



State of Wisconsin

DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny  
Secretary

BOX 7921  
MADISON, WISCONSIN 53707

September 24, 1981

File Ref: 3430

Mr. Steve Law  
Route 2, Box 114  
Chatham, VA 24531

*Virginia Situation  
Not Directly Related  
to Sankville Wells  
Case. GNE 12/81*

Dear Mr. Law:

Thank you for sending us the information on the Freeman Resins situation in Chatham, Virginia. So far, our district investigations of the Freeman plant here in Wisconsin have not shown all of the same kind of problems you have indicated are occurring at their Virginia plant.

However, further investigations are continuing on the matter by our department to be sure we have not overlooked anything of significance. I'm sure the information you have sent will be of interest to our investigators so I will circulate it to them for their information.

If you think you have further developments in the Chatham case that may be of importance to us, please let me know.

Sincerely,  
Bureau of Wastewater Management

*Paul P. Didier*

Paul P. Didier, P.E., Chief  
Industrial Wastewater Section

PPD:k1

LA 11 8P 2131

Route 2, Box 114  
Chatham, Virginia 24531  
September 17, 1981

Mr. Paul Didier, Chief of Industrial Waste Water Section  
Wisconsin Department of Natural Resources  
P.O. Box 7921  
Madison, Wisconsin 53707

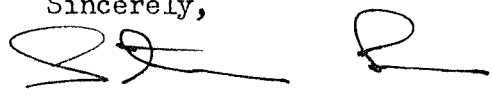
Dear Mr. Didier:

I am forwarding the list of Freeman Resins' raw chemicals and thought you might benefit from other information related to the situation brought about by this company in Chatham. You might also be interested in obtaining from the State Water Control Board, in Roanoke, Virginia, a list of Freeman's finished products and by-products.

Since the possibility exists in Wisconsin for many of these same abuses, you might be especially concerned about their capability to treat wastes, as well as, their actual conduct in dealing with their wastes.

If there is any way I am able to benefit your office in the course of clearing up our local situation, I may be reached at (804)432-8655.

Sincerely,



Steve Law

Route 2, Box 114  
Chatham, Virginia 24531  
August 20, 1981.

The Honorable John N. Dalton  
Governor of Virginia  
State Capitol  
Richmond, Virginia 23219

Dear Governor Dalton:

For several years, Freeman Chemical Company, Chatham, Plant, has been dumping raw chemicals onto the ground and into our Banister River, threatening the underlying aquifer, and emitting into the air toxic, odorous chemical fumes on an almost daily basis. You will find enclosed photographs substantiating each of these illegal activities' occurrence beyond any reasonable requirement of proof.

The 160 petitioners listed herein and our children are requesting your assistance in repairing the damage to our neighborhood and insuring that these abuses are not repeated.

On August 7, 1981, after an on-site investigation which revealed chemical dumping in alarming proportions, the Virginia State Water Control Board ordered Freeman Resins to cease immediately all non-permit, unapproved discharges and unapproved activities. The Board has since returned to make a more in depth investigation of the soil and water, with an assessment of environmental damage and recommendations for long-term remedies forthcoming.

Freeman, which produces over 360 "batches" of some of the chemical industry's more dangerous compounds, has shown itself to be a corporation which has little regard for the environment, human life, wildlife, our drinking water supply, their own water supply, the air we all breathe, or the legal system to which it owes compliance. It has become obvious that Freeman can no longer be afforded the luxury of taking its own water samples or the responsibility of regulating itself.

Freeman Resins is in daily violation of Virginia's Odor Rule EX-6 by venting its odorous pollutants directly into the air over a 12 square mile residential area. Though over 400 residents are breathing these chemicals, Rule EX-6 does not state that a large number of people must be offended by an odor. Rather, it is illegal to even discharge "air pollutants which cause an odor". These odors are inherent in production, not "accidental". These odors are daily, not "infrequent".

After repeated widespread cases of nausea, diarrhea, dizziness, weakness in the calves and knee area, and burning of the eyes and nose, we had a chemist advise us that these and others experienced in this community are but a few of the symptoms of exposure to various chemicals listed on Freeman's own letterhead. Urethane resins, for example, "May cause death or permanent injury after very short exposure to small quantities by ingestion or inhalation. It may cause depression of bone marrow and focal degeneration in the brain, nausea, and vomiting. It is an experimental carcinogen. When heated, it will emit toxic fumes". Of Styrene he states, "This substance can cause irritation and violent itching of the eyes, and severe eye injuries".

The solution to these problems is in updating of equipment and processes, and in installation of "venturi fume scrubbers" on the vents to the kettles, mixers, and storage tanks, as well as "general area scrubbers" similar to filtered exhaust fans in an enclosed paint room. I contacted two manufacturers of these items and sent their brochures to both Freeman and the Air Board, with no results.

I cooperated with Freeman Resins from November 1977, and then since April 1978, with the State Air Board to no avail. I have documented the exact dates, times of day and intensity of the odors over a four year period, and photographed actual odorous emissions in progress. There is a police report filed by a Deputy who witnessed the odors at the Freeman plant and one-half mile away, both in our yard and in our house. I have photos of chemicals spilled onto the ground and into the Banister River, and of the interior of the plant itself, depicting careless spills throughout; aging, leaking equipment no longer capable of meeting minimum standards of worker health and safety; incomplete incineration; and chemicals discharged in such quantity as to erode a ditch over 4' deep. I have in writing a statement by Mike Phillips of the Air Board in his Complaint Report that, "Freeman Resin plant is producing odors not being dispersed by the weather".

Unfortunately, though, all this evidence of fact has not freed the residents of this community from these dangerous chemical odors.

I was told by W. W. Parks of the Air Board on October 15, 1979, in the presence of Mr. Phillips, "If you keep this up I can take a survey that will shut this case. I'll take a survey and end this thing". This is exactly what he did. He surveyed 44 people. Of these, 18 did not live in the area affected; 2 are employees; one was a 14 year old girl; 12 said they did have an odor; and 10 said they did not. Six of these 10 answered "yes" in our survey of 160 residents of the immediate 12 square mile area in June 1981. Several residents said to me they were threatened with a possible court summons should they complain of an odor when surveyed by the state.

Mr. Phillips told me on April 11, 1980, "If I were not inhibited by management, I could do something, I could help you". And again on July 28, 1980, "I have smelled it. This agency, though, has closed this case. I get no backing from management, so I can't do anything about it". Consequently, the Tightsqueeze Community still has a serious odorous air pollution problem, not being rectified for the people by the State Air Pollution Control Board.

In an "Inter Office Communication" concerning a by-product, "acid water", with an "acid value of 1.9" and containing "p-Dioxane", Freeman states, "...the presence of such by-products in this acid water is considered quite normal". This is the same waste the Water Control Board documented as being dumped into the environment by Freeman, whose Discharge Permit holds them to a pH range of 6 - 8.5. Of the content p-Dioxane, a derivative of Dioxin used in Agent Orange, our chemist states, "There may be loss of appetite, nausea, vomiting, pain and tenderness in the abdomen and lumbar region. Enlargement of the liver may result without jaundice. Further exposure to this substance may result in suppression of the urine, followed by uremia and death".

It is for these reasons and many more that we are asking you to:

- ① Have the State Air Pollution Control Board simply do its job by requiring Freeman Resins to halt all illegal activities and install pollution control equipment
- ② Insure that the State Water Control Board continue its efforts to repair damage already done and to equip this company correctly
- ③ Have both agencies continue to monitor this particular company at irregular intervals without advance notice
- ④ Urge both agencies to work more closely with us
- ⑤ Approve the formation of a "Panel" of those of us most knowledgeable of this particular situation. This Panel should consist of an engineer from Freeman, an Engineer from the Air Board, an engineer from the Water Board experienced in the field of industrial discharges, Dr. Claude Whitehead of the County Board of Supervisors, and myself, as the eyes, ears, and nose of the area residents. The purpose of this Panel would be to insure the cleanup, repair, and future operation of the Freeman plant to be in compliance with existing laws.

Governor Dalton, the citizens of this community have not "banded together" as a typical environmentalist group. We are simply hardworking people, unable to sleep many nights for the intense odor inside our homes. Having been taken advantage of by a large chemical company for so long, we are now dedicated to our right to clean water and air, and are determined to pursue this odor problem until we have guaranteed our right and that of our children to enjoy long life and the land we have worked so hard to secure.

We need your help. Thank you!

Sincerely,



Steve Law  
Of the 160 Tightsqueeze Community Petitioners

cc: Air Pollution Control Board  
Onico Barker, State Senator  
Marshall Coleman, Attorney General  
Dan Daniels, U. S. Senator  
A. L. Philpott, State Representative  
Charles Robb, Lieutenant Governor  
Board of Supervisors  
Claude Swanson, State Representative  
Mary Sue Terry, State Representative  
Water Control Board  
Media



Received on teletype  
8/18/81 - 8:30

22-1695

# COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD  
2111 Hamilton Street

H. V. Davis, P. E.  
Executive Director

State Office Box 11143  
Richmond, Virginia 23230  
(804) 257-0056

BOARD MEMBERS  
William L. Tol  
Chairman  
John H. Arid,  
Vice-Chairman  
Col. J. Leo Burt  
Warren L. Bras  
George M. Carr  
Millard B. Rice,  
Dr. Bert van't R

## EMERGENCY SPECIAL ORDER

### ISSUED TO

FREEMAN CHEMICAL CORPORATION

This is an Emergency Special Order issued to Freeman Chemical Corporation ("Freeman") pursuant to Section 62.1-44.15(8) of the Code of Virginia, requiring Freeman to cease and desist the pollution of State waters as set forth herein.

This Order is issued by the Board through the Executive Director. The Executive Director has received and considered the factual findings presented by the staff in support hereof. This Order is issued pursuant to Section 62.1-44.15(8)(b)(i) and (iii) of the Code after sufficient cause was found to warrant its issuance. Pursuant to that statute, a hearing will be held, after reasonable notice, to affirm, modify, amend, or cancel this Order.

### Findings of Fact

1. Freeman Chemical Corporation owns and operates a polyester resins plant (the "Plant") off of State Route 703 near Chatham in Pittsylvania County, Virginia.
2. Freeman is authorized to discharge once-through, non-contact cooling water from the Plant to State waters by NPDES Permit No. VA0001309.
3. The cooling water discharge is being contaminated by a Chemical substance that is injurious to aquatic life.
4. Boiler blow-down water is being discharged from the Plant.
5. Wastewater from floor drains in the Plant's production area is being discharged from the Plant.
6. Wastewater from a drain under the Plant's raw material storage tanks is being discharged from the plant.



7. Tank truck washwater is being discharged from the Plant
8. Condensate wastewater and incinerator residue are being discharged from The Plant.
9. All of these discharges are to an unnamed tributary to the Banister River.
10. All of these discharges are injurious to aquatic life and are grossly affecting, and have the potential to further grossly affect, the health of animals, fish, or aquatic life and the reasonable use of State waters.

Conclusions of Law

Freeman Chemical Corporation is an owner within the meaning of the State Water Control Law who is permitting or causing pollution of State waters. Such pollution is grossly affecting the health of animals, fish, or aquatic life and the reasonable uses of State waters. Cause therefore exists to issue an Emergency Special Order pursuant to Section 62.1-44.15(8)(b)(i) and (iii) of the Code, ordering Freeman Chemical Corporation to cease and desist its pollution of State waters.

Decision

The State Water Control Board by its Executive Director hereby orders Freeman Chemical Corporation to cease and desist pollution of State waters by ceasing all discharges to State waters immediately upon receipt of this Order. The Executive Director will cancel this Order as it affects the cooling water discharge upon a showing that the source of contamination of that discharge has been identified and eliminated.

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

R. V. Davis  
Executive Director

RECEIVED

AUG 17 1981

22-1675

MEMORANDUM

State Water Control Board

2111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 23230

SUBJECT: Telephone Conversation with R. B. Burnley of WCRO  
Concerning Freeman Resins of Chatham, Virginia

TO: File

FROM: *Wll* D. E. Wright and *VB* D. S. Bailey

DATE: August 13, 1981

COPIES: C. W. Maus, R. G. Burnley, ~~D. C. Pagen~~ J. E. Hensley,  
T. M. Felvey, R. E. Bowles, L. G. Lawson, Brian Buniva

On August 12, 1981, at 3:45 P.M. the writers and Jim Hensley telephoned Bob Burnley of the West Central Regional office to discuss the course of action on the Freeman Chemical Corporation Resins plant near Chatham, Virginia. The plant produces polyester resins from various raw materials, some of which are hazardous under RCRA. A by-product of the production of these resins is a highly corrosive condensate which the company has been incinerating. Unfortunately, due to the caustic nature of the condensate, there have been pipe and pump failures at the incinerator which have caused spills of this material into a small ditch which carries the company's permitted cooling water discharge to the Banister River. A site inspection on August 11, 1981, indicated a continued seepage of apparently objectionable material down the bank below the incinerator towards the ditch.

In addition to this problem, unpermitted discharge pipes were found for a (drain field under the raw material storage tanks) and for a (tank truck cleaning operation). By mutual agreement with the company, the incineration of waste and the tank truck cleaning operation have been shut down until proper facilities were installed to prevent discharge to State waters. The company has been provided with a No-Discharge Certificate Application and advised that the company should take all necessary steps to prevent any further discharge to State waters.

The primary reason for calling Bob Burnley was to find out the status of the samples of the incinerator seepage and inquire about further sampling. Bob stated that no further samples would be taken by WCRO's staff at this time because it would be futile considering the poor turnaround time at DCLS.

He said that the company was taking core samples that day and were analyzing them to determine the extent of ground contamination around the incinerator. As soon as this is determined, WCRO would direct the removal of contaminated soil. Dave Bailey asked if Bob thought some immediate action to stop this seepage wasn't warranted considering



the degree of seepage indicated during the site visit and the complaints from the public on the lack of fish in the Banister River which they felt was due to discharges from Freeman Resins. Bob said that DES was scheduling a biological survey of the Banister River and a bioassay of the effluent in the ditch. He said he felt they were pursuing the proper course of action and would supervise soil removal as soon as the results came in from the company. Since these results had to be included with the application by August 31, 1981, WCRO felt that samples by the regional office would not be analyzed before then so why should they make the effort. Additionally, there should be no further discharge from the incinerator and the contaminated soil will be removed.

Bob did offer to take any more samples which Dave thought were necessary, but Dave said that if WCRO was comfortable with the current course of action, he had no further requests at this time.

Late in the day, we did talk to Neil Obenshain about the seepage from the incinerator site and the question of stream samples for our own analysis. Neil indicated that the company had agreed to stop using the incinerator and that should eliminate further contaminations. We don't know if that will stop all seepage, however, since the whole plant site is on a fill area and some of the seepage may be underground drainage.

Neil expressed concern also about the lack of our own stream samples but agreed with Bob with regard to the value of our own samples.

Dale and I remain concerned about this sampling situation. Given the obvious prospect of litigation in the future for illegal discharges of known hazardous waste, it seems important to sample the ground-water and surface for every suspect chemical with legal sampling procedures. We urge WCRO to consider such a program in conjunction with the agreed to company program.

dwc

22-1695

# MEMORANDUM

## State Water Control Board

2111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 2326

**SUBJECT:** Preliminary Report of Investigation of Freeman Resins Corp. - 8/14/81

**TO:** D. Wright

**FROM:** David K. Paylor *DKP*

**DATE:** August 18, 1981

**COPIES:** R. E. Bowles, D. Willis, N. Obenshain

On 14 August 1981 Jim McNeal collected 13 water samples from the vicinity of Freeman Resins Corp. near Chatam, Virginia. The purpose was to determine whether any injurious or hazardous substances were being discharged into state waters and groundwater. As an initial screen, the 13 water samples were analyzed with a Beckman Microtox unit to determine the presence or absence of toxicity to flores-cent bacteria. An extreme toxic response\* was found in samples taken from seven separate locations and moderate toxicity was observed in two other samples. Every sample taken from the Freeman Resins Corp. plant site showed a moderate to extreme toxic response using the Microtox system. Water samples taken from the Barrister River showed little or no toxic response.

Although toxicity measured by the Microtox system is not always directly correlated to toxicity measured using animals as test organisms, the magnitude of the toxic response observed in samples taken from Freeman Resins Corp. during a relatively short (15 min.) assay leaves little doubt that substances which are extremely toxic to aquatic animals are present in Freeman Resins Corp. discharges and in groundwater on the plant site.

A complete report of the subject study is being prepared and further toxicity tests using fish as test organisms have been initiated to support the Microtox data.

\* Nearly 100% reduction in light output in 15 minutes

RECEIVED		AUG 19 1981	
WCRO - SWCB			
CWM	✓	ADM	
		FILE	
DAT	<i>DKP</i>		
DRFS			
DTN		GEO	
JH		AWM	
TWS			
ETJ		AHP	
BAT		DSFS	
BE		BWCM	

✓

## MEMORANDUM

## State Water Control Board

2111 North Hamilton Street

P. O. Box 11143

Richmond, VA. 23230

SUBJECT: Freeman Resins - Chatham, Virginia

TO: File

FROM: Neil Obenshain *Neil Obenshain*

DATE: August 13, 1981

COPIES: Dale E. Wright-BE; Vince A. Carpano-BAT; BAT File

On August 6, 1981 and August 11, 1981, R. G. Burnley and the Writer conducted intensive inspections of the subject facility. The facility has an NPDES Permit for cooling water discharge which has been reissued until 1984. Several unpermitted process chemical and wastewater discharges were found including:

1. Chemical tank truck rinse water containing "small" residues of unrecovered cleaning fluids and process chemicals. (See attachment for chemical inventory on site).
2. Condensate wastewater from process operations (approximate characteristics of pH of 2 and 4-6% organic acids.) The condensate wastewater treatment system consists of piping to a stainless steel tank truck, pump system, and incinerator. The discharge is due to multiple breakdowns of all three parts of the system due to the corrosiveness of the wastewater.
3. Chemical spill/dump area below the storage tanks and transfer areas.

The tank truck rinse water runs through an oil/water separator and is discharged via a pipe to a drainage ditch on site. The discharges from the incinerator and from the chemical transfer and storage areas are due to poor housekeeping and the lack of a preventive maintenance program at the incinerator. A telegram was sent to the Company on August 7, 1981 to confirm verbal agreements with the staff to cease unpermitted discharge.

The Writer has requested the Company to determine which waste streams are hazardous and pending confirmation to contact the Division of Solid and Hazardous Waste Management-SDH, for further instructions. A No-Discharge Certificate application was delivered on August 11, 1981, and an explanatory letter was sent on August 13, 1981 requiring:

1. The design of drip pads, sewer system, no-discharge spill holding basin, and ultimate treatment system and,
2. chemical analyses of wastewater and soils.

Soil analyses will be used to determine the amount of soil excavation and approved methods for ultimate disposal. The staff collected soil samples from all spill areas for data verification if necessary. Further wastewater sampling is scheduled August 14, 1981.

Memo: Freeman Resins, Chatham, VA  
August 13, 1981  
Page 2

Mr. Ross Cerk, Vice President of Manufacturing at 414/284-5541, in Port Washington, WI, discussed the No-Discharge Certificate application with the Writer on August 12, 1981 and noted that:

1. The design for modification to the incinerator will begin immediately.
2. The No-Discharge Certificate application can be filed by August 31, 1981.
3. The Chemical analyses will be conducted by outside lab and may not be available on August 31, 1981.
4. The condensate from the process is hazardous due to the corrosive characteristics.
5. The company has Interim Status for hazardous waste handling from EPA.

The Writer discussed the problem with Sandra Morse, Division of Solid and Hazardous Waste Management, SDH, Richmond, VA on August 12, 1981. The Writer agreed to transmit a copy of the pertinent file information and to coordinate No-Discharge Certificate application review.

NAO/bgm

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ATTACHMENT I

Chemical Inventory  
(Provided by Rick Niesen-8/6/81)

Styrene	180,000 lbs.
Ethylene Glycol	120,000 lbs.
Diethylene Glycol	120,000 lbs.
Dipropylene Glycol	120,000 lbs.
Propylene Glycol	120,000 lbs.
Dicyclopentadiene	40,000 lbs.
Foam Glycol	40,000 lbs.
Dimethylgluterate	40,000 lbs.
Thallic Anhydride	20,000 lbs.
Maleic Anhydride	20,000 lbs.
Benzoic Acid	15,000 lbs.
Isothallic Acid	65,000 lbs.
Polyester	100,000 lbs.

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FREEMAN CHEMICAL CORPORATION

RAW MATERIALS

Acetone

Acrylic Acid, Glacial, 200 ppm MEHQ Inhibitor

Adipic Acid

alpha-Methylstyrene

Antiform A

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Benzil

Benzoic Acid, Industrial

Benzoic Acid, Technical

Benzotriazole, unsubstituted

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Caprolactone Polymer, Low Profile Resin Additive, Bakelite LPS-60

Catalyst, Dibutyltin oxide

Catalyst, Triphenylantimony (Antimony)

Cellulose Acetate Butyrate (Half Second Butyrate), CAB 381-0.5

Cobalt 254, 21% Cobalt, Paste

Cobalt Octoate, 12% Cobalt

Cobalt Octoate, 12% Cobalt, DMR Process

Copper Naphthenate, 8% Copper

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Deallyl Phthalate Monomer

Dibasic Ester Mixture, DBE

Dibromoneopentyl Glycol, Dow FR-1138

> Dicyclopentadiene, 87%

Dicyclopentadiene, 95% Minimum

Diethylene Glycol Monoethyl Ether, Carbitol Solvent

Diethylene Glycol, 89%, Recovered Diethylene Glycol

Diethylene Glycol, Resin Grade

Dimer Acids, Coatings Grade, e.g. Unidyme 22

Dimethyl Glutarate

Dipropylene Glycol

Divinylbenzene, 50 - 60% Purity

Drier Complex - Polyester Promoter, Copac Polyester Accelerator

Dye, Brilliant Blue 2GLN

Dye, Oil Blue A

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Epoxy Resin, Pure Diglycidyl Ether or Bisphenol A, EFW=172-176, DER 332

Ethylene Glycol, Industrial Grade

Ethylene Glycol Monobutyl Ether, e.g. Butyl Cellosolve

Ethylene Glycol Monoethyl Ether, e.g. Methyl Cellosolve

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Glycerine, 99%

Glycol, Freeman Blend

Glycol Mixture, Polyethylene Terephthalate Type, American Enka

Glycol Mixture, Polyethylene Teraphthalate Type, Fiber Industries, Palmetto

Glycol Mixture, Polyethylene Terephthalate Type, Fiber Industries-Salisbury

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Hypophosphotous Acid, 50%

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Inhibitor, p-Benzoquinone, (PBQ)

" , 2, 5-diphenylparaquinone, (DPQ)

" , 2, 6-Di-tert-Butyl-p-Cresol, (Tonol), (BHT)

" , Di-tert-Butylhydroquinone

" , Hydroquinone, 33.3% Solution

" , Hydroquinone, Inhibitor Grade (HQ)

" , p-Methoxyphenol (Monoethyl Ether of Hydroquinone) (MEHQ)

Inhibitor, 2-Methyl-1, 4-Naphthoquinone, 67% Active (Menadione)

" , 2-Methyl-1, 4-Naphthoquinone, (Menadione)

" , Mono-tert-Butylhydroquinone

" , 1, 4 Naphthoquinone

" , Phenidone A

" , 4-tert-Butyl Catechol, (TBC)

" , Toluhydroquinone, (THQ)

" , Tolyhydroquinone, 33.3% Solution in Diethylene Glycol, Greeman Blend

Isophthalic Acid - 85

Isophthalic Acid - 99

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Magnesium Oxide, Maglite A

Maleic Anhydride, Bags

Maleic Anhydride, Molten

Manganese, Salt of C<sub>8</sub> to C<sub>12</sub> Acids, 6% Manganese

Methacrylic Acid, Glacial, 250 ppm MEHQ Inhibitor

Methyl Methacrylate Monomer, 25 ppm HQ Inhibitor

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Neopentyl Glycol (NPC)

N-Methylmorpholine, (NMM)

N,N-Diethylaniline

N,N-Diethylacetamide (DMAA) 80% Solution in Water

N,N-Dimethylaniline

N,N-Dimethylethanolamine, (DMEA)

N-Phenyldiethanolamine

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Oxalic Acid, Technical Grade

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Paraffin Wax, M.P. = 125° - 127.5° F.

Pentaerythritol (PE) - Technical Grade

Phosphite, Complex Organic Type, Thermolite 187

Phosphoric Acid, 85%

Phthalic Anhydride, Bags

Phthalic Anhydride, Molten

Pigment Paste, Green, Tenneco's Thalo Green 850-5601

Pigment Paste, Grey, Ferro VT 11742

Pigment Paste, Phthalo Blue, Plasticolor CM-3014

Polyether Polyol, Polyoxypropylene-Ethylene Oxide Capped OH#-56, Pluronic L-61

Polyether Polyol, Polyoxypropylene-Glycerine Type OH# = 23-, e.g. Voranol 2070

Polyether Polyol, Polyoxypropylene-Sucrose Type, OH# = 380, Multranol 4030

Polyol, Blend of Polyoxyethylene Fatty Amine and

Polyoxyethylene Sorbitol Oleate, Atlas G-2070

Polyvinyl Acetate Solution, 40% in Styrene Monomer, LP-90

Potassium Hydroxide Pellets, Reagent Grade

Propylene Glycol, Industrial Grade

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Quaternary Ammonium Salt, Arquad 2C-75

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Reodorant, Magnalizer "A"

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Silica, 200 Mesh

Super Airout

Silicone Surfactant, DC-193

Surfactant, Triton X-35

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Sodium Acetate, Anhydrous

Stearyl Stearate

Styrene, 15 ppm TBC Inhibitor

Styrene, Reclaimed

Tall Oil Fatty Acids, 1.5% Rosin Acids

Tartaric Acid, Powder

Thixotropic Agent, ASBESTOS, Chrysotile, RG244

Thixotropic Agent, Silica, Fumed

Toluol (toluene), Technical Grade

Triethylenediamine, 33% Solution in Dipropylene Glycol, (DABCO 33LV)

Triethylenediamine - Dimethlethanol Amine Blend, 20/30 (DABCO R-8020)

Trimethylolethane (TME) Technical Grade

Trimethylolpropane (TMP)

2, 2, 4-Trimethyl-1, 3-Pentanediol (TMPD)

Triphenyl Phosphite

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UV Absorber, Tinuvin 328

UV Absorber, Tinuvin P

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Vinyl Acetate Polymer, Softening Point = 150.8° F., Bakelite AYAA

Vinyl Acetate Polymer, Softening Point = 170.6° F., Bakelite AYAF

Vinyltoluene, 50 ppm TBC Inhibitor

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Xylol (xylene) Technical Grade

## STATE WATER CONTROL BOARD

P. O. Box 11143

Richmond, Va. 23230

MEMORANDUM FOR AGENDA OF September 23-25, 1981

BOARD MEETING

SUBJECT: Freeman Chemical Corporation, Enforcement Document

TO: Board Members

FROM: David S. Bailey, Director, Bureau of Enforcement

DATE: September 4, 1981

Summary:

On August 6, and 11, 1981, staff members of the West Central Regional Office and the Bureau of Enforcement observed five (5) points of unpermitted discharges to State waters from the Freeman Chemical Corporation's resins plant near Chatham, Virginia. Microtox tests conducted on the several discharges by the Board's Division of Ecological Studies indicated the presence of a contaminant that was toxic to aquatic life. Additionally, the test indicated the presence of toxic contaminant in the permitted cooling water discharge (NPDES Permit No. VA0001309), and in an unnamed tributary to the Banister River.

Issues:

1. Did Freeman Chemical Corporation violate Section 62.1-44.16 of the Code of Virginia (1950), as amended, by discharging to State waters without first, providing facilities approved by the Board?
2. Did Freeman Chemical Corporation <sup>(2)</sup> cause pollution of State waters?
3. Did Freeman Chemical Corporation violate Part I.B.4 Reporting Requirements of NPDES Permit No. VA0001309 and Board Regulation No. 4 <sup>(3)</sup> by not reporting the discharge of unpermitted materials to State waters?
4. <sup>(4)</sup> Should the Emergency Special Order issued to Freeman Chemical Corporation on August 18, 1981, be affirmed, modified, amended, or cancelled in accordance with Section 62.1-44.15(8)(b)(i) and (iii) of the Code of Virginia (1950), as amended?

Introduction:

Freeman Chemical Corporation (Freeman) is located off State Route 703, in the Chatham Industrial Park in Pittsylvania County. Freeman heats organic glycols and acids in a batch reactor chamber to produce polyester resins. There are four unpermitted point source discharges from the Freeman facility which originate from (1) boiler blow-down; (2) the production floor drains; (3) the underground storage tank drain field; and (4) the tank truck rinse water. Additionally there were multiple spills of the production condensate wastewater and associated incinerator residues which entered State waters constituting a fifth unpermitted discharge.

Condensate wastewater is generated in the reaction chamber and is condensed in a water cooled reflux unit. The condensate is very corrosive and has been incinerated on site using other flammable by-products and fuel. An inadequate transmission system and pumping equipment along with poor maintenance of the incinerator reaction chamber has caused multiple spills of the condensate into surface and groundwater. The incinerator residue exhibited a toxic response when exposed to test bacteria in the Beckman Microtox\* unit. Additionally, the cooling water for the reflux condenser exhibited a toxic response when tested by the Microtox unit.

The Microtox test also showed a toxic response to the discharges from the boiler blow-down, the production area floor drains, and the underground storage tank drain field.

The tank truck cleaning operation consists of a pressurized cleaning unit with recovery of cleaning solution and a final rinse. The rinse water was treated in an oil-water separator, passed through a straw filter, and, up until August 6, 1981, was discharged to State waters. The Microtox indicated the presence of toxic substance(s) in the rinse water and later preliminary chemical analysis indicated the presence of styrene. The separator and straw filter treatment system are inadequate to remove soluble organic compounds.

In fact, for all five of the unpermitted discharges described and the cooling water discharge, inadequate or no treatment has been provided.

#### Discussion of Events:

The staff inspected the Freeman facility on April 24, 1979, as a result of a pollution complaint from an adjacent property owner. This inspection and a subsequent inspection on November 30, 1979, found no problems at the Freeman facility.

Subsequent to another pollution complaint, the staff again inspected the Freeman facility on August 6, 1981. During this inspection, staff members observed recent spills of condensate water at the incinerator and an unpermitted discharge from the tank truck rinse water operation. At the confluence of the unnamed tributary into which the Freeman facility discharges and the Banister River, strong aromatic chemical odors were noticed originating from the unnamed tributary indicating contamination by unknown chemical compounds.

On August 7, 1981, the WCRO staff requested verbally and in writing that all unpermitted discharges be ceased immediately.

On August 11, 1981, the staff delivered a No-Discharge Certificate Application to Freeman Chemical Corporation. Investigation of the site was conducted and the presence of aromatic odors revealed contamination of soils around the incinerator to a depth of greater than five feet. The Corporation was instructed to collect representative soil samples and conduct analyses to determine the extent of contamination. The tank truck rinse water was being stored and the incinerator was not being operated. A third unpermitted discharge was discovered from the underground tank drain field.

\*The mention of trade names or commercial products in this document does not constitute endorsement or recommendation for use by the Virginia State Water Control Board.

On August 12, 1981, by letter to the Corporation, the writer confirmed soil and wastewater sampling requirements, and confirmed again the requirement to cease unpermitted discharges.

On August 14, 1981, the staff collected samples from all known discharge points for use in the Microtox test. During this investigation two additional unpermitted discharges were discovered which consisted of the boiler blow-down and the production area floor drains. Samples were collected from these additional unpermitted discharges for use in the Microtox test. The results of the Microtox test indicated an extreme toxic response from all five (5) unpermitted discharges. A Microtox test on water from the unnamed tributary approximately 3/4 miles from the Freeman facility also produced a toxic response.

Based on the findings of additional unreported and unpermitted discharges and evidence that all five (5) unpermitted discharges and the non-contact cooling water discharge were injurious to aquatic life, the Board issued an Emergency Special Order to Freeman on August 18, 1981, requiring the Corporation to immediately cease all discharges to State waters, including the Corporation's permitted discharge of cooling water. The Order was written so as to allow for the cancellation of the Order as it affected the cooling water discharge upon a showing that the source of contamination of that discharge had been identified and eliminated.

Freeman notified the staff that all discharges had ceased on August 19, 1981. The Corporation is currently working on submittal of a No-Discharge Certificate Application for the unpermitted discharges. An interim waste collection and holding system has been installed until an appropriate final solution is developed, submitted to the Board for approval and implemented.

The Corporation is currently storing and trucking some wastewater to its headquarters in Wisconsin under the approval of an RCRA permit to transport.

Conclusion:

The staff believes that Freeman Chemical Corporation failed to provide facilities approved by the Board in violation of Section 62.1-44.16 of the Code of Virginia (1950), as amended, and discharged causing the pollution of State waters. Further, the failure to notify the Board of the discharge of unpermitted materials to State waters violated Part I.B.4 Reporting Requirements of NPDES Permit No. VA0001309 and the Board's Regulation No. 4. As a result of the discharges enumerated in the above document and the inadequate facilities at the Freeman plant, the staff believes that the potential exists for further discharges which would be harmful to State waters therefore, cause exists to affirm and amend the Emergency Special Order issued to Freeman Chemical Corporation on August 18, 1981.

Enforcement document approved and Special Order Hearing authorized.

Date SEP 04 1981

Approved By

R. J. Davis  
Acting Executive Director

~~PPH  
KTB  
PRB~~

9.28.81

NOV 5 1981

Please copy Kati's minutes  
to those in desk. Jan + see notes on envelope  
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(804) 432-8655

Freeman Chemical  
Chatham, Virginia

MICROTOX DATA  
AUGUST 14, 1981

<u>CONDENSATE #1</u>	↓	TOXIC
<u>CONDENSATE #2</u>		TOXIC
<u>FLY ASH</u>		TOXIC
<u>X-TRIBUTARY</u>		TOXIC
<u>BORE HOLE</u> - FLOATING FRACTION		TOXIC
<u>BORE HOLE</u> - SINKING FRACTION		TOXIC
DRAIN FROM <u>UNDERGROUND TANKS</u>		TOXIC
FLOOR <u>DRAIN</u> DISCHARGE		TOXIC
<u>COOLING WATER</u> DISCHARGE		TOXIC
<u>BOILER BLOW DOWN</u>		TOXIC
<u>TRUCK WASH RINSE WATER</u>		TOXIC
<u>TRIBUTARY</u> TO BANISTER		TOXIC
<u>BANISTER</u> DOWNSTREAM		NON-TOXIC
BANISTER UPSTREAM		NON-TOXIC

APPENDIX A

TERMS OF MODIFIED ORDER

\$15,000. FINE

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Freeman Chemical Corporation shall comply with the following:

1. There shall be no further discharge from any unpermitted or unarthorized outfalls.
2. Freeman Chemical Corporation shall complete its No-Discharge Certificate Application within 30 days of the receipt of the Board's letter identifying deficiencies in the existing submittal by Freeman.
3. Freeman Chemical Corporation shall submit all data developed by the Corporation pertaining to the Emergency Special Order within 15 days of the effective date of this Order. These data should include data on all core samples, chemical analyses, and biological testing.
4. Within 15 days of the effective date of this Order, Freeman Chemicals shall submit a plan for the environmental assessment of all areas of contamination from which there is an actual or potential discharge to State waters. Said plan is to include a schedule for implementation of the plan of assessment and for submission of engineering plans and specifications for the correction of any contamination identified by the assessment. Upon Executive Director approval of the plan and schedule of assessment, the Corporation shall implement said plan in accordance with the schedule.



5. Prior to amendment of Freeman Chemical Corporation's National Pollutant Discharge Elimination System (NPDES) Permit, there shall be no discharge of cooling water from the Corporation's facility without explicit written approval of the Executive Director. Said approval shall be preceded by a submission of all data collected during tests conducted on the cooling water system. Such data shall include:

- a. The results of the 96-hour bioassay and all monitoring data collected during the bioassay.
- b. The results of all Microtox analyses.
- c. The results of all Chemical Oxygen Demand (COD) analyses.
- d. The results of all chemical analyses for Copper and Zinc.
- e. The results of any other analyses, chemical or biological, conducted on the cooling water system.

Said approval will be conditioned on completing the following tests and analyses on the cooling water effluent as soon as normal production level is achieved:

- a. A 96-hour flow-through bioassay conducted in accordance with criteria to be established by the staff.
- b. Collection of samples for completion of NPDES Application, Forms 1 and 2C, including Parts V-A, B, and C.

The cooling water discharge shall be monitored by a weekly grab sample taken at a representative time during normal production. Said sample shall be analyzed for pH, COD, and Temperature, and the results of these analyses shall be reported by telephone to the West Central Regional Office within 24 hours and on the Monthly Discharge Monitoring Report.

6. Within 45 days of sampling the cooling water discharge for the above referenced "2C" application form, a complete NPDES application for amendment of NPDES Permit No. VA0001309 shall be submitted to the Board.
7. Freeman Chemical Corporation shall comply with all terms and conditions of NPDES Permit No. VA0001309 as it may be amended by the Board.
8. Freeman Chemical Corporation shall comply with any No-Discharge Certificate which may be issued to it by the Board.
9. This Order shall expire one year from the effective date of the amendment date of NPDES Permit No. VA0001309.

Approved unanimously by the Virginia State Water Control Board, Abingdon, Virginia, on September 24, 1981.

## TOXIC EFFECTS OF CHEMICALS

### FOUND IN FREEMAN'S DISCHARGES

Benzene: (TLV = 10 ppm); Poisoning occurs most commonly through inhalation of the vapor, though, benzene can penetrate the skin, and contribute to poisoning. Locally causes redness and burning, swelling of fluid in skin and blistering. Has narcotic action on central nervous system in high quantity, as in failure of equipment or spills. Recognized as causing cancer of the blood forming tissues. Development of bone marrow may be slowed, normal, or increased; long-term, cumulative effects include fatigue, headache, dizziness, nausea, loss of appetite, weight loss and weakness. mouth(3) nose(3) skin(3).

Diethylene glycol: (TLV = 100 ppm); Suspected carcinogen of the bladder; severe and even fatal poisoning have occurred following ingestion; central nervous system depressant; causes kidney damage which can terminate fatally; very toxic in particulate form. fire hazard; lethal dose for man reported to be 100ml

Di-N-Butylphthalate: Toxicity unknown.

Ethyl Benzene: (TLV = 100 ppm); Irritant to skin and mucous membranes; 0.1 % concentration of vapor in air irritant to human eyes; 0.2% causes dizziness, irritation to nose and throat, sense of constriction of the chest. No data available on long term exposure; fire hazard; mouth(2) nose(2) skin(2)

Toluene: (TLV = 100 ppm); Mouth(2) skin(1) nose(2); long term effects have been bone marrow development slowed, anemia; acute (short term) effects of high concentration exposure rare.

\*\* Phenol : (TLV = 5 ppm) Skin absorption very rapid, and death results from collapse within 30 minutes to several hours. Proven to cause cancer. As little as 1.5 grams (oral) has killed. Corrosion of the lips, mouth, throat, esophagus and stomach. There may be perforation. Usually no immediate complaint of pain; later, intense burning is felt, followed by local numbness and still later, by gangrene. Prolonged exposures to low concentrations of the vapor or mist, results in digestive disturbances (vomiting, difficult swallowing, excessive salivation, diarrhea, loss of appetite), nervous disorders (headache, fainting, dizziness, mental disturbances), and skin eruptions. Death caused by prolonged exposure to small amounts damaging kidneys or liver. Mouth, nose, & skin (Extremely toxic - 3+).  
The symptoms develop rapidly, frequently within 15 to 20 minutes following spilling of phenol on the skin. Headache, dizziness, muscular weakness, dimness of vision, ringing in the ears, irregular and rapid breathing, weak pulse, and difficult breathing may all develop, and may be followed by loss of consciousness, collapse and death.

Found by the State Water Control Board in Freeman Resin's Chatham Plant discharges.

KEY EVENTS

- AUGUST 6, 1981 STAFF INSPECTION REVEALED AN UNPERMITTED DISCHARGE AND A RECURRENT SPILL AREA.
- AUGUST 7, 1981 STAFF REQUESTED COMPANY TO CEASE ALL UNPERMITTED DISCHARGES.
- AUGUST 11, 1981 STAFF INSPECTION REVEALED AN ADDITIONAL PIPED DISCHARGE.
- AUGUST 14, 1981 STAFF INSPECTION REVEALED TWO ADDITIONAL UNPERMITTED DISCHARGES AND TOXIC CONTAMINANTS IN ALL DISCHARGES INCLUDING THE PERMITTED COOLING WATER DISCHARGE.
- AUGUST 18, 1981 EMERGENCY SPECIAL ORDER ISSUED.
- AUGUST 19, 1981 COMPANY RESPONDED TO ORDER AND CEASED ALL DISCHARGES.
- AUGUST 31, 1981 COMPANY PARTIALLY COMPLETED NO-DISCHARGE CERTIFICATE APPLICATION.

Staff Presentation

Freeman Chemical Company

Chairman, members of the Board, I am Neil Obenshain, Engineer, with the West Central Regional Office, and I am here to make a presentation concerning Freeman Chemical Corporation.

The issues are:

1. Did Freeman Chemical Corporation violate Section 62.1-44.16 of the Code of Virginia (1950), as amended, by discharging to State waters without first, providing facilities approved by the Board?
2. Did Freeman Chemical Corporation cause pollution of State waters?
3. Did Freeman Chemical Corporation violate Part I.B.4 Reporting Requirements of NPDES Permit No. VA0001309 and Board Regulation No. 4 by not reporting the discharge of unpermitted materials to State waters?
4. Should the Emergency Special Order issued to Freeman Chemical Corporation on August 18, 1981, be affirmed, modified, amended, or cancelled in accordance with Section 62.1-44.15(B)(b)(i) and (iii) of the Code of Virginia (1950), as amended?

The evidence is:

1. Staff inspections revealed 4 unpermitted piped discharge points and a multiple spill discharge area wherein approved treatment facilities had not been provided.

2. Chemical and biological analysis of the five unpermitted discharges revealed pollution of State waters.

The conclusions are:

1. The staff believes that Freeman Chemical Corporation failed to provide facilities approved by the Board in violation of Section 62.1-44.16 of the Code of Virginia (1950), as amended, and discharged causing the pollution of State waters.
2. Further, the failure to notify the Board of the discharge of unpermitted materials to State waters violated Part I.B.4 Reporting Requirements of NPDES Permit No. VA0001309 and the Board's Regulation No. 4.
3. As a result of the discharges enumerated in the above document and the inadequate facilities at the Freeman plant, the staff believes that the potential exists for further discharges which would be harmful to State waters, therefore, cause exists to affirm and amend the Emergency Special Order issued to Freeman Chemical Corporation on August 18, 1981.

Freeman Chemical Corporation is located off State Route 703, in the Chatham Industrial Park in Pittsylvania County. Freeman produces polyester resins by heating organic glycols and acids in a batch reaction chamber. Freeman is authorized to discharge single pass non-contact cooling water by NPDES Permit No. VA0001309. The cooling water has been partially recycled using a cooling tower without Board approval or permit amendment. There are four unpermitted point source discharges from the Freeman Facility consisting of

(1) boiler blowdown; (2) production area floor drain; (3) underground storage tank drainfields and (4) tank truck rinse water discharge. Also, there have been multiple spills of condensate wastewater that is generated in the reaction chamber. The condensate wastewater is very corrosive and has been incinerated on site using flammable by-products and fuel. An inadequate condensate wastewater transmission system and pumping system along with poor maintenance of the incinerator reaction chamber has been the cause of multiple spills into the surface and ground water. Also the incinerator residue has been allowed to flow from the site with the frequent spills. Based on observation of the unpermitted discharges on August 6, 1981, the staff requested verbally and in writing on August 7, 1981, that the Company cease all unpermitted discharges.

On August 11, 1981, the staff conducted further inspections of the site to determine compliance, which revealed an additional unpermitted discharge. On August 14, the staff collected chemical and biological samples from the 3 unpermitted discharge points, and two additional unpermitted discharges discovered during sample collection. Biological toxicity data using a bacterial indicator (Microtox unit) indicated the presence of contamination (in all 4 unpermitted point source discharges, the spilled condensate, and the cooling water discharge.) Stream surveys of the unnamed tributary to the Banister River, which receives the discharges from the Company, indicated the absence of aquatic organisms except for a small number of pollution tolerant organisms (sludge worms).

Based on the further findings that the unpermitted discharges revealed a toxic response, and that biological activity in the stream was suppressed as observed on August 14, 1981, the Board issued an Emergency Special Order to the Company

on August 18, 1981, requiring the Company to immediately cease all discharges to State waters. The Emergency Special Order included ceasing the permitted cooling water discharge and was written to allow for the cancellation of the Order as it affected the cooling water discharge upon a showing that the source of the contamination had been identified and eliminated.

Chemical analysis of all discharges has not been completed, however, some of the contaminants have been identified. The effluent from the numerous discharges at the site contained process chemicals and toxic pollutants as noted on the overhead. A discharge of this type would require significant treatment prior to discharge under NPDES Permit. The unnamed tributary which receives discharges from the site also contained process chemicals and toxic pollutants as noted. No toxic concentrations of pollutants were found in the tributary at the time of sampling.

The Company notified the staff on August 19, 1981 that all discharges had been ceased. Interim facilities have been installed to collect and store wastewater from the four point source discharge points and leachate from the spill area. The Company has been recirculating cooling water and continuing production at a reduced rate. Some of the condensate wastewater has been trucked to Wisconsin for ultimate disposal under approval of a hazardous waste (RCRA) permit to transport.

The Company is currently completing an application for permit amendment and design of permanent facilities to eliminate unpermitted discharges. The Company has conducted analyses of the cooling water system in accordance with the staff's suggested criteria.

Application for amendment to the existing NPDES Permit is being completed to request recirculation of the cooling water.



The staff believes that the Company <sup>①</sup> failed to provide adequate treatment facilities approved by the Board and <sup>②</sup> discharged causing pollution to State waters. Further, the Company <sup>③</sup> failed to notify the Board of the discharge of unpermitted materials and violation of their NPDES Permit. As a result of the discharges enumerated above and the <sup>④</sup> inadequate facilities at the Freeman Plant, the staff believes that the <sup>⑤</sup> potential exists for further discharges which would be harmful to State waters; therefore, <sup>⑥</sup> cause exists to affirm and amend the Emergency Special Order issued to Freeman Chemical Corporation on August 18, 1981.

## TOXIC EFFECTS OF CHEMICALS

USED BY FREEMAN RESINS - CHATHAM PLANT

Acrylic Acid: May cause death or permanent injury after very short exposure to small quantities; acrid odor.

Antimony: Irritant to skin(3) and nose(3); signs and symptoms may include irritation and eczematous eruption of the skin, inflammation of the mucous membranes of the nose and throat, metallic taste and stomatitis, gastrointestinal upset, with vomiting and diarrhea, and various nervous complaints, such as irritability, sleeplessness, fatigue, dizziness and muscular and neuralgic pains.

Asbestos ("Chrysotile, RG244): Prolonged inhalation can cause cancer of the lung, pleura and peritoneum, and has experimentally produced cancers of the peritoneum and intestine; usually 4 to 7 years exposure before noting some symptoms; Nose(3)

Copper Naphthenate: Fire hazard; mouth(2), nose(2).

Dicyclopentadiene: Very toxic material; fire hazard; can react with oxidizing materials.

p-Dioxane: Vapor causes irritation of the eyes and nose(3), followed by narcosis and/or pulmonary edema and death; repeated exposures to low concentrations have resulted in human fatalities, liver and kidneys mainly affected; brain and lungs may show acute swelling; symptoms include headache, drowsiness, dizziness, nausea, vomiting, loss of appetite, pain & tenderness in loin, enlargement of liver without jaundice indication, suppression of urine, followed by uremia and death; mouth(3) skin(2)

Epoxy Resins: Suspected cancer causing; skin(3)nose(2); Dangerous rating as Disaster Hazard when heated to decomposition emits highly toxic fumes.

Ethylene Glycol: Severe and even fatal poisoning have occurred following ingestion; (TLV = 100 PPM); central nervous system depressant; causes kidney damage which can terminate fatally; very toxic in particulate form; fire hazard; lethal dose for man reported to be 100 ml.

Ethylene Oxide: (TLV = 50 ppm); irritating to eyes and nose(2)skin(3); experimental cancer causing; severe explosion hazard when exposed to flame or heat, rated as "highly dangerous disaster hazard".

Inhibitor, p-Benzoquinone: (quinone TLV = .1 ppm); can cause severe damage to skin(3) in vapor, solid, or liquid form; workers can develop corneal (eye) injury, vision loss; characteristic, irritating odor; mouth(3) nose(3); prolonged contact may lead to death of living tissue.

Inhibitor, Hydroquinone: Considered more toxic than phenol; severe skin disorders with vapors; inhalation(3) must be avoided; 1 gram may induce nausea dizziness, sensation of suffocation, vomiting muscular twitches, headache, delirium and collapse; mouth(3) nose(3) skin(3)

Magnesium Oxide: Inhalation of the fumes can produce in man a fever reaction and leukocytosis - a condition of leukemia; nose(3).

Maleic Anhydride: (TLV = .25 ppm); Inhalation of vapor can cause fluid in the lungs; causes burns to skin(3), eyes(3) and nose(3); fire hazard; emits toxic fumes when heated; can react on contact with oxidizing materials.

Methyl Cellosolve: (TLV = 25 ppm); has caused severe occupational poisoning; vapors extremely hazardous, causing blood disorders, exaggerated or abnormal reflexes, drowsiness, fatigue, tremors, and aplastic anemia; fire hazard.

Methyl Styrene: From animal studies it appears that immediate deaths occur from primary action on central nervous system, delayed deaths come about from pneumonia. mouth(3), nose(2), skin(2).

N, N-Dimethylaniline: (TLV = 5 ppm); central nervous system depressant; industrial accidents are dangerous in that they can release sudden massive quantities of the oil or its vapor from breaks in the pipes of a closed system; mouth(3), nose(3), skin(3).

Oxalic Acid: Acute oxalic poisoning results from ingestion of a solution of the acid. corrosion of the mouth, esophagus and stomach, vomiting, burning and abdominal pain, collapse and sometimes convulsions. Death may follow quickly.; profound kidney disturbance; inhalation of dust or vapor may cause symptoms of irritation of upper respiratory tract, stomach disturbances. loss of weight, weakness and nervous system disorders; has caustic action on skin; dermatitis; a case of early gangrene of the fingers resembling that caused by phenol has been recorded; headache, irritability, nervousness, chronic cough, cracks in skin, slow healing ulcers, brittle, yellow nails; mouth(3), nose(3), skin(3).

Potassium Hydroxide: Disaster hazard-will react with water or steam to produce highly caustic solution and heat; mouth(3), nose(3) skin(3).

Silica: main cause of worker lung-dust disease; American Public Health Association - states shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to TB; 2 to 30 years exposure required; nose(3).

Styrene; violent itching of eyes, tears, severe human eye injuries; possible narcosis (stupor or unconsciousness); mouth(2), nose(2), skin(2); (TLV = 100 ppm).

Surfactant: suspected of causing cancer in lungs, skin, bladder and alimentary canal.

Urethane: Causes depression of bone marrow, focal degeneration in brain, central nervous system depression, nausea and vomiting; experimental carcinogen; mouth(3), nose(3).

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Threshold Limit Value(TLV) - represents condition above which it is believed that nearly all workers may experience symptoms listed herein if exposed daily.

Method of poisoning - "mouth"-ingestion, "nose"-inhalation, "skin"-direct contact.

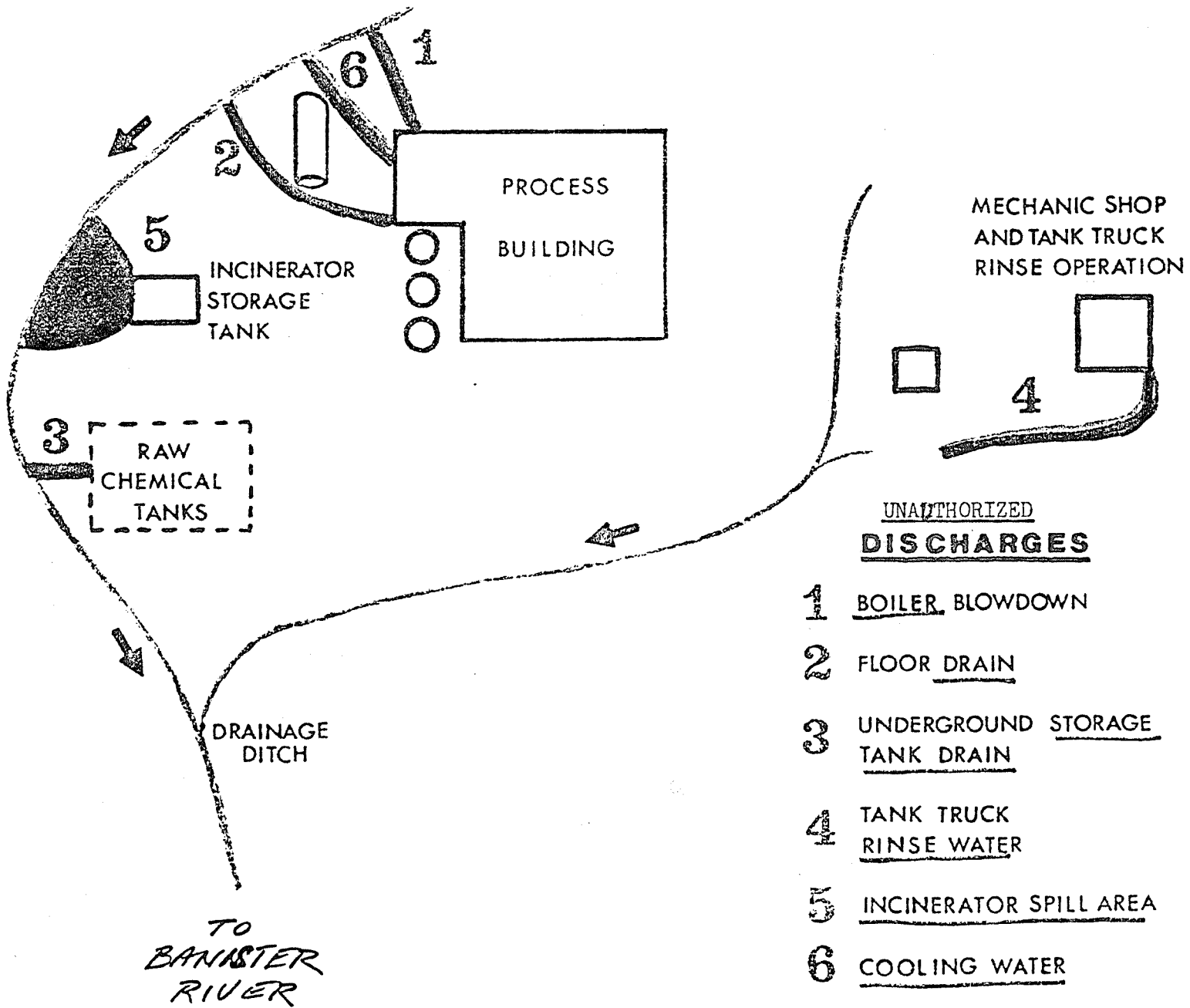
Toxic Hazard Rating Code:

(2) - Moderate hazard, may cause changes not severe enough to cause death or permanent injury.

(3) - Highly toxic, may cause death or permanent injury after very short exposure to small quantities.

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Source: Dangerous Properties of Industrial Materials, New York:Van Nostrand Reinhold Company, Irving Sax, 1975.



UNAUTHORIZED DISCHARGES

- 1 BOILER BLOWDOWN
- 2 FLOOR DRAIN
- 3 UNDERGROUND STORAGE TANK DRAIN
- 4 TANK TRUCK RINSE WATER
- 5 INCINERATOR SPILL AREA
- 6 COOLING WATER

Water Board - Staff Presentation  
 September 24, 1981  
 Abingdon, Va.