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STATUS UPDATE FOR THE HF TANK CAR CLOSURE PLAN INFORMATION AND DATA

06/20/94

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LETTER

Department of Energy
Fernald Environmental Management Project
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 648-3155

JUN 2 0 1994

DOE-1955-94

Mr. Mark Metcalf
Hazardous and Solid Waste Division
Ohio Environmental Protection Agency
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Metcalf,

STATUS UPDATE FOR THE HF TANK CAR CLOSURE PLAN INFORMATION AND DATA

Reference: Letter, (DOE-1248-94), Walter J. Quaider to Phil Harris, "Status Update and Request for Extension for the HF Tank Car Closure Plan Information and Data," dated March 18, 1994.

This letter, with enclosure, provides a status update on the Hydrofluoric Acid (HF) Tank Car Closure Plan Information and Data (CPID) and a summary of the bench scale testing that was conducted to neutralize the acid currently stored in the HF Tank Car.

On April 14, 1994, the HF Tank Car was moved within secondary containment. Movement of the tank car (described in the CPID, Revision 2, Attachment D, HF Tank Car Transportation Safety Plan, submitted November 10, 1993) was performed safely and without incident. The revised CPID will be updated to indicate this change.

As described in the referenced letter, Lime Slurry Neutralization was selected for bench-scale treatability testing. Bench scale testing was completed May 18, 1994. Three variations of Lime Slurry Neutralization were evaluated against the sixteen parameters described in the referenced letter. The variations tested were:

(1) HF acid added to lime slurry
(2) Lime slurry added to HF solution
(3) Direct addition of neutralization solids to HF

Reagent concentration, composition, and addition rates were altered to determine which process would achieve the most desirable results. Results of bench-scale testing has shown that HF acid addition to lime slurry will effectively neutralize HF in a safe, lower cost, and environmentally protective manner. The physical and chemical properties of reagents and neutralization products for the selected neutralization process are summarized in the enclosed table.

Recycled and Recyclable

A revised CPID will be submitted by July 29, 1994, and will include bench scale testing results and a description of the system selected for HF neutralization. It will also include a schedule for installation of the lime neutralization treatment system, start up and testing of the system, neutralization of the HF, and decontamination of the HF Tank Car.

If you have questions please contact John Sattler at (513) 648-3145.

Sincerely,

Walter J. Quaider

Walter J. Quaider
Assistant Manager
Technical Support

Enclosure: As Stated

cc:

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J. W. Thiesing, FERMCO/1
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Administrative Record

PHYSICAL AND CHEMICAL PROPERTIES OF REAGENTS AND NEUTRALIZATION PRODUCTS FOR THE SELECTED NEUTRALIZATION PROCESS INVOLVING ADDITION OF HF TO LIME SLURRY

Material	English Units	Value	Metric Units	Value
HF Tank Car Acid				
Acid Type	-	HF	-	HF
Concentration	wt.%	28.7	wt.%	28.7
Density (estimated)	lb/gal	9.063	g/ml	1.086
Lime/$CaCO_3$ Slurry				
Solids Content	wt.%	10	wt.%	10
Lime % of Solids	wt.%	70	wt.%	70
$CaCO_3$ % of Solids	wt.%	30	wt.%	30
Slurry Density	lb/gal	8.85	g/ml	1.06
pH	unit	12.4	unit	12.4
Neutralized Slurry				
Solids Content	wt.%	9.8	wt.%	9.8
Density (estimated)	lb/gal	8.85	g/ml	1.06
pH	unit	6-8	unit	6-8
Viscosity	cp	30	cp	30
Solids Settling Velocity	in/min	0.03	cm/min	0.08
Temperature	°F	130	°C	54.4
Heat Evolved	BTU/lb HF	1209	cal/g HF	671.6
Filtered Solids				
Solids Content	wt.%	51.6	wt.%	51.6
Density	lb/cu. ft.	70.9	g/cc	1.14
pH	unit	6-8	unit	6-8
Solids Composition:				
CaF_2, % (estimated)	wt.%	85	wt.%	85
$CaCO_3$, % (estimated)	wt.%	3	wt.%	3
$Ca(OH)_2$, % (estimated)	wt.%	12	wt.%	12
Filtrate				
Solids Content (estimated)	ppm	<20	ppm	<20
Density	lb/gal	8.3	g/ml	1.0
pH	unit	6-8	unit	6-8
Fluoride	ppm	5.8	ppm	5.8