State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

December 22, 1987 File Code: 4430

Mr. Rick Karl
US EPA Region V, 5HE/JCK/12
230 S. Dearborn Street
Chicago, IL 60604

SUBJECT: - Freeman's Consent Order - Task 1 Review

Dear Mr. Karl:

We have completed our review of Task 1 -Description of Past and Present Conditions. We have a number of items we would like addressed. You will find these items and our comments in the outline below. This outline follows the outline of the order's Scope of Work.

Task 1 - Description of Past and Current Conditions

Summarize hydrogeology - The report states that groundwater flows directly to the Milwaukee River. This statement has not been substantiated. The USGS topographic map shows that the Milwaukee River has an elevation of about 745 feet MSL. The December 1986 dolomite potentiometric surface (Figure 1-11A) shows that the potentiometric surface at the east side of the facility is about the same as the river. Lack of upward gradients suggests that contamination not captured by the pumping of the Freeman well may move eastward beneath the river.

A. Facility Background
1. Maps -
a. general geographic location - Adequate
b. property/landuse - Adequate
c. topography - Adequate
d. tanks/buildings/paved areas - Adequate
e. solid/hazardous waste areas active after 1980 - Inadequate. This item was not covered. The submittal should include a revised site map that identifies these areas.
f. solid/hazardous waste areas active before 1980 - Inadequate. This item was not covered. The submittal should include a revised set map that identifies these areas.
g. all known past and present underground tanks and piping. - Inadequate. The 'nature and extent of contamination' and 'corrective measures' portions of task I describe several underground tanks and repair of broken piping. It is not clear whether these are all of the underground tanks and its certainly

not the limit of their underground piping. Task I should include a diagram of past and present piping and a map of all underground tanks.

2. A history of hazardous and solid waste activities. Inadequate. The submittal should include a narrative describing the areas identified under 1.e. and 1.f. The description should include the type and quantity of waste handled in each area.

3. A description of current production operations. Adequate.

B. Nature and Extent of Contamination

1. Sources of contamination. Inadequate. The submittal includes a map of contaminated areas (Task I, Figure 2-1) but does not indicate the quantities of materials.

2. Spill History. Inadequate. The spill history is limited to the information contained in Task I, Figure 2-1. The submittal should contain a chronological spill history providing the date of the spill, material, quantity, location and clean-up activities and date of clean-up.

3. Extent of contamination. Inadequate. Task I, Figures 2-2 and 2-3 do not differentiate between wells containing <100 ppb total VOCs. This implies that levels less than 100 ppb are not of concern. The figures should be resubmitted delineating a 10 ppb contour and a no detect contour.

Freeman has maintained that they are not responsible for the chlorinated compounds present in the groundwater. The submittal should include contour plots for total chlorinated VOCs in the glacial layer and shallow dolomite.

Odor analysis has shown to be an effective method of identifying contamination from reaction water. From my August 21, 1987 letter to Mr. Russ Cerk and Jim Knauss' September 2, 1987 letter to me, it is evident that odor has not been monitored for the Freeman groundwater wells. As described in Jim's letter, the September quarter monitoring would provide the first set of odor analyses. This analysis should be included as a part of Task I in the form of contour plots.

Much work has been done in soil excavation in and around the facility. This data is presented in Appendix 3. This data should be summarized on a plan sheet to show the extent of soils contamination left in place. One sheet should show contamination levels as determined by the 9.5 ev HNU meter and one sheet should show levels as determined by laboratory analysis.

Section 3.1.2 indicates that HNU readings were taken for numerous borings at the facility. I have not been able the readings for each boring. Identify where this information has been submitted or prepare contour plots for each sampling depth.

The order requests a discussion of water contamination from the site. Freeman discharges groundwater directly to the Milwaukee River under a WPDES permit for non-contact cooling water and to the Saukville wastewater treatment plant. The submittal should discuss the quality and quantity of these discharges.

The order requests a discussion of sediment contamination. The Department is not aware of any data indicating sediment contamination. This should be verified in the submittal.

C. Behavior and Characteristics of Contaminants

1. Density and solubility - These parameters are identified for VOCs detected in the groundwater. This list (Task I, Table 2-1) should be expanded to include compounds identified in Table C-2 of the Part B submittal ("Possible Appendix VIII Constituents") and detected Appendix IX parameters from () of the Part B submittal.

2. Transformations - Task I, Table 2-1 lists only Volatilization, Slow Biodegradation or Readily Biodegradable. These parameters should be revised to include the vapor pressure, henry's law coefficient, and a narrative of biodegradation. The biodegradation narrative should include how quickly degradation occurs under aerobic and anaerobic conditions and the products of breakdown. Transformations should also be included for additional compounds identified under C.1.

3. Rate and Direction of Contaminant Movement- No information was submitted to quantify contaminant movement. The submittal does include groundwater contours for the site. The submittal should be revised to include gradient information with permeability and retardation factors to estimate contaminant movement.

Although not specifically requested in the scope of work, the revised Task I, Table C-2 should include ionization potentials to determine which compounds are detected by an 9.5 ev HNU meter.

D. Investigation of Off-Site Property

1. Document nature and extent of contamination that exists off-site. Inadequate. Some of this information is contained in the report but it is not buried in various places. The submittal should summarize groundwater data from all of Freeman's off-site wells (including the abandoned wells), a summary of the odor data (such as the figures contained in the report 'Summary - 1985 Interim Remedial Investigations Report'), a summary of HNU measurements from soil excavation work and analytical results from the soil excavation. The discussion of soils results should concentrate on the concentrations left in place rather than removed.

2. Adequate? Perhaps we should send a copy of the information to Waters Instruments to see if they feel that the submittal adequately covers efforts to reach an agreement.(?)

E. Village of Saukville Water Supply

1. Document efforts to ensure the quality of water supplies. The submittal should discuss whether any private water supplies within the village are accessible and the steps taken to protect these wells. The analytical data from the municipal wells was presented but the odor data was not mentioned. The submittal should include a discussion on the odor data.

2. Flow charts showing water treatment, use, and disposal - Adequate.

3. Source of the odor and the compounds causing the odor - The submittal indicates that the source of the odor is probably from esters. What esters have been identified and what is their characteristic odor?

F. Construction Documentation of Corrective Measures

1. Plan sheet. Adequate

2. Narrative describing how the groundwater collection was constructed. Adequate

3. Documentation of Corrective Measures - Dry Well Remediation - Where is the documentation on the level of contaminants that were hauled by tank wagon, removed to the spoils area and left in place? Where was the tank wagon material disposed? How much material was removed by tank wagon and to the spoils area?

Caustic Tank Remediation - I have not been able to find a history on this tank. How was this caustic waste generated, what quantities were generated, how was this waste disposed, when was it constructed and what is its repair history?

The submittal indicates that the tank was inspected before being filled with concrete. What testing was done to assure that the tank or drain tile did not leak? What testing was done to determine the level of residual contamination?

Styrene Tank Remediation - What contamination levels where left in place?

4. Pictures. Were pictures taken of the caustic tank remediation?

G. Objectives and Evaluation of Corrective Measures. Adequate.
Soils Handling Plan

Other Items to be Addressed

Soils Handling Plan

The approved soils handling plan states that PID sampling would be conducted in a glass jar, the field monitoring procedures (Task I, section 3.1.1) states that a polyethylene bottle was used. Given the tendency for organics to adsorb onto plastic, how did using a plastic bottle affect the PID readings?

The approved soils handling plan states that if VOCs were present, the bottle would be washed before reusing and that the clean bottle would be checked to ensure that no VOCs were present. Section 3.1.1 states that reusing or washing the bottle would depend on the degree of contamination. How did using 'clean' bottles with detectable levels of VOCs affect the results?

The soils handling plan states that the HNU meter was allowed to stabilize before a reading was taken. What sort of time frame was required for this stabilization?

Section 3.1.3 (Preconstruction Soil Handling) states that excavation work was monitored by an HNU meter and that the soil would be treated as a hazardous waste if the concentration exceeded 10,000 ppm. Given that the HNU's response in nonlinear over 500 ppm and the maximum scale reading is 2,000 ppm, how was it determined whether the soil exceeded 10,000 ppm?

Additional Parameters

The Appendix IX analysis of the reaction water indicates that phenol is present in substantial quantities. The Part B submittal indicates that Freeman uses substantial quantities of Freon 12. Include phenolics and Freon 12 in the groundwater monitoring program and in the Task I section B and C discussions. The method detection limit for these compounds should be less than or equal to 5 ug/l.

The Part B submittal indicates that Freon 11 may have been used at the facility. Have any other forms of Freon been used. If so, which ones and in what quantities?

Additional Monitoring

Piezometer 20 showed increasing levels of contamination before it was dropped from the monitoring program. Include this well with the quarterly monitoring program.

Freeman should be asked to identify the compounds responsible for the odor in MW-2 and the Laubenstein well. The compounds are reported to be esters. Our State Laboratory of Hygiene indicates that since the esters have an odor, they should be volatile enough to be analyzed by GC/MS. Samples should be collected from the Laubenstein well, MW-1 and MW-2 for further analysis. This analysis would consist of noting all GC peaks and a library scan for tentative identification.

Hatcher Inc. has proposed a deep well pump test to be conducted next spring. A key factor in evaulating the risk to the Saukville water supply is the interaction of the river with the aquifer. Sufficient shallow and

deep piezometers should be proposed and installed near the river to quantify the interaction.

I'm sorry to here that Marian Barnes will be leaving. It was a pleasure to work with her and I wish her good luck with GTI. Marian has said that I will be working with Laura Lodisio. Please have her call me if she's got any questions concerning Freeman or this letter.

Sincerely,

Mark Tusler, Hydrogeologist
Hazardous Management Section
Bureau of Solid Waste Management

cc: Ted Bosch - SED
Gregg Pilarski - SED
Frank Schultz - SED
Lee Bouchon - WS/2

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Russ Cerk

Roger Hatcher, Ph.D.
Hatcher, Inc.
Suite 101
1523 Huguenot Road
Midlothian, Virginia 23113

Re: Freeman Chemical Corporation
Corrective Action Order
Task 1 Comments

Dear Mr. Hatcher:

Representatives of the United States Environmental Protection Agency (U.S. EPA) and the Wisconsin Department of Natural Resources (WDNR) have reviewed the report and addendum titled "Corrective Measure Activities, Task 1, Description of Past and Current Conditions, Site Construction Documentation Report." The report is dated June 1, 1987, and the addendum is dated November 20, 1987. Both were submitted to meet the requirements of Task 1 of the Scope of Work for the corrective action order regarding Freeman Chemical Corporation's Saukville facility.

The U.S. EPA and WDNR have discussed the submittal and have assembled the comments listed in the attachment. Please incorporate the comments into the Task 1 report and/or respond to the comments within thirty (30) days of receipt of this letter. If you have any questions or would like to discuss the comments, contact Marian Barnes of my staff at (312) 886-7568 or Mark Tusler of the WDNR at (608) 266-5798.

Sincerely yours,

William E. Muno, Chief
RCRA Enforcement Section

Attachment

cc: Russell Cerk, Freeman Chemical Corporation
Craig Boswick, Freeman Chemical Corporation
Franklin Schultz, WDNR
Mark Tusler, WDNR (2 copies)
William C. Kreye, Hatcher, Inc.

Attachment

A. Facility Background

1. e. and f. - Maps of current and past hazardous and solid waste treatment storage, and disposal areas are not included. Although some of this information may be contained in Figure 2-1, Potential Sources of Groundwater Pollution, Figure 2-1 does not present the information specified.

1.g. - A map or maps shall be included which show all past and present product and waste underground storage tanks and piping.

2. Little information is presented on past solid and hazardous waste treatment, storage, and disposal facilities. The submittal shall include a narrative describing the areas identified in 1.e and 1.f including time period of waste handling, and type and quantity of waste handled in each area. Include, but do not limit the narrative to the caustic tank discussed in Section 3.11 of the report.

B. Nature and Extent of Contamination

1. The quantity of raw materials and solid and hazardous wastes associated with the sources of contamination shown in Figure 2-1 needs to be addressed in the submittal.

2. The spill history is inadequate. The submittal shall include a chronological spill history providing the date of each spill, type and quantity of material spilled, location, clean-up activities, date of clean-up, and contaminant levels left in place. Include, but do not limit the history to the church property, near the railroad right-of-way, and the southwestern corner of the facility property.

3. The information submitted on the degree and extent of contamination is inadequate. Figures 2-2 and 2-3 do not delineate areas with less than 100 ppb total VOC's. This implies that levels less than 100 ppb are not of concern. Resubmit the figures with a 10 ppb contour and a no-detect contour.

Section 3.1.2 describes how the extent of soil contamination was determined using a PID meter on soil borings, and then confirmed using laboratory analyses. Identify where this information has been submitted, if it has been. If not previously submitted, please submit it.

A description of degree and extent of contamination for surface water and sediments is required. The Milwaukee River is of interest because of Freeman's past and current discharges. Any known information on the river and sediments should be submitted. If none is available, this should be stated. Also, submit information on the WPDES outfall including permissable levels of specified constituents and required monitoring procedures. Reference the position papers regarding discharge to Saukville's wastewater tratment plant.

Is any air monitoring conducted at or near the facility? If so, information should be included in here.

C. Behavior and Characteristics of Contaminants

1. and 2. Expand Table 2-1 to include detected Appendix IX constituents. Also include for each constituent vapor pressur, Henry's Law coefficient, and a description of biodegradation. The description shall be based on rate of biodegradation under aerobic and anaerobic conditions, and breakdown products.

3. No information was submitted on rate and direction of contaminant movement. Include a discussion on direction of contaminant movement based on groundwater flow maps and influences of the groundwater remediation system. Include a discussion and calculations on rate of contaminant movement based on hydraulic gradients, permeability, retardation and other known information from monitoring results.

D. Investigationn of Off-Site Property

1. Submit the results of previously conducted off-site investigations including groundwater monitoring data from off-site wells (including private wells), a summary of odor data, and a summary of HNU measurements and analytical work from soil excavations on the church property. The discussion on soil excavations should address concentration of contamination left in place.

E. Village of Saukville Water Supply

1. Discuss, and on a map, show the location of private water supply wells in Saukville. Include sampling results, and whether the well is still in use, abandoned, or sealed.

2. The flow diagrams assume municipal wells 1 and 2 will be in service, although some provisions are made in the discussion for well 2 not being in service. In order for Freeman to successfully conduct groundwater remediations, well 2 could only be utilized for emergency purposes. The ability of well 1 to serve as a continuous source of clean water without affecting remediation activities is not known. Provisions should be made in the flow chart to accurately reflect the use of wells 1 and 2.

Projections should be extended from 5 years to 10 years in order to assist the city in planning for possible future well construction. Future demands should include or be based on the required fire flow, if they are not already.

Potential decrease in well capacity should be discussed and taken into account in the flow diagrams if necessary.

3. The submittal indicates that the source of odor is probably from esters. Discuss which esters have been identified and their characteristic odor.

F. Construction Documentation of Corrective Measures

contaminants left in place - HWU for

3. Dry Well Remediation - Include documentation on the level and volume of contaminants that were hauled by tank wagon, removed from the spoils area, and left in place. Where was the tank wagon material disposed?

Caustic Tank Remediation - Before this tank was filled with concrete, was any testing conducted to determine if it leaked? Was any testing done to determine the level of residual contamination or the level of contamination of the sediment.

Styrene Tank Remediation - Describe what level of contamination was left in place.

4. Include pictures of the caustic tank remediation, if available.

Appendices

1A - Is the Appendix VIII analysis for reaction water or the resin waste stream?

6A - What is the history of discharge of well 36?

OTHER ITEMS

Soils Handling Plan

The approved soils handling plan states that PID sampling would be conducted in a glass jar, the field monitoring procedures (Section 3.1.1) states that a polyethylene bottle was used. Given the tendency for organics to absorb onto plastic, how did using a plastic bottle affect the PID readings?

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Section 3.1.3 states that excavation work was monitored by an HNU meter and that the soil would be treated as a hazardous waste if the concentration exceeded 10,000 ppm. Given that the HNU's response is nonlinear over 500 ppm and the maximum scale reading is 2,000 ppm, how was it determined whether the soil exceeded 10,000 ppm?

Groundwater Monitoring

Groundwater monitoring currently being conducted at the facility is based on an October 21, 1986, letter to Russell Cerk from WDNR and a May 14, 1987, letter to Marian Barnes from Hatcher, Inc. which specifies the wells which are monitored. The Task 2 schedule which Freeman submitted indicates that quarterly

monitoring for VOCs will continue one year under the order following the specifications of the above letters. After one year, an evaluation of the monitoring results will be made.

The following modifications should be made to the monitoring program:

1. Piezometer 20 has showed increasing levels of contamination in previous monitoring. Therefore, it should be monitored quarterly instead of annually.

2. The Appendix IX analysis of the reaction water indicates that phenol is present in substantial quantities. The Part B submittal indicates that Freeman uses substantial quantities of Freon 12. Include phenolics and Freon 12 in the groundwater monitoring program and in the Task I Section B and C discussions. The method detection limit for these compounds should be less than or equal to 5 ug/l.

3. The Part B submittal indicates that Freon 11 may have been used at the facility. Have any other forms of Freon been used. If so, which ones and in what quantities?

No comments from Lee Bauschan, Brian Barbieux or Ted Bosch

Draft comments on Task I.

P/s get your comments to me by December 14 so that they can be incorporated in this response. MT

November 12, 1987

Freeman

Mr. Rick Karl
US EPA Region V, 5HE/JCK/12
230 S. Dearborn Street
Chicago, IL 60604

SUBJECT: - Freeman's Consent Order - Task 1 Review

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1. Plan sheet. Adequate

2. Narrative describing how the groundwater collection was constructed. Adequate

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4. Pictures. Were pictures taken of the caustic tank remediation?

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Soils Handling Plan

Other Items to be Addressed

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Additional Monitoring

Piezometer 20 showed increasing levels of contamination before it was dropped from the monitoring program. Include this well with the quarterly monitoring program.

Closing

1) piezom for pump test
2) VOC analysis w/ library search
3) Total Phenols - munis plus

Review of Task I

1/

Processes
- Alkyd resin - condensation rx, paints & varnishes
- polyester resin " " → fiberglass
- Urethane resin - blending of isocyanate rx, insulation & cushions

Haz Waste
- Waste Rinse Solvent - equipment cleaning (non halog)
- process waste resin manufacture → recycled then incinerated
- Reaction Water - xylene & toluene scavenge water - recycled, total solvents 1,500 ton/yr
- Rx Water - from polyest & alkyd resins, 500 ton/year, Haz W by ignitability
- Waste resins - ignitable, perhaps toluene
- U waste spill residue
- Incinerator Ash

* Rx Water "Appendix IX analysis" (where is this?) - Part B

Ethyl Benzene 31 mg/l Styrene 23 mg/l, Toluene 710 mg/l, Xylene 120, Phenol 2,400
Iron 1.2 mg/l Tin 1.6 mg/l Zinc 53 mg/l Sodium 503

U spill residue - Table VI constituents

Unstable: Maleic Anhydride OCOC# = C4HCO, BOD 50% 5 days, solid @ 15°C, tox by ingest 0.5 to 5 g/kg
" TLV - 1 ppm, WQ 5 ppm/96hr, solid @ 15°C, 150 ppm/24hr eq Tox
Unstable: Phthalic " Immediate health - 10,000 ppm
Unstable: Toluene Diisocyanate - poison - TLV - 0.005 ppm, WQ unknown, BOD?, oral tox low | Unstable in water
sharp sweet fruity odor, Tox by ingest - 0.5 to 5 g/kg
TLV - 0.1 ppm, irritating odor
? o-Benzoquinone
Pleasant sharp odor
Methyl Methacrylate rat - 5 to 15 g/kg, TLV 100 ppm, odor thres - 0.005 ppm
? Bis (2-ethylhexyl) Phthalate
Isobutyl Alcohol - No threat
Toluene aromatic (Benzene like), tox by ingest - 0.5 to 5 g/kg

@ IA - Agreed to Work;
Oct 20 1987

a) 20 days - Lab Certification
b) 30 days - Task 1 in field ✓
c) 30 days Task 2 time table
d) 60 days Task 3 support plans for CMI

Task I

Background
a general geographic location ✓
b property lines ✓
c Topography drainageway ✓
d Tanks buildings paved areas wells ✓
e solid waste / haz waste treatment / storage / disposal active after Nov 19 1980
f past areas
g. underground tanks + piping

2. history of solid/haz waste hist sort of

3. current production operations ?

Nature & extent
1. source of contamination check w/ files
2. Spill History + clean up ?
3. Degree of contamination odor, sampling from Abandoned wells
include TOGH contour

C. Behavior & Characteristics
1. pH & solubility ✓
2. transformations absent
3. Rate & Direction absent

D. Off-site
1. nature and extent of site and measures implemented
2. efforts to reach an agreement w/ parties

E. V of Saukville
1. document efforts to protect
2. flow charts (future & present) on how water is used
3. describe source of odor and efforts to determine absent components