feet of freeboard 7.500 million gallons (M gal)

Estimated total liquid volume through 1993:

Original volume to Pond A	5.100 M gal
Ebasco waste pile operations	0.265 M gal
Additions to Pond A to date	0.723 M gal
Estimated Basin F area Operations and Maintenance (O&M) through December 1993*	0.420 M gal
Hydrazine rinsewaters**	<u>0.400 M gal</u>
Total	6.908 M gal

* Based on an average of 14,000 gallons per month for 30 months. The actual amount added during June 1991, a very wet month, was 13,932 gallons. Therefore, this estimate may be conservative.

** Includes rinsewater from decommissioning of the Hydrazine Blending and Storage Facility (HBSF) in 1991, conservatively estimated here at 100,000 gallons. The actual amount is expected to be lower.

In the event of a structural failure, one of the 1.3 M gal Basin F tanks can be downloaded to Pond A, bringing the total liquid volume in Pond A to 8.2 M gal. This will reduce the freeboard to approximately 1.3 feet.

SPECIFIC COMMENTS

Specific Comment No. 1

Page 3: The Army refers to the risk assessment performed by the U.S. Army Environmental Hygiene Agency as indicating that discharge of the HBSF liquids to the RMA Sewage Treatment Plant would meet EPA requirements for an acceptable health risk. This risk assessment was not accepted for by the regulatory agencies. Unqualified reliance on its conclusions, therefore, may not be justified.

Response

The Army plans to issue responses to comments and a revised risk assessment for the discharge of treated hydrazine rinsewater to the Sewage Treatment Plant (STP) by August 1991. Revisions and corrections requested by the Organizations and State (OAS) did not alter the conclusions of the risk assessment.

Specific Comment No. 2

Page 3: "Viable" is defined by Webster's dictionary as "workable". Certainly the disposal of U/V treated HBSF liquids in the incinerator is workable; therefore, the Army's conclusion that "no viable options exist for disposal of hydrazine wastewater treated via UV/chemical oxidation" is unjustified. We agree, however, that such a treatment alternative would be more costly than the direct incineration of the HBSF liquids in the SQI.

Response

See response to EPA Specific Comment No. 2. The word was used in reference to this IRA and may have been misunderstood.

Specific Comment No. 3

Page 4: The Army has selected incineration as the preferred treatment and disposal alternative "because of technical feasibility and protection afforded human health"; however, without a risk assessment, the protectiveness of this alternative cannot be demonstrated.

Response

See response to EPA General Comment No. 1.

Specific Comment No. 4

Page 5: The Army intends to transfer the liquids by tank truck. The Army should evaluate transfer mechanisms to reduce volatilization of organic compounds during loading and unloading. We would expect to see such measures reflected in the Implementation Document to be issued for this IRA.

Response

Closed system mechanisms and practices are planned for transfer of the hydrazine rinsewater. A discussion of transfer operations will be included in the Final Implementation Document for Rinsewater Transfer (Phase II).

Specific Comment No. 5

Page 6: The State never agreed to a 15 day comment period on the Draft Final Implementation Document.

Response

Comment noted.

RESPONSES TO THE ADAMS COUNTY LEAGUE OF WOMEN VOTERS'
COMMENTS REGARDING THE PROPOSED AMENDMENT TO THE FINAL
DECISION DOCUMENT FOR THE HYDRAZINE BLENDING AND
STORAGE FACILITY (HBSF) INTERIM RESPONSE ACTION (IRA)
February 25, 1991

GENERAL COMMENTS EXTRACTED FROM LETTER

Comment No. 1

We request that some form of public health risk report be made available to the public before the final recommendation is made on the hydrazine. We feel this should be part of the decision making process.

Response

The U.S. Department of the Army (Army) has performed a risk assessment of incineration of the hydrazine rinsewater with the Basin F liquids in the submerged quench incinerator (SQI) and has made the assessment available to the general public. The results of the assessment show this treatment and disposal alternative to be protective of human health. The risk assessment is available at the Joint Administrative Record Document Facility.

Comment No. 2

I talked to Sandy & she said the H.R.A was an internal document & could not be released but said the health analysis should be in the 1988 JARDIS. We have not been able to locate this report at the library.

Response

See response to Comment No. 1 above.

Comment No. 3

The Chronic Hazardous Index will be an elementary beginning for only 18 months in an attempt to measure public risks. The League feels more information must be made available to the public prior to making an informed decision.

Response

See response to Comment No. 1 above.

RESPONSES TO THE CITIZENS AGAINST CONTAMINATION COMMENTS
REGARDING THE PROPOSED AMENDMENT TO THE FINAL DECISION DOCUMENT
FOR THE HYDRAZINE BLENDING AND STORAGE FACILITY (HBSF)
INTERIM RESPONSE ACTION (IRA)
February 25, 1991

GENERAL COMMENTS EXTRACTED FROM LETTER

Comment No. 1

One of our strong concerns is that no risk assessment was done prior to this decision. How can you claim that this is a safe activity if no risk assessment has been completed.

Response

Incineration was proposed on the basis of its proven technology, known high destruction efficiencies, and capability to treat water with the quality of the hydrazine rinsewater. The U.S. Department of the Army (Army) has performed a risk assessment of incineration of the hydrazine rinsewater with the Basin F liquids in the submerged quench incineration (SQI) and has made the assessment available to the general public. The results of the assessment show this treatment and disposal alternative to be protective of human health.

Comment No. 2

These toxic chemicals were to be treated by ultraviolet light/chemical oxidation and disposal in the sanitary sewer. It appears that you are taking an easier, yet unknown path. We do not feel that this is in the best interest of the citizens in this area.

Response

In general, incineration is an accepted, proven technology capable of safely treating water similar to the quality of the hydrazine rinsewater. Incineration represented an attractive alternative when, subsequent to the final decision on this IRA, an onsite capability was planned for Rocky Mountain Arsenal (RMA). Changing the preferred treatment and disposal alternative to incineration was proposed by the Army primarily because of citizen concerns expressed about disposal of the treated water into the RMA sanitary sewer.

RESPONSES TO MS. CLARA LOU HUMPHREY'S COMMENTS REGARDING
THE PROPOSED AMENDMENT TO THE FINAL DECISION DOCUMENT
FOR THE HYDRAZINE BLENDING AND STORAGE FACILITY (HBSF)
INTERIM RESPONSE ACTION (IRA)
February 25, 1991

SPECIFIC COMMENTS

Comment No. 1

The public has a right to know the results of ALL studies which affect public health and the environment. At this time at least one health risk assessment has not been made available to the public.

Response

Results of the risk assessment for incineration of the hydrazine rinsewater with the Basin F liquids in the submerged quench incinerator (SQI) were not available at the time of the issuance of the proposed amendment. The U.S. Department of the Army (Army) has since made the assessment available to the general public. The results of the assessment show this treatment and disposal alternative to be protective of human health.

Comment No. 2

Since the first decision (UV/hydrogen peroxide treatment system) was found to be faulty, for whatever reasons, the public needs to be assured in as many ways as possible that the final decision will, in fact, protect their health.

Response

Changing the preferred treatment and disposal alternative was proposed by the Army because of citizen concerns expressed about disposal of the treated water into the RMA sanitary sewer, not because the original decision was faulty. The Army agrees that protection of human health and the environment remain top priority in the implementation of this IRA and will continue to communicate with the public about ongoing activities.

Comment No. 3

My understanding is that the most recent health risk report has not been made public because of disagreement among the Parties And State. Although I have no way to know the nature of the disagreement, or for that matter of any of the disagreements, I must assume there is some question about the safety of the proposed action or about the methods of reaching the decision.

Response

See response to Comment No. 1 above.

Comment No. 4

According to the "Draft Public Health Risk Assessment Report, Submerged Quench Incinerator, task IRA-2, Basin F Liquids, Treatment Design, January, 1990, Contract No. DAAA15-88-D-0022/0001, VERSION 2.1" the Submerged Quench Incinerator was given the go-ahead based on the finding that "Incineration of Basin F liquids at the Rocky Mountain Arsenal site does not pose an unacceptable cancer risk, according to EPA policy and other government agencies". The implication is that there IS a cancer risk in the current action. To add yet another factor (hydrazine) to the analysis before all questions have been answered satisfactorily could jeopardize the SQI action.

Response

The results of the risk assessments for both incineration of the Basin F liquids and incineration of the hydrazine rinsewater show protection of human health is provided (i.e., no unacceptable cancer risk).

Comment No. 5

Although no cumulative effects studies or standards are required at this time, it seems a wise move in view of changing attitudes and regulations to conduct studies of cumulative effects for the future protection of the Parties and the peace of mind of the Public.

Response

Comment noted.

RESPONSES TO NATIONAL TOXICS CAMPAIGN COMMENTS REGARDING
THE PROPOSED AMENDMENT TO THE FINAL DECISION DOCUMENT
FOR THE HYDRAZINE BLENDING AND STORAGE FACILITY (HBSF)
INTERIM RESPONSE ACTION (IRA)

February 25, 1991

COVER LETTER

Response

Issues addressed by the National Toxics Campaign are repeated in the comments section and will be addressed below for ease of understanding.

SPECIFIC COMMENTS

Specific Comment A - Opposition to Process

The National Toxics Campaign has strongly objected (both at the March 5, 1991 public meeting and in subsequent correspondence of March 8, 1991) to the Army's poor process for assuring meaningful public participation in decision-making concerning clean-up actions at the Rocky Mountain Arsenal.

We believe that the poor attendance from citizens (other than Shell and government attorneys) at these meetings reflects a number of factors. Among these are the Army's failure to provide timely notification to the public; meeting formats that discourage public involvement (e.g. PR consultants that are hired by the Army to act as a buffer by speaking for citizens, when citizens are perfectly capable of speaking for themselves; allowing time at meetings only for "questions" from the public; holding meetings on the Arsenal property, when many citizens do not want to enter for fear of exposure; etc.)

Most outrageous is the Army's failure to make available for public examination -- prior to and during the public comment period -- the key documents that are theoretically being used as bases for evaluating remedial action options for extremely dangerous sites, such as the Hydrazine Blending and Storage Facility (HBSF).

The National Toxics Campaign has requested the documents concerning the "test burn" of hydrazine wastewaters that Colonel Voss claimed was conducted in Pennsylvania last Fall, and the "risk assessment" for the Army's amended proposal for the HBSF. Both documents, of course, are critical to any meaningful evaluation of the HBSF options. While we have requested an opportunity to review these documents in order to provide meaningful comments on the Army's proposal, we have been denied those documents, to date. We have had to resort to filing a formal request for these documents under the Freedom of Information Act, yet still have received nothing as of this date, the deadline for the closure of the public comment period.

This clearly tells us either one or both of two things: 1) the Army does not care what the public thinks about its plans for Superfund site activities involving the additional release of highly dangerous poisons and/or 2) the Army is not basing its decisions on anything other than its own whims.

We would like to remind you that all of these contractors' studies are being conducted with public funds derived from taxpayers. It is our right to have timely access to these documents, especially

when major decisions with great potential for adverse public health impacts are under consideration.

Since the Army has failed to produce these documents for our review before the close of the public comment period, we are therefore requesting that the comment period be extended for thirty days following the Army's production of both documents, pursuant to our FOIA request.

It is stupid to make critical decisions before a full analysis of the public health risk assessment can be evaluated, and it would certainly be a misuse of public funds to contract for these studies if they are not actually being used to inform government agencies -- AND THE PUBLIC -- in the decision-making process. The Army and other federal agency parties to the consent agreement clearly made this mistake during the Basin F snafu, where a risk assessment was not conducted until AFTER the Irondale area residents were already being gassed by Basin F toxic fumes.

Nonetheless, the National Toxics Campaign offers the following preliminary comments on the Army's amended proposal for the HBSF IRA, pending our receipt of all documents identified in our March 14, 1991 FOIA request.

Response

Regarding public meetings: More than 400 letters were mailed on February 25, 1991, to citizens on the Rocky Mountain Arsenal (RMA) mailing list to inform them about the March 5, 1991, public meeting for the HBSF IRA. The IRA programs use the public meeting process to incorporate citizens' questions and concerns into proposed decision documents. This process is not a public hearing at which testimony is given or received. The workshop format cited has been used successfully by the U.S. Department of the Army (Army) in the past to solicit questions and concerns from citizens.

Regarding requested documentation:

1. The T-Thermal test report did not include a separate test burn of hydrazine rinsewater or analysis of emissions for hydrazine compounds. The report was provided to U.S. Environmental Protection Agency (EPA) and the Colorado Department of Health (CDH) on February 7, 1991.
2. The risk assessment performed by the Army for incineration of the hydrazine rinsewater with the Basin F liquids in the submerged quench incinerator (SQI) has been made available to the Organizations and State (OAS) and the general public.

Regarding the extended comment period: The public comment period is not set unilaterally by the Army, but is agreed upon by the EPA, the Army, and Shell Oil Company (Shell). The comment period can also be extended if determined appropriate by these parties, and in this case was extended to March 27, 1991, at EPA's request.

Regarding risk assessments and the decision-making process: Review of risk assessments and ultimate project decisions proceed as directed by Comprehensive Environmental Recovery, Compensation and Liability Act (CERCLA), with extensive participation by EPA and CDH and with final concurrence by EPA.

Specific Comment B - Opposition to Dumping Liquid Hydrazine Wastes to Pond "A"

B-1 - It's Illegal

The Army is proposing as a clean-up action a plan that violates state and federal environmental laws. The dumping of tons of highly toxic hydrazine wastes is in clear violation of the Resource Conservation and Recovery Act, as well as the federal ban on the land disposal of liquid hazardous wastes. As you well know, the land ban was enacted after overwhelming evidence nationwide confirmed the simple fact that such surface impoundments leak, to contaminate underlying groundwater. We can see no reason why Pond "A" would be an exception to this rule.

The National Toxics Campaign is adamantly opposed to any proposal that violates these laws, designed to protect public health and safety, as well as the environment. The military should not be exempt from the same federal laws that private entities are expected to comply with. We expect the Army to voluntarily comply with the government's laws at the Arsenal and other sites around the nation, and not attempt to further jeopardize public health and safety through any loopholes which may exist in the law.

Response

The Army has no plans, nor will it ever have plans, to violate federal law. The Army and EPA reviewed pertinent guidance regarding LDRs and concluded that LDRs will not affect the proposed transfer of hydrazine rinsewater to Pond A.

B-2 - The Area Leaks Like a Sieve

The hydrogeology of the Pond "A" site in the Arsenal's northwest quadrant is confirmed to be an area that is atop shallow groundwaters shared offsite by private well owners for domestic use, as well as municipal sources further downgradient. It is well known that the area has already leaked like a sieve for miles and miles offsite, contaminating well over a hundred wells with RMA poisons and continuing to march further northward to the South Platte River and municipal water supplies.

The movement of RMA contaminants has been quite swift from this area, as the U.S. Public Health Service in 1959 documented that Basin F contaminants (from an area adjacent to Pond "A") had already polluted wells in the Henderson area.¹

Response

The transfer of the hydrazine rinsewater from the older tanks it is currently stored in to the recently completed, double-lined Pond A will provide exceptionally secure storage pending disposal by incineration. In addition, Pond A is continuously monitored. The overall goals of protection of human health and the environment will be better attained by the proposed change in storage locations.

¹ "Public Health Aspects of the Contamination of Groundwater in South Platte River Basin in Vicinity of Henderson, Colorado, August 1959," by Graham Walton, Engineering Section, Water Supply and Pollution Branch, U.S. Department of Health, Education & Welfare, Public Health Service, Bureau of State Services, Robert A. Taft Sanitary Engineering Center, Cincinnati 26, Ohio, November 2, 1959.

B-3 - These Are Extremely Deadly Poisons

The hydrazines and their related compounds are among the most potent cancer-causing compounds known, yet the Army's amended HBSF IRA proposal risks the release of these poisons to underlying groundwater supplies.

One of the world's leading experts on the health effects of these compounds has concluded that: a) hydrazine causes seizure disorders in humans; b) methylhydrazine and unsymmetrical dimethylhydrazine cause seizure disorders in multiple animal species and can cause the same effect in humans; c) hydrazine, methylhydrazine, UDMH and n-nitrosodimethylamine are highly carcinogenic in several animal species and can cause the same effect in humans; d) hydrazine, methylhydrazine and UDMH are teratogenic in animals and can cause the same effect in humans; and e) hydrazine, methylhydrazine, UDMH and NDM.A damage the genic make-up (mutagenic, genotoxic) of animals, and can cause the same effect in humans.²

The National Toxics Campaign -- backed by several prominent physicians and medical experts in the health effects of toxic chemicals³ -- strongly believes that there is evidence right here in the Denver metropolitan area as to the public health consequences of releasing these extremely dangerous compounds to public water supply sources.

The U.S. Air Force mixed hydrazine and UDMH at the Arsenal site to make Aerozine-50 jet fuel, which was then trucked down to the Air Force PJKS/Martin Marietta complex in southern Jefferson County. Public records confirm that hydrazine-contaminated wastewaters were then routinely dumped down Brush Creek over several decades to the public water supply immediately downhill. Public records confirm that this water was served to the Friendly Hills suburb -- as well as numerous other suburban neighborhoods. Colorado health officials still have no other explanation for the 2 1/2 times elevated incidence of childhood cancer in the community, while independent medical experts have concluded that certain children in the Friendly Hills area died, suffered cancer, birth defects and/or seizure disorders as a probable result of their exposures to hydrazines in the public water supply.⁴

Further, the National Toxics Campaign has documented the occurrence of cancer, birth defects and/or seizure disorders in at least 37 different children in this same area known to have received this contaminated source of water, and has documented that 16 of these children have died, to date.⁵

While this public health scandal continues to be argued in court -- not at the 10th Circuit Court of Appeals -- the U.S. Army and E.P.A. should not now even consider the possibility of allowing the development of a similar public health disaster from these same deadly compounds.

Further, the U.S. Army has failed to characterized the extent of groundwater contamination from hydrazine compounds at the Arsenal, to date. The National Toxics Campaign has only recently

² Affidavit of Bela Toth, D.V.M., to U.S. District Court, Civil Action NO. 87-Z-42, Renaud et. al. vs. Martin Marietta and the Denver Water Board.

³ Affidavits of David Ozonoff, M.D., Richard Clapp, M.D., and Janette Sherman, M.D., to U.S. District Court, District of Colorado, Civil Action No. 87-Z-42.

⁴ Ibid.

⁵ Affidavit of Adrienne Anderson to U.S. District Court, District of Colorado, Civil Action No. 87-Z-42

learned that the Army dumped at least 24 tons of hydrazine-contaminated liquids to Basin F -- largely without any treatment whatsoever.⁶ Yet the National Toxics Campaign has never seen any analyses for these compounds in Army tests of the Basin F liquid or off-site wells to determine their presence or absence. This must be done.

Similarly, the extent of contamination from the HBSF itself has not been adequately characterized, to determine the nature and extent of the plume of these deadly compounds from the source to where they have gone so far.

As further grounds for NTC's opposition to the Army's plan to dump these liquids to Pond "A", we note EPA studies which confirm that NDMA, MMH and UDMH are poorly adsorbed onto activated carbon due to their low molecular weight and chemical structures, as well as the Army's own contractor studies which confirm that the most toxic of these compounds -- NDMA -- is often the most resistant to treatment.⁷ This tells us that in the unfortunate event that the Army and EPA allow this plan to proceed -- despite our strong opposition -- there would be no avenue for successfully recovering these compounds (including the existing RMA boundary systems) or treating them with existing (and expensive) technologies in the event that they escape to private and/or public domestic water systems

It is also known that these compounds are highly stable, highly miscible in water, and travel rapidly in water. This raises the real possibility that these compounds could end up in Henderson area water supplies and beyond at some point in the future, if it is not already present from past migration of these compounds along with other poisons -- such as DIMP -- from the Basin F chemical soup.

Response

First, the hydrazine rinsewater was generated by a triple rinse of the HBSF equipment and tanks following removal of all hydrazine fuels during deactivation of the HBSF. This rinsewater contains very low levels of hydrazine fuels and extremely low levels of n-nitrosodimethylamine (NDMA). Second, transfer of the rinsewater to Pond A is for temporary storage, pending disposal by incineration.

The Army has initiated planning for an HBSF groundwater investigation to assess the extent of groundwater contamination from the hydrazine fuel compounds. EPA and CDH have participated in the planning process. The Army is prepared to begin sampling activities in August 1991.

B-4 - The Stuff Is Deadly Even When It Can't Be Detected

Further still, the Army is fully aware that these compounds are dangerous to human health at levels well BELOW the levels that laboratories are capable of detecting their presence. While the EPA has set the Ambient Water Quality Criteria at 1.4 parts per trillion for NDMA to protect human health, for example, the Army's lab is not capable of detecting the compound down to this level. This, of

⁶ Numerous Rocky Mountain Arsenal Documents as cited in Section A.3: AEROZINE-0 BLENDING OPERATION, pages A-44 through A-56, in document obtained from Colorado Department of Health, title of document unidentified in pages obtained

⁷ Technical Plan, Version 3.2, April 1988, Task No. 34, Hydrazine Blending and Storage Facility Wastewater Treatment and Decommissioning Assessment, Contract No. DAAK11-84-D-0017, p. 1-34.

course, means that people could die or contract cancers from the escape of these poisons to their groundwater supplies and not even be able to have the compounds detected.

Surely the Army and its partners to the Consent Agreement do not want to risk further potential liability from such a scenario. The National Toxics Campaign and citizens from our affiliated local groups who are down gradient from this proposed action are unwilling to accept the consequences of such a bad gamble with people's lives in neighboring communities.

Response

The Army recognizes the Ambient Water Quality Criteria (AWQC) for NDMA is 1.4 parts per trillion (ppt), which is 30 times lower than the most sensitive certified analytical method anywhere in the United States can reliably and consistently detect.

B-5 - The Stuff Is Dangerous as an Air Pollutant

On top of the real risk of groundwater contamination from this illegal proposal, there is the added risk of air contamination from these compounds as they are dumped to Pond "A", sit for months and months pending the construction of the incinerator and completion of Basin F waste incineration, and are then transferred to the incinerator. As the HBSF was shut down in the first place due to OSHA findings of high NDMA readings in air, with its risks to workers, the Army should not consider an option that could well pose this same risk to downwind communities.

Magnifying this concern is the fact that the Army allowed these same downwind communities to be exposed during several months of 1988 and 1989 to dangerous poison gasses from the Basin F action. As Pond "A" is in the same general area, there is not reason to expect that this same problem would not recur, to re-contaminate Irondale residents who have been unable to afford to move away from your life-threatening actions of the distant and recent past, and to possibly contaminate still wider areas beyond.

Response

The decision to cease operations at the HBSF was made when levels of NDMA were detected in air during the handling and processing of large quantities of pure hydrazine fuel compounds. The hydrazine rinsewater contains low levels of NDMA and the hydrazine fuel compounds. Closed system mechanisms and practices are planned for onsite transfer and temporary storage of the rinsewater to minimize volatilization of the liquid.

Specific Comment C - Opposition to Incineration

The National Toxics Campaign is on record with our opposition to incineration of any kind at the Rocky Mountain Arsenal, based upon:

- 1) RMA's proximity to populated areas;
- 2) The already poor air quality of the Denver metropolitan area -- among the worst in the nation;

- 3) *The already elevated rates of numerous types of cancers in residential communities neighboring the Arsenal⁸*
- 4) *The assured release of numerous cancer-causing compounds -- including dioxin and other persistent toxic metals -- which are products of incomplete combustion;*
- 5) *The likelihood of "upset" conditions where even higher levels of toxins would be released to the atmosphere and neighboring communities; and*
- 6) *The risk of accidents and/or explosions at the incinerator.*

NTC's opposition to the incinerator -- as proposed in 1989 -- is now only bolstered by the Army's proposal to burn another 150 tons of deadly hydrazine-contaminated liquids in the incinerator, in close proximity to residential neighborhoods.

The Army's Amended HBSF IRA also contradicts the Army's public representations in 1989 and 1990 about the proposed use of the incinerator. In an apparent attempt to soften public opposition for the incinerator, Colonel Voss assured the public that the incinerator would be used ONLY for Basin F wastes, and not for other sources of poisons at the Arsenal or elsewhere.⁹ Of the Basin F incinerator, Voss stated, "It has to be dismantled or in non-use, because nothing else will go through it that we have." The Army's recently amended hydrazine IRA obviously contradicts these assurances. Therefore, the entire plan for incineration at the Arsenal should be re-examined and called into question, as the public was clearly misled by these misrepresentations.

Response

The Army committed that the SQI would not be used for non-RMA wastes. Some equipment may be suitable for processing other aqueous streams or liquid wastes that result from future remedial activities at RMA.

GENERAL COMMENTS

Comment No. 1

The National Toxics Campaign and our affiliates, the Poised Arsenal Neighbors of the Irondale Community (PANIC), and People Against Arsenal Toxic Hazards (PATH) in addition to the above comments, further support and echo the comments and positions taken by the State of Colorado regarding the Hydrazine Blending and Storage Facility IRA Draft Final (sic) Implementation Document, for Decommissioning, (Phase I), January 7, 1991, as presented by Mr. Jeff Edson of the Colorado Department of Health by letter and document of February 5, 1991.

Response

Comment noted.

⁸ Colorado Department of Health Epidemiology Study, Commissioned by Colorado Attorney General, December 1989.

⁹ Transcript of October 19, 1990 Public Meeting.