2021 Hazardous Waste Scanning Project

File Form Naming Convention.

(*File_Type*).(*Program*).(*Site_Number*).(*YYYY-MM-DD*).(*File_Name*).pdf

Note 1: Each category is separated by a period "."
Note 2: Each word within category is separated by an underscore "_"

Specific File Naming Convention Label:

report.hw.915184.1982-10-7.deep_injection_well_summary.pdf

915184

buffalo
COLOR CORPORATION
one garret mountain plaza / west paterson, new jersey 07424
201-881-1700

October 7, 1982

Ms. Barbara Guibord
Assistant Council
Hazardous Waste Compliance Team
New York State of Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202-1073

Dear Ms. Guibord:

As requested in your letter of July 26, 1982, attached is an updated "Deep Well Report". The report has been revised to include that information available in answer to your questions.

It must be remembered that this process was discontinued at the site about twenty years ago and knowledge of the process and records are difficult to obtain.

If there are any questions, please contact Mr. J. A. Gouck at 716-827-4527.

Very truly yours,

Anthony J. ten Braak
Vice President

AJT/chs

Attachments

cc: D. Griffin
J. Gouck
T. Wlodarczak

915184

DEEP WELL REPORT

BUFFALO COLOR CORPORATION

Dated May 4, 1982

Revised September 1982

Prepared by: J. A. Gouck

Approved by: A. J. ten Braak

TABLE OF CONTENTS

I. Rationale

During the mid-fifties, specific technology was installed by Allied Chemical in Building 312, Buffalo Dye Plant for the manufacture of Antioxidant B (AOB) and Antiskinning Agent (ASA). Both of these products were used in paint formulations to prevent skin formation after cans of oil based paint had been opened and exposed to the atmosphere. The products were the result of a reaction between hydroxylamine and buteraldehyde (ASA) or methyl ethyl ketone (AOB). Reaction conditions differed slightly for both products but 4500 gallons of a 40% solution of ammonium sulfate was the by-product of each. Only one product could be made at a time but operation levels at that time required at least a 90% operating factor or at least 325 batches per year. The production ratio was at least 2:1 for ASA over AOB.

Production of these products occurred at a time when concerns about water quality of the Buffalo River were beginning to emerge. It was decided that the ammonium sulfate waste was to be disposed of in a manner other than discharge to the Buffalo River. After a review of possible recovery methods and the economics involved, it was decided to try to dispose by deep well injection. A partial basis was that the material, ammonium sulfate, could cause higher ammonia levels downstream and be toxic to fish life, and injection to a zone well below any possible potable water would not cause any short and long term environmental problems. A capital request was prepared and submitted for approval.

Therefore, in mid 1957, Job. No. 8513 dated 8/57 was prepared and approved covering the installation of a disposal well in the vicinity of the manufacturing area (see Appendix I).

In addition, the Erie County Health Department was contacted and permission was received to discharge about 10,000 gallons per day of 40% ammonium sulfate solution into the well (Appendix II). The rationale for the 10,000 gallon amount was that product sales could increase to a point necessitating the installation of another processing system. The advent of latex paints and their immediate acceptance reduced sales potential and the daily amount remained at 4500 gallons per day.

During the period prior to well construction and also after, sales of the ammonium sulfate solution was made to Bethlehem Steel Corporation Lackawanna Plant. The solution was fed into their sulfate saturators in the coke plant production area and dried ammonium sulfate recovered. These sales were sporadic at times and did not require the total amount. There is no data available on time covered or amount delivered.

Prior to the installation of the deep well, an application was made to the Erie County Health Department to test the concept using an existing well adjacent to the Plant A steam generating facility. The existing well had been installed some years prior in an attempt to provide an on site source of cooling water for that portion of the plant. The depth of this well was approximately 160'. The well was abandoned after installation as water flow was negligible, not in sufficient quantity for plant use. The well was drilled to a depth of 250 feet into the limestone strata containing brackish water.

Using the test well during the period July 9, 1957 - August 14, 1957, a total of 78,500 gallons of 90% ammonium sulfate were discharged to the well with no buildup of head pressure at the well head. This was equivalent to the waste flow from 17 batches (Appendix X). This test was deemed to be definitive. As a result, the capital request was made to install well at the north end of Bldg. 312 and an application submitted to Erie County Health for installation (Appendix XI). Approval of the project followed shortly and installation begun (Appendix XII).

Based on the results using the data from the test well in Plant A, the original well was designed to discharge in the limestone strata at about 180 foot depth. The data indicated that waste was acceptable and no pressure problems were evident. It was felt that at the 180 foot depth, it would be well into the limestone strata. After a period of usage, about 3 years, the formation plugged and was no longer useable. The reason for pluggage was unknown but could be due to the precipitation of insoluble salts from the limestone strata that resulted from improper neutralization of the waste before discharge.

In late 1960, another capital request was approved to drill the existing well to a depth that upon testing with city water would take the flow without undue pressure at the well head. The original capital request contained no specific depth but the Change Order No. 77230 (Appendix V) indicates that total depth of well was 744 feet. This depth was mostly determined as the optimum based on the water flow. As far as can be determined, there were no considerations given to strata permeability, or reaction between waste solution and rock strata.

During the initial rotary drilling of the well, observation as to the depth of potable water was left to the judgement of the driller. But based on boring logs (Appendix XIII) drilled in 1946, a judgement can be made as to the depth of potable water. The log for boring No. 3, taken in the vicinity of the well notes that at a depth of 20-25 feet, excess water was present and core samples lost strength when remolded and became very sticky; these geological indicators usually are indicative of ground water level.

Injection Wells

The plant site as operated by National Aniline, Allied Chemical Corp. and Buffalo Color Corp. has had only the two deep wells as described in this report. The Plant A well had not been used in quite some time and its original installation date is unknown. The deep well installed for the injection of the ammonium sulfate wash was the only other well on the plant site. It is thought that the Plant A well was drilled in the late 1930's.

II. Location and Construction

Location - Disposal well is 7'3" North and 34'4" West of the N.E. corner of Building 312.

Driller - The Warner Brothers, Well Drilling, Lancaster, New York, were selected as the Contractor. There is no data on file as to selection process or if bids from other contractors were solicited. About 1975, Warner Brothers was sold to another individual after the death of the original owner. Upon review with the new owner, there is no data on file as to strata, water flow, permeability, drilling logs or other recorded material for this well. In addition, a review of existing files at Buffalo Color did not uncover any such data.

Well Construction - Initially an 8" dia. hole was drilled and cased to bedrock to seal off any water stream above rock level and 6" casing was installed and extended to 90' and sealed at bedrock. This procedure was designed to prevent backflow through outer casing when pressure applied to inner casing. From the 90' level, a 6" hole was drilled in bedrock to a depth of 180' from surface (see Appendix III). At this point, city water was pumped into the well so that quantity and pressure could be determined. The connection from an existing 2" discharge line to the injection well is described in Appendix IV. The existing line had been installed previously for loading tank trucks and was idle equipment.

In late 1960, pumping pressures for discharging to the well increased to the point that installation of a high pressure pump would be required. Warner Brothers were contacted and they advised drilling the well deeper. On October 25, 1960, a purchase order was issued (Appendix V) covering specification of drilling well to approximately 750 feet. The existing 6" casing was removed and an 8" hole drilled and cased at about 200' below surface level. About 200' of 6" casing was installed and a packer used to seal it to rock strata. A 6" hole was drilled in the rock from packer elevation to water bearing strata. Total depth of the well was 744' at time of its completion. The pluggage of the injection well that occurred in 1960 was possibly due to the precipitation of sulfates resulting from a reaction of the waste and the limestone strata. The reaction most likely would take place as a result of poor pH control allowing acidic waste to be discharged. The pluggage was gradual and no attempt was made to determine the exact details as it was mainly pump pressure requirements that determined the action taken to deepen the well.

The deep well was used for the discharge of the 40% Ammonium sulfate solution from late 1957 to late 1960 to a depth of 180 feet from surface level. From late 1960 until mid 1963, the deep well was used to a depth of 744 feet.

In 1963, the process was relocated to an other Allied facility and discharge was terminated.

Since relocation of the process, no attempts have been made to use the well for any disposal of other waste streams.

The containerization of wastes described in Purchase Order #75674 are those wastes resulting from drilling operations. During the installation of a well using rotary drilling equipment, there are muds and other debris that have to be disposed of. In keeping with good manufacturing practices, wastes such as drilling muds were put in a dumpster box for removal to a landfill.

IIIA. Chemical Reactions

The chemical reaction used in the process was the Aldol condensation well known in organic synthesis. The initial product was given a final distillation after separation from the ammonium sulfate layer.

Anti-Skinning Agent (ASA)

Hydroxylamine Sulfate + Butyraldehyde Butyraldehyde oxime

$$C_2H_5CH_2\text{-}CHO + H_2NOH\text{-}HSO_4 \xrightarrow[40^\circ C]{NH_3} C_2H_5\text{-}CH_2\text{-}CH{=}NOH + H_2O + (NH_4)_2SO_4$$

Antioxidanl B (AOB)

Hydroxylamine Sulfate + Methyl Ethyl Ketone ---- Methyl Ethyl Ketoxime

$$\begin{matrix} CH_3 \\ C_2H_5 \end{matrix} CO + H_2NOH\text{-}HSO_4 \xrightarrow[40_oC]{NH_3} \begin{matrix} CH_3 \\ C_2H_5 \end{matrix} C{=}NOH + H_2O + (NH_4)SO_4$$

Hydroxylamine was delivered to the plant as the sulfate to prevent decomposition. During the process, pH was controlled with NH_3 resulting in a side product of $(NH_4)_2SO_4$. The Aldol condensation results in a reaction completion of approximately 99%. The solubility in H_2O of the organic raw materials being the primary loss. Also there would be a negligible amount of Butyric acid formed due to some decomposition of butyraldehyde.

	Solubilities	
Hydroxylamine Sulfate	$H_2N\text{-}OH\text{-}HSO_4$	Complete
N-Butyraldehyde	$CH_3CH_2CH_2CHO$	7 gms/100 gms H_2O
Methyl Ethyl Ketone	$CH_3CH_2\text{-}\underset{\underset{O}{\|}}{C}\text{-}CH_3$	269 gms/100 gms H_2O

The chemical equipment used was very simple in nature, consisting of two side-by-side 10,000 gallon capacity vats. In addition, a pump was connected to the system and was used as multiple-purpose equipment. One vat was used as storage receiving crude product after ammonium sulfate separation preparatory to being pumped to a still.

IIIB. Waste Disposal Process

The manufacture of the anti-skinning agents was a batch process and due to the operating cycle, the 40% ammonium sulfate solution was always available for day shift. Pollution abatement was given great consideration as well as economics in the disposal procedures (Appendix I). In order to remove any potential hazardous by-products, a carbon treatment of the waste stream was installed resulting in a 40% ammonium sulfate solution ready for discharge. The typical operation was as follows - (1) pH adjusted to approximately 7 with NaOH. (2) The ammonium sulfate solution was pumped downflow through an activated carbon column at ambient temperature at a 22 gallon per minute flow. The column consisted of a 3' diameter by 5' long lead lined column containing 800 lbs. of an 8x30 mesh carbon. The discharge of the column went directly to the injection well (Appendix VI). After pumping was completed, the carbon column was left to drain for at least an hour before the inlet and outlet valves were closed and the column was made ready for regeneration. When an operator had isolated the carbon column, city water was opened at the well head and allowed to run for at least one hour. The main purpose of the water wash was to minimize corrosion. As required by regulations, the city water line was equipped with a backflow check valve.

The organic material recovered from each batch of the carbon column contained roughly 50 lbs. of organics. The extraction efficiency was calculated to be at least 98%.

Regeneration of the column was carried out after each batch of ammonium sulfate discharge using 30 lb. steam.

IIIC. Carbon System

The carbon system as described in Appendix VI resulted from laboratory work of which the removal of the organic oils from the sulfate solution was the primary interest. There were no attempts made to determine exact amounts of recovered materials or the chemical composition.

The laboratory unit, 1 inch dia. x 4 ft. long, was the basis. From this unit, gms. carbon/liter of sulfate were determined and extrapolated to requirements for regular batch. Regeneration of the carbon was a visual observation of no oil layer in a sample of the steam condensate. The regeneration of the carbon in the laboratory column was checked intermittently by analyzing a sample of the carbon for Iodine No. and Molasses No. These results were compared with virgin carbon and an assessment of degree of regeneration calculated. In the scale-up, this data was also included to determine actual carbon requirements.

It is possible that there were hydrocarbon breakthroughs on the plant scale carbon system. Occasional checks would be made on the sulfate solution as it discharged to the well at the carbon system. The check consisted of a grab sample of the discharge and a visual observation to determine if there was an oil layer. In addition, at least once per month the head of the carbon column was removed and new carbon added if level was not adequate.

IV. Properties

Ammonium sulfate is a major raw material in many industrial processes and is used widely as a fertilizer. Its toxicity to fish and biota are well known and documented in the literature. Its toxicity is highly pH dependent (Appendix VII).

V. Regulatory Consideration

Title 6, Part 703, "Ground Water Classification Quality Standards - Effluent Standards and/or Limitations" does not specifically list ammonium sulfate as a regulated contaminant.

In addition, ammonium sulfate is not listed as a hazardous material in any RCRA list contained in the FR, Vo. 45, No. 98, May 19, 1980, pp 33132-33133, Rules and Regulations.

As required by Section 103(c) of PL 96-510 - "The Comprehensive Environmental Response, Compensation and Liability Act", notification of inactive sites at Buffalo Color were submitted (Appendix VIII). This notificatiton included the Deep Well as a site. In addition, information was also submitted to the New York Inter-Agency Task Force on Hazardous Waste in November 1978.

Sealing of the Deep Well following your request of 10/29/79 has been accomplished (see Attachment IX).

VI. Assessment of Environmental Impact

We believe the method of disposal was sound and consistent with present deep well disposal technology employed.

If any threat to drinking water contamination is visualized, it should be remembered that the depth of the disposal well is such that it is far below the level where economic recovery of potable water is realized.

However, to verify any potential impact on other wells drilled in a one mile radius of the disposal well, we have searched for the presence of such wells. To the best of our knowledge, the only wells within a one mile radius of the disposal well were two drilled on site at Donner-Hanna Coke Co. The wells were drilled sometime in 1928 and are about one hundred twenty feet deep. The purpose of these wells was to provide a supply of colder cooling water in the summer months. The water was found to be brackish and very high in sulfur and the well has not been used in at least 15-20 years.

It is documented that the waste stream consisted of aqueous ammonium sulfate with trace amounts of butyric acid.

The environmental fate of the waste ammonium sulfate at both the 180 and 744 foot depth is unknown. The absence of core data, water containing strata, or physical descriptions for both levels prevents an adequate or definitive judgement of the fate of the material.
Based on the knowledge available, the limestone units in the general area vary widely in water bearing characteristics. Even so, it is suggested by the hydrology of the subsurface that the waste material together with ground water would move north toward Tonawanda Creek ("Ground Water Resources, Erie-Niagara Basin", N.Y. State Water Resource Commission, 1968).

The final composition of the material is unknown as the following could happen: dilution of waste to a low level or a chemical change causing salting out of the ammonium sulfate. It could be possible, if the waste was discharged in a large water bearing strata that the dilution would reduce the level to trace amounts.

According to the January 1982 NIOSH Registry of Toxic Effects of Chemicaal Substances (RTECS) the acute oral LD_{50} (rat) of Ammonium Sulfate is 3000 mg/kg. It is rated to having a "slight" acute toxicity by ingestion in SAX 4th Edition, p. 396, of Dangerous Properties of Industrial Materials with chronic effects unknown. Ammonium sulfate is a miscellaneous and general purpose food additive used mostly as a buffer, neutralizing agent, yeast food and dough conditioner. (Food Chemicals Codex - Edit 2, pp 52-3; Sax 4th Edit pp 308 & 318).

According to January 1982 RTECS, Butyric Acid has an acute oral LD_{50} (rat) of 2950 mg/kg. The Merck Index, 9th Edit, p. 203 lists the acute oral LD_{50} (rat) as 8790 mg/kg. Sax 4th Edit, p. 396 of Dangerous Properties of Industrial Materials gave acute toxic hazard rating of "slight" with chronic effects unknown. Butyric Acid is a food additive used for flavoring according to the Food Chemicals Codex. 2nd Edit, p. 114.

Based on the findings listed above, it is our opinion that the Deep Well does not contain hazardous materials and certainly does not pose a significant threat to health or the environment.

APPENDIX I

ev. 5M 12-54

NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION

Request Number G.O.-851
Charge Number

REQUEST FOR MAINTENANCE—CONSTRUCTION—PURCHASE AUTHORIZATION
Construction Authorization to be included in Minor Budget C—

Operating Division Azoics Bldg. Floor Apparatus Name No.

Name Product Number

AUTHORITY IS REQUESTED TO COVER THE EXPENDITURES DESCRIBED AS FOLLOWS:

Description: It is proposed to install a 6" diameter well approximately 160' in Plant "E" north of Bldg. 312.

to be accomplished:

Proposed work is required as part of a pollution abatement program for osal of waste ammonium sulfate solution. This waste is currently hauled fro Plant by a contractor at a cost of $0.01-1/8 per gallon or approximately 00./month at current production levels.

Based on current tests in a Plant "A" well, it is believed that this waste be discharged directly from the process facilities in Bldg. 312 to a new in Plant "E" without need for motor truck transportation. Since such osal is required only during seasonal low flow in the Buffalo River, annual ngs are projected to be $12,500. based on elimination of trucking charges.

ted Time to Complete: 3 Months Depreciation Rate: -

SUMMARY OF ESTIMATE

Classification	Distribution		
	Fixed Capital	Expense	Total
al	2,215.	-	2,215.
	310.	-	310.
	2,525.	-	2,525.

ent on Hand -

tling Expense -

xpenditure $2,525.

SUMMARY OF RETIREMENTS AND/OR TRANSFERS

Apparatus No.				
Building				
Classification				
Book Value				
Accrued Depr.				
Salvage	-			
Retirement Loss				
Date Inst.				

tor J. Mora Dept. Operating Date 8/5/57 Engineer H R Pain Date 8/5/57

PLANT APPROVALS

Operating Dept.	Service Depts.	Eng., Const., Maint. & Power Depts.	Miscellaneous
8/5/57	8/5/57	8/5/57	8/5
8/5/57	8/5/57	8/5/57	8-5
8/8/57		8/5/57	
		8/5/57	
		8/5/57	

Plant or Branch Manager

GENERAL OFFICE APPROVALS

DIRECTOR OF ENGINEERING AND CONSTRUCTION

Dept. Head

DIVISION COMPTROLLER

I

W.H.H. AUG 2 7 1957

Buffalo Plant
August 23, 1957

Mr. E. L. Ledbetter
Assistant Secretary
New York Office

AMMONIUM SULFATE DISPOSAL

Please refer to my letter of August 14, 1957 to the Commissioner of Health, County of Erie.

Attached is an autostat of the letter dated August 19, 1957 from Mr. Charles C. Spencer, P. E. Director, Division of Environmental Sanitation, Health Department, County of Erie giving us permission to discharge about 10,000 gallons per day of ammonium sulfate solution into the well in Plant E to be provided by O. O. 8513.

It is expected that drilling of this well will be started during the week of August 26, 1957.

ORIGINAL SIGNED
BY J. F. DALY

J. F. Daly
Plant Manager

CJC:nes
Encl.

cc: Mr. J. W. Carey
Dr. W. Minnis
Mr. F. J. Krueger
Mr. H. W. Rasch
Mr. B. L. Woolley
Dr. R. N. Hess
Mr. W. A. Helwig

PRINTED IN U. S. A.

APPENDIX III

8-513

COPY OF PURCHASE ORDER FOR
FILE COPY
DESTINATION

INVOICES AND PACKAGES MUST SHOW THESE NUMBERS

TO	DATE	REQUISITION	ORDER
WARNER BROTHERS, WELL DRILLING PAVEMENT ROAD LANCASTER NEW YORK	8-16-57	29290	75671
		TERMS	F. O. B.
		NET	DELD

TO: NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION

DESTINATION: 1051 South Park Ave., Buffalo 10, N.Y.

DELIVERY DATE

SHIPPING DATE

SHIP VIA

CODE NO.	QUANTITY	ARTICLE AND DESCRIPTION	PRICE
		FURNISH MATERIAL, LABOR, TOOLS, EQUIPMENT AND SUPERVISION AND PERFORM THE FOLLOWING: DRILL A WELL FOR WASTE DISPOSAL, APPROX. 5 FEET NORTH AND APPROX. 30 FEET FROM THE EAST CORNER OF OUR BLDG 312. WELL TO BE 8" DIA. FOR 90 FEET AND CASED TO ROCK OR BELOW TO SEAL WATER STREAM AT ROCK LEVEL. ROCK IS APPROX 90 FEET BELOW SURFACE. A 6" DIA CASING TO EXTEND TO 90 FEET AND BE SEALED AT THIS LEVEL TO PREVENT FLOW BACK THROUGH OUTER CASING WHEN PRESSURE IS APPLIED TO INNER CASING. 6" DIA. HOLE IN ROCK ONLY TO BE DRILLED FROM 90 FEET TO BOTTOM. IT IS BELIEVED THAT SUITABLE STRATA FOR DISCHARGE OF WASTE IS LOCATED AT OR NEAR 160 FEET BELOW SURFACE. EXACT DEPTH TO BE DETERMINED AT TIME OF DRILLING. TEST TO BE MADE WHEN SUITABLE STRATA IS REACHED TO DETERMINE QUANTITY OF WATER WHICH CAN BE DISCHARGED INTO THIS STRATA. WATER NECESSARY FOR DRILLING AND TESTING TO BE FURNISHED BY NATIONAL.	NOT TO EXCEED 1450.00

OUTSIDE CONTRACTOR

CONTINUED ON PAGE #2

n-56
N U.S.A.

COPY FOR DEPT. REQUIRING MATERIAL

APPLYING ON PURCHASE ORDER
CO #1
NO. 7 5 6 7 4
REQUISITION NUMBER
29299----76904
DESTINATION
BUFFALO NEW YOR

WARNER BROTHERS, WELL DRILLING
PAVEMENT ROAD
LANCASTER NEW YORK

PLEASE ~~CANCEL~~ CHANGE OUR ABOVE MENTIONED ORDER AS FOLLOWS:

DATE 9-19-57

~~CANCELLATION OR~~ CHANGE ORDER

E ORIGINAL ORDER AS FOLLOWS:
E DEPTH OF WELL FROM 160' TO 180'. 110.00
INSTALL PACKER SEAL AT BOTTOM OF 6" PIPE. 150.00 PER QUOTE 9-
NOT INCULDED IN ORIGINAL ORDER. INCREASED DEPTH NECESSARY TO HIT SUITABLE
A FOR DISCHARGE OF WASTE. SEAL NECESSARY TO PREVENT WASTE FROM ENTERING
STREAM ABOVE BOTTOM OF 6" CASING.

T THIS C.O. $260.00
T ORIGINAL P.O. 1450.00
$1710.00

CT. OF

CHARGE: - C.O. 8513-1

NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION

BY _____

III

PRINTED IN U. S. A.

COPY OF PURCHASE ORDER FOR
FILE COPY
DESTINATION

INVOICES AND PACKAGES MUST SHOW THESE NUMBERS

DATE	REQUISITION	ORDER
TO WARNER BROTHERS WELL DRILLING	29299	75671
	TERMS	F. O. B.
	DELIVERY DATE	
	SHIPPING DATE	
	SHIP VIA	

TO: NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION
DESTINATION: 1051 South Park Ave., Buffalo 10, N.Y.

TRADE NO.	QUANTITY	ARTICLE AND DESCRIPTION	PRICE
		SUITABLE CONTAINERS WILL BE PROVIDED FOR WASTE FROM DRILLING AND WASTE DISPOSED OF BY NATIONAL. CONTRACTOR WILL PUT WASTE INTO CONTAINERS FURNISHED. NATIONAL TO FURNISH PERMIT. BLASTING IF REQUIRED WILL BE BY OTHERS. COST OF DRILLING AND CASING AS PER QUOTE OF JULY 26, 1957 AS FOLLOWS: 8" HOLE 7.00 PER FT 8" PIPE 3.60 PER FT 6" HOLE 5.50 PER FT 6" PIPE 2.65 PER FT INSURANCE CLAUSE CHARGE: 8513-1 - 1450.00	

OUTSIDE CONTRACTOR

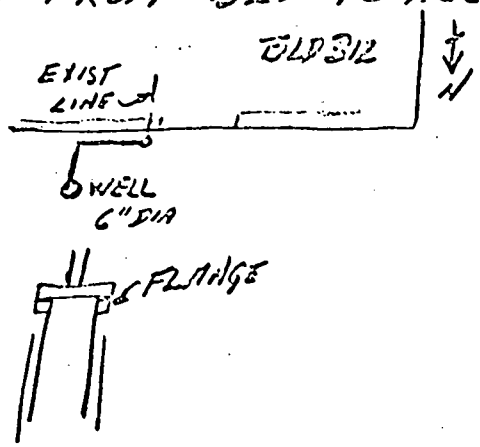
III

SPEC 1 SHEET 2 OF 2 8513-1

FURNISH MATERIAL AND LABOR AND PERFORM THE FOLLOWING :-

CONNECTION TO WELL

CONNECT EXISTING 2" DISCHARGE LINE AT EAST SIDE OF CENTER DOOR TO WELL. EXISTING VALVE TO BE REMOVED AND NEW SECTION TO DROP TO LEVEL OF UNDERSIDE OF WINDOW AND RUN HORIZONTAL TO POINT OPPOSITE WELL, THEN HORIZONTAL TO POINT ABOVE WELL AN THEN TO WELL. INSTALL VALVE IN HORIZONTAL RUN FROM BLD TO WELL. ALSO, INSTALL T WITH 1/4" VALVE FOR TEST PURPOSE AHEAD OF VALVE IN THIS RUN.



WATER CONNECTION.

INSTALL CONNECTION FROM PROCESS CITY WATER MAIN UNDER 2ND FLOOR TO SUCTION LINE OF PUMP CP-3 . USE EXISTING 1½" PIPE REMOVED FROM EXISTING LINE AS DETERMINED BY OPERATING SUPERVISOR. INSTALL ALL IRON GATE VALVE ADJACENT TO PUMP AND BRONZE GATE VALVE AHEAD OF THIS AT LOCATION TO BE DETERMINED IN FIELD.

SPEC 1-A SHEET 2 OF 2 8515-1

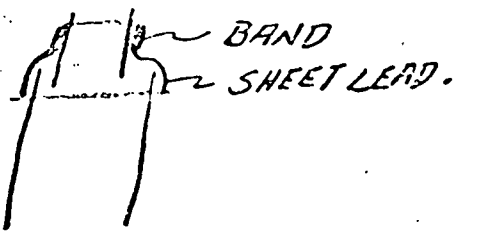
FURNISH MATERIAL AND LABOR AND PERFORM THE FOLLOWING:

(1) FILL AREA ADJACENT TO WELL WITH CONCRETE TO PAVEMENT LEVEL

(2) INSTALL GUARD POST APPROX 2' EAST & WEST OF WELL. POSTS TO BE 6" DIA PIPE, FILLED WITH CONCRETE. PAINT POST YELLOW!

BLD 312

(3) INSTALL LEAD SEAL OVER 8" CASING.



SEAL IS TO PREVENT DEBRIS FROM DROPPING IN SPACE BETWEEN CASINGS ONLY.

(4) INSTALL PI 13662 ON WELL OR PLATE AT SUITABLE LOCATION ADJACENT TO WELL.

G L Price
9/17/57

Allied Chemical CORPORATION — NATIONAL ANILINE DIVISION

CHANGE ORDER — ENGINEERING & CONSTRUCTION P.O. No. 77230

Warner Brothers Well Drilling, Inc.
Pavement Road
Lancaster, New York

Oct. 25, 1960

CHANGE ORDER No. /
APPENDIX V

ADDRESS ALL CORRESPONDENCE TO ADDRESS CHECKED BELOW:

- [ ] 40 RECTOR ST., NEW YORK 6, N. Y.
- [X] P.O. BOX 975, BUFFALO 5, N. Y.
- [ ] P.O. BOX 831, HOPEWELL, VA.
- [ ] P.O. BOX 396, MOUNDSVILLE, W. VA
- [ ] P.O. BOX 14, HAWTHORNE, N. J.

Attn. 1051 South Park Avenue
Buffalo 10, New York

PLEASE CHANGE OUR ABOVE MENTIONED PURCHASE ORDER AS FOLLOWS:

CODE	QUANTITY	DESCRIPTION	UNIT PRICE
D C		Establish total amount of order as $4,103.70 Lot ✓ 4100 3,03.70 Total depth of well is 744 Ft. Receiver #110563 and 110732 cover this transaction. Charge 9558-01 NO COPY TO VENDOR	

Purchase

PAGE 1 OF 1

INSIDE CONTRACT V

PROJECT APPROPRIATIONS SECTION

PURCHASE ORDE

No. 77230

WARNER BROTHERS WELL DRILLING, INC.
PAVEMENT ROAD
LANCASTER, NEW YORK

SHIP TO

NATIONAL ANILINE DIVISIOI
1051 SOUTH PARK AVE.
BUFFALO 10, NEW YORK

ADDRESS ALL CORRESPONDENCE TO: P. O. BOX 975, BUFFALO 5, N. Y.

	SHIPPING DATE	REQUISITION NO.	SHIP VIA	F.O.B.	TERMS
13-60	AT ONCE	2661	-	-	NET

CODE	QUANTITY	DESCRIPTION	UNIT PRICE
D C		FURNISH MATERIAL, LABOR, TOOLS, EQUIPMENT AND SUPERVISION AND REMOVE EXISTING 6" CASING AND PACKER AND ENLARGE EXISTING 6" DIA. HOLE TO 8" DIA. DRILL ADDITIONAL 8" DIA. HOLE AS REQUIRED FOR PLACING PACKER IN SOLID ROCK AT APPROXIMATELY 200 FT. BELOW GROUND LEVEL. INSTALL APPROXIMATELY 200 FT. OF 6" DIA. CASING AND PACKER. EXACT LENGTH TO BE DETERMINED BY ROCK STRATA AT TIME OF DRILLING. EXISTING 85'-6" OF 6" PIPE AND PACKER TO BE REUSED. DRILL 6" DIA. HOLE IN ROCK FROM PACKER ELEVATION TO WATER BEARING STRATA AT OR NEAR 600' BELOW GROUND LEVEL. EXACT LEVEL TO BE DETERMINED AT TIME OF DRILLING. WATER NECESSARY FOR DRILLING AND TESTING TO BE FURNISHED BY NATIONAL. WASTE CONTAINERS WILL BE FURNISHED BY NATIONAL AND WASTE DISPOSED OF BY NATIONAL. COST OF DRILLING AND CASING AS PER QUOTE OF 6/1/60	NOT TO EXCEED 3800.00 LOT WITH WRITTEN PROVAL BUFFALO PURCHAS OFFICE N. A. D.

4 PLANT DESTINATION

#77230 10/19/60

No. 77230

HARNER BROTHERS WELL DRILLING, INC.

SHIP TO

NATIONAL ANILINE DIVISION
1051 SOUTH PARK AVE.
BUFFALO 10, NEW YORK

ADDRESS ALL CORRESPONDENCE TO: P. O. BOX 975, BUFFALO 5, N. Y.

	SHIPPING DATE	REQUISITION NO.	SHIP VIA	F.O.B.	TERMS
3-60	AT ONCE	2661	-	-	NET

CODE	QUANTITY	DESCRIPTION	UNIT PRICE
D C		8" HOLE (REDRILL OR NEW). . . . . $7.00 FT. 8" PIPE. . . . . 3.60 FT. 6" HOLE. . . . . 5.50 FT. 6" PIPE. . . . . 2.65 FT.	
		CHARGE 9558-01	
		ATTACHED "GENERAL CONDITIONS OF CONTRACT" SHALL CONSTITUTE A PART OF THIS PURCHASE ORDER.	
		NATIONAL WILL ADVISE WHEN TO START WORK.	
PRICE			

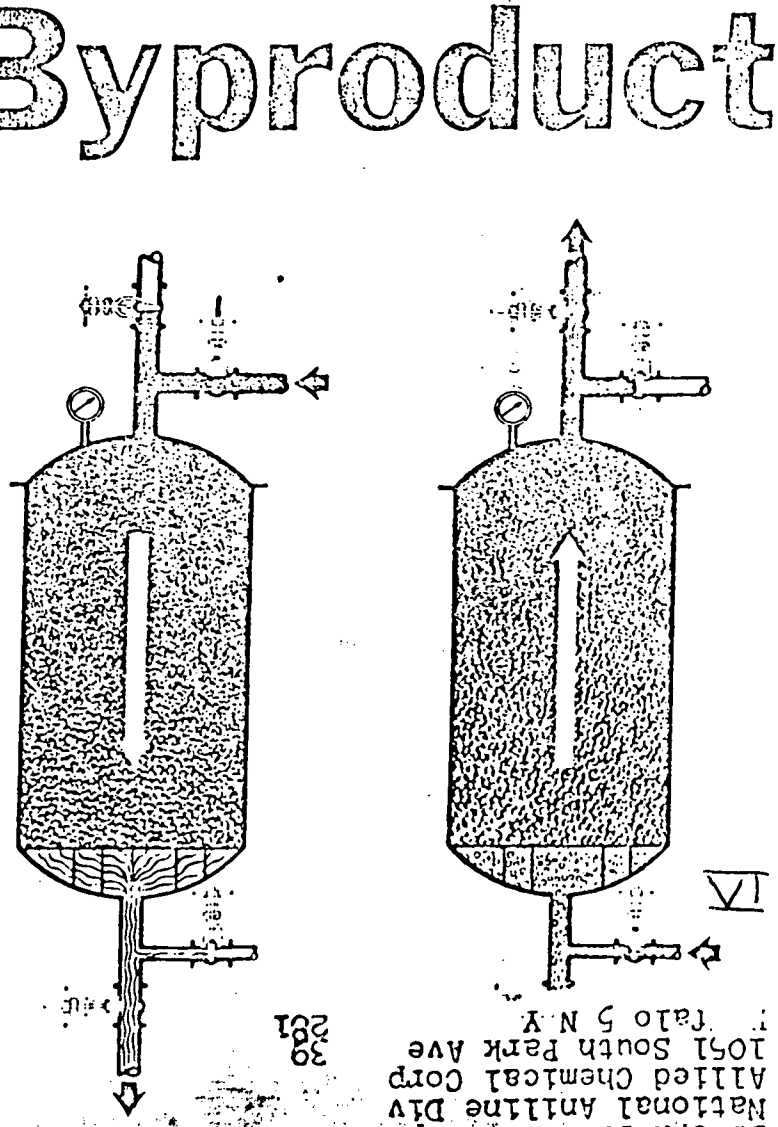
4 PLANT DESTINATION

V

MANAGEMENT'S
CHEMICAL PROCESSING

APPENDIX VI

Pollutant becomes Byproduct



From pesky pollutant to valuable byproduct

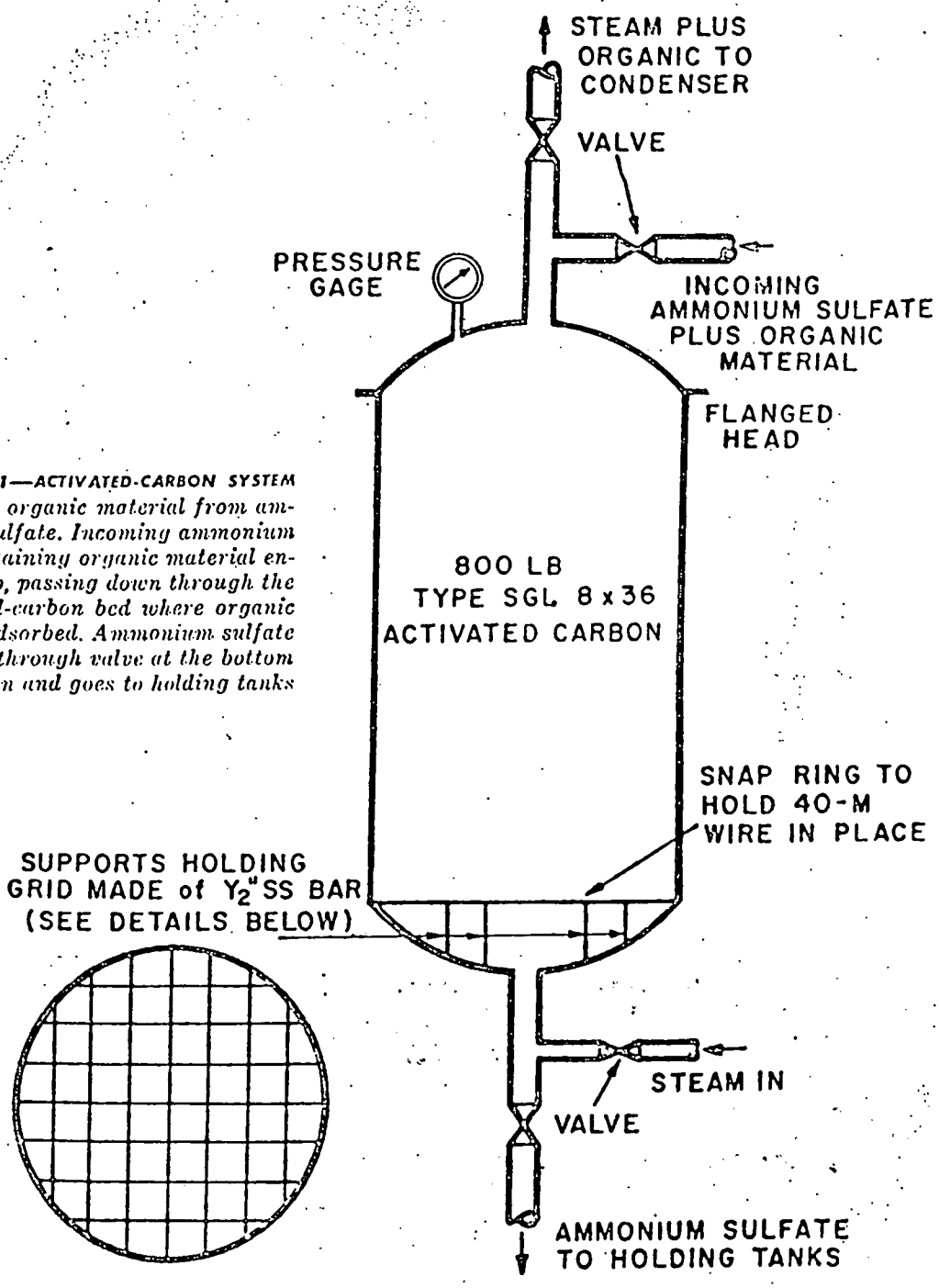


FIG 1—ACTIVATED-CARBON SYSTEM *recovers organic material from ammonium sulfate. Incoming ammonium sulfate containing organic material enters at top, passing down through the activated-carbon bed where organic material is adsorbed. Ammonium sulfate discharges through valve at the bottom of the column and goes to holding tanks*

VI

Ammonium sulfate is neatly relieved of an organic material by activated-carbon system to preclude pollution and save $20/day

By JAMES A. GOUCK, Pollution Research
NATIONAL ANILINE DIVISION
ALLIED CHEMICAL CORPORATION
Buffalo, N.Y.
with CP STAFF

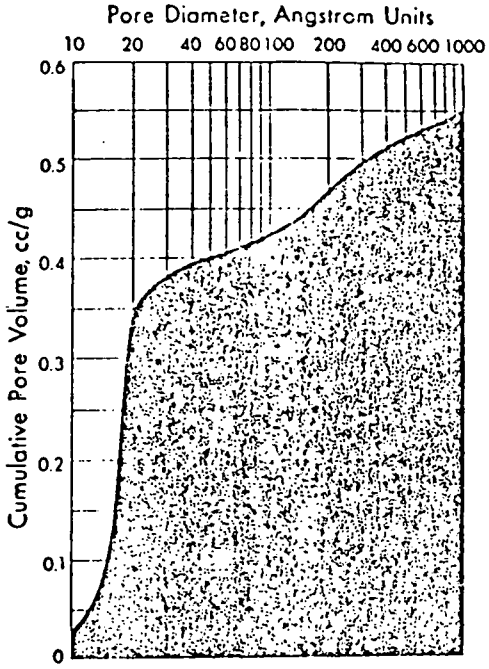


FIG. 2—ACTIVATED-CARBON PORE STRUCTURE

Problem: Loss of a valuable organic material and the disposal of ammonium sulfate containing it were dual problems for the National Aniline Division of Allied Chemical Corporation in their Buffalo, New York, plant.

OPERATING CASE STUDY

Separated out from the ammonium sulfate, the organic material would have been transformed from a bothersome pollutant, making disposal of the ammonium sulfate a problem, into a valuable byproduct, re-usable in the process.

Solution: An activated-carbon system was installed to recover the organic material from the ammonium sulfate in which it was contained.

This system consists of a three-ft-diameter by five-ft-high lead-lined column in which 800 lb of 8 x 30 mesh activated carbon is charged. This material is a granular decolorizing carbon.

The activated-carbon unit as installed is depicted in Fig 1 on the facing page. It is equipped with inlet and outlet valving as shown. The incoming solution of 40% ammonium sulfate containing the organic material enters at the top and passes downward through the activated carbon bed where the organic material is absorbed. The ammonium sulfate discharges through the valve at the bottom of the column and goes to holding tanks.

The operation is carried on at room temperature on an intermittent basis in which 4500 gal of ammonium sulfate containing the organic material is pumped downflow through the column at 22 gpm. The pump operates at 25 psi. There is only a minimum pressure drop across the column. At the end of this cycle the column is drained and the inlet and outlet valves are closed.

At that time, a steam valve at the outlet of the column is opened to admit 30 psi steam which is discharged through the outlet valve at the top of the column. This steaming goes on for one hour.

The steam containing the organic material recovered from the activated carbon is carried to a condenser. The discharge from the condenser goes into drums. The organic is then physically separated, since it is on top of the water. The small amount of water, which may be carried over to the process when the organic is re-used, does no harm to the process. Each batch of the organic recovered is about 50 lb. Extraction efficiency is 98%.

Regeneration is carried on after each 4500-gal batch of ammonium sulfate containing organic is processed.

Big carbon pores

The activated carbon incorporated in this process is designed for use in fixed beds to purify and decolorize aqueous and organic liquids. Its particle size of 8 x 30 mesh has been selected to give optimum adsorption characteristics and low resistance to flow with liquors of high viscosity.

The carbon is made from selected grades of bituminous coal combined with suitable binders to give hardness and long life. It is produced under controlled conditions by high-temperature-steam activation. The product is a high-density carbon with large pore volume and moderately high surface area. Its pore structure has been designed for the adsorption of both high- and low-molecular-weight impurities from solutions.

The carbon's cumulative pore volume is plotted against pore diameter in Fig. 2. Correlation studies have shown that adsorption capacity is determined in part by total pore

To next page

volume and pore-size distribution.

Color bodies and high-molecular-weight organic impurities require pores within the 20- to 500-Angstrom-unit range; odors and low-molecular-weight impurities require pores smaller than 20 Angstrom units.

As shown in the graph, the material has a high percentage of its total pore volume in both of these ranges. This contributes to its performance characteristics.

In addition, each granule is completely permeated by a system of large macropores. These serve as avenues for the rapid diffusion of adsorbed material to the internal pore surfaces. This enhances both adsorption and regeneration characteristics.

Results: The system permits the recovery of $20 of organic material each 24 hr. The column has been in operation well over a year. Roughly 60 of the original 800 lb of carbon has been lost through attrition.

(Type SGL granular carbon is a product of the Activated Carbon Division, Pittsburgh Chemical Co., Grant Bldg., Pittsburgh 19, Pa.)

Check 4096 opposite last page.

Permanent anti-static properties provided for vinyl resin

Electrostatic charge build-up eliminated by additive

Uses: Product is a permanent, internal anti-static agent developed primarily for polyvinyl chloride and its various copolymers. It can also be used as a semi-permanent, external anti-static agent for other thermoplastic resins, paper and textiles.

Features: Vinyl (particularly vinyl phonograph records) containing this additive will not attract dust, dirt and grit. Only 0.8 to 1.2 phr are needed to make products permanently static resistant. In processing, elimination of static build-up serves to decrease downtime, reduce product loss and minimize danger of fire or explosion.

Description: Liquid anti-static agent is supplied as a 60-62% active solution in isopropanol. It is soluble in water, acetone, benzene, ethanol and hexylene glycol, insoluble in mineral oil. Price in tank

VI

APPENDIX VII

WATER QUALITY CRITERIA

SECOND EDITION
By
McKEE & WOLF
(1963)

Publication 3-A
(Reprint January, 1973)

CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

soluble compound which the author states is a constituent of some gas-manufacturing wastes.

AMMONIUM FLUORIDE NH_4F

This highly soluble compound is used in textile dyeing and printing, for preserving wood, for etching glass, and as a mothproofing agent (361). According to Simonin (3271) 200 mg/l will kill the fish, *Tinca vulgaris*, in less than 48 hours. For the related compound, ammonium fluosilicate, the lethal dose was found to be only 50 mg/l, and for ammonium bifluoride it was 150 mg/l.

AMMONIUM HYDROXIDE NH_4OH

(see Ammonia)

This substance is dealt with separately from ammonia and the ammonium salts only because some the references report data in terms of ammonium hydroxide. Whenever ammonia gas or ammonium salts are dissolved in water, or when ammonium ion is formed in the decomposition of organic matter, the undissociated compound NH_4OH results. The proportion of ammonium ion and undissociated base is a functions of pH, as explained under Ammonia and the toxicity of the resulting solution depends primarily on the concentration of NH_4OH, i.e., the undissociated compound is the toxic principle.

In as much as toxicity varies considerably with pH and hence is a function of the buffering action of the water used, it is difficult to compare the results of many investigators. Toxic concentrations of ammonium hydroxide toward fish have been reported as follows:

Concentration of NH_4OH in mg/l	Time of Exposure	Type of Fish	Remarks	Reference
4-5	--	goldfish	lethal	2920
6.25	24 hours	brook trout	lethal	313, 359
10	--	suckers, shiners, carp, trout	lethal	803
10	24 hours	creek chub	not lethal, 15-21°C	1442
13	24 hours	suckers, shiners, carp	lethal	313, 359
15	48-hour TL_m	bluegill sunfish	Philadelphia tap water, 20°C	2093
17.5	48-hour TL_m	fathead minnows		3335
18.5	48-hour TL_m	bluegill sunfish	Philadelphia tap water, reoxygenated, 20°C	2093
20	15 minutes	suckers, shiners, carp	lethal	313
30	24 hours	small fish	lethal	313, 359
30	24 hours	creek chub	lethal, 15-21°C	1442
30		perch	lethal	2920
37	96 hour TL_m	mosquito-fish	turbid water	2910

In contrast, it has been reported (359) that a concentration of 9.4 mg/l has not harmed suckers, shiners, and carp in 24 hours of exposure.

According to Anderson (358) the threshold concentration of ammonium hydroxide for the immobilization of *Daphnia magna* in Lake Erie water at 25°C was found to be less than 8.75 mg/l.

AMMONIUM MOLYBDATE $(NH_4)_6Mo_7O_{24}\cdot H_2O$

(see Ammonia, Molybdenum)

This highly soluble salt is used for decorating ceramics and in photography. Bringmann and Kuhn (2158) tested ammonium molybdate in River Havel water from which the test organisms had been recovered. They found no adverse response by *Daphnia* held for 48 hours at 23°C nor by *E. coli* incubated at 27°C even at 1000 mg/l of molybdenum. For *Scenedesmus* held for 4 days at 24°C, however, the median toxic threshold effect occurred at 54 mg/l of molybdenum.

AMMONIUM NITRATE NH_4NO_3

(see Ammonia)

This soluble colorless compound is used as a fertilizer, in pyrotechnics, for explosives and matches, and in chemical industries. Ellis (313) quotes references to the effect that a concentration of ammonium nitrate of 800 mg/l in tap water killed bluegills in 3.9 hours but in distilled water not until 16 days. Goldfish were killed in distilled water by 1,515 mg/l in 90 hours. This salt dissolves readily and dissociates into its ions but since the ammonium ion combines with the hydroxyl ion of the water, the pH is lowered markedly in unbuffered water. Since it is the undissociated NH_4OH that is the toxic principle, it is easy to understand why a solution in tap water is more toxic than in distilled water.

AMMONIUM PERSULFATE $(NH_4)_2S_2O_8$

(see also Ammonia)

Highly soluble in water, this compound is used in dyeing, electroplating, photography, and many other applications (364). Using water of the River Havel from which the test organisms were recovered, Bringmann and Kuhn (2158) found that the median threshold effect of this compound toward *Daphnia* held for 48 hours at 23°C occurred at 120 mg/l, measured as persulfate. Toward *Scenedesmus* during a 4-day exposure at 24°C, the median threshold effect occurred at 33 mg/l of S_2O_8, but toward *E. coli* at 27°C, there was no measurable effect at 1000 mg/l of persulfate.

AMMONIUM PICRATE $C_6H_2ONH_4(NO_2)_3$

(see Ammonia, Picric Acid, Explosives)

This substance is used in the manufacture of explosives and fireworks. Being freely soluble in water, it may occur in waters from munitions works. According to Ruchhoft and Norris (655) 0.5 mg/l of ammonium picrate in drinking water can be detected by taste and 1.0 mg/l is objectionable.

AMMONIUM SULFAMATE (AMMATE)

(see Chapter IX)

AMMONIUM SULFATE $(NH_4)_2SO_4$

(see Ammonia)

Used widely as a fertilizer and in many industrial processes, this crystalline salt dissolves readily in water with a resulting decrease in pH; hence its toxic effect upon fish is analogous to that of ammonium nitrate and ammonium chloride but less severe than that of ammonium carbonate which has a buffering action.

Ellis (313) quotes a reference to the effect that 66 mg/l in tap water killed bluegills in 3.5 hours, but in distilled water the same concentration required 17 days to kill the bluegills (Note: this is the pH effect on ammonium hydroxide concentration. See Ammonia). In his own experiment Ellis found that 264 mg/l in hard water killed goldfish in six days or less. According to Shelford (363) orange-spotted sunfish were killed in one hour by 420 to 500 mg/l.

[illegible]ere and Devlaminck (2944) report the minimum [illegible]al concentration in 6 hours toward minnows in hard [illegible]er at 18°C to be 400-500 mg/l; but in distilled water [illegible]6°C, the minnows did not succumb until the concen[illegible]tion reached 4000-5000 mg/l. Wallen et al. (2940) [illegible]nd the 96-hour TL_m for mosquito-fish (*Gambusia af[illegible]s*) in turbid water at 20-21°C to be 1290 mg/l. The [illegible]monium sulfate reduced the turbidity from 240 mg/l [illegible]ss than 25 mg/l.

[illegible]airchild (2946) studied the effects of varying oxygen [illegible]ion on the toxicity of ammonium sulfate toward [illegible]phnia exposed for 100 hours at a temperature of [illegible]°C. Results showed a toxicity threshold of 288 mg/l [illegible]n the dissolved oxygen was 6.6 mg/l; but the toxicity [illegible]d of the ammonium sulfate dropped to 116 mg/l when dissolved oxygen was only 1.52 mg/l. Threshold con[illegible]trations for other organisms were reported (2955) as [illegible]wn below:

Organism	*Concentration in mg/l for Threshold Immobilization*
Daphnia magna, young	106
Daphnia magna, adult	152
Diaptomus oregonensis	13

[illegible]MONIUM SULFIDE $(NH_4)_2S$

[illegible]e also Ammonia, Sulfides)

[illegible]ccording to Ellis (313), 100 mg/l of ammonium sul[illegible]in hard water killed goldfish in 72 hours, but with [illegible]10 mg/l the fish survived more than 100 hours of [illegible]. He reports that this substance may occur in [illegible]ical, beet-sugar, or gas-plant wastes. Wallen et al. [illegible]40) found the 96-hour TL_m toward the mosquito-fish [illegible]urbid water at 21°C to be 248 mg/l. The addition of [illegible]compound had very little effect upon the turbidity. [illegible]he solution of this colorless crystalline substance in [illegible]r results in a dissociation into ammonium ions and [illegible]de ions. The former react in part when the hydroxyl [illegible]to form NH_4OH while the latter react with hydro[illegible]ons to form HS^- and H_2S, depending on the pH of [illegible]olution. Thus, toxicity is controlled by the resulting [illegible]binations in the water, rather than by the added salt [illegible]f.

[illegible]MONIUM SULFITE $(NH_4)_2SO_3 \cdot H_2O$

[illegible]is highly soluble compound is used as a reducing [illegible]t in photographic work. Wallen et al. (2940) tested [illegible]xicity toward the mosquito-fish in highly turbid [illegible]r at 20-21°C. They found the 24-hour, 48-hour, and [illegible]our TL_m values to be 240 mg/l. The addition of this [illegible]ound lowered the turbidity from 220 to less than [illegible]g/l.

[illegible]MONIUM THIOCYANATE NH_4SCN

[illegible]e also Ammonia, Cyanides)

[illegible]s highly soluble substance is used in textile proc[illegible]pyrotechnics, and in chemical process industries [illegible]It may also occur in gas-plant wastes (313, 363). [illegible]ord to Shelford (363), orange-spotted sunfish [illegible]ill[illegible]in one hour by 280 to 300 mg/l, and Demya[illegible](431) reports that a concentration of 200 mg/l is [illegible]to fish. In highly turbid water at 16 to 23°C, Wal[illegible]al. (2940) found the 96-hour TL_m toward the mosquito-fish (*Gambusia affinis*) to be 114 mg/l, although the 24-hour TL_m was as high as 910 mg/l. The addition of this salt did not lower the turbidity. The lethal limit for 24 hours exposure has been reported (2977) at 1600 mg/l for goldfish and tench.

Larvae of chironomids are killed by 50 mg/l of this salt, but *Cricotopus sp.* and *Asellus aquaticus* withstand 100 mg/l without noticeable harm (2977). The concentration of NH_4SCN required to lower the BOD of sewage is in excess of 5000 mg/l (2923).

AMMUNITION PLANT WASTES

(see Explosives, Trinitrotoluene)

AMYGDALIN $C_{20}H_{27}NO_{11}$

(see also Hydrocyanic acid)

This substance, a cyanogetic glucoside, is widely distributed in nature, being found in bitter almonds, leaves of cherry laurel, peach, cherry, apricot, quince, plum kernels, other hard-nut fruits, cotoneaster, and many other plants. The enzyme *emulsin* hydrolyzes amygdalin to glucose, benzaldehyde, and hydrocyanic acid. According to Schaut (362), about 7 mg/l of amygdalin is toxic to young carp and minnows.

Chlorination of water containing amygdalin may produce a very toxic median when chlorine and the hydrolysis product HCN are brought together. Apparently chlorine does not destroy amygdalin or the enzyme, but it may retard enzymatic action.

AMYL ACETATE $CH_3COOC_5H_{11}$

Isoamyl acetate, a colorless neutral liquid with a pear-like odor, is soluble in 400 parts of water. It is used extensively in organic chemical industries, varnishes, lacquers, and dyeing (361). The threshold odor is reported at a concentration of only 0.0006 mg/l (1756).

Toxicity tests with creek chub, a fish considered to be average in tolerance, at 15-21°C in well-aerated water indicated that all four test fish lived for 24 hours at concentrations of 50 mg/l or less, and all died at concentrations exceeding 120 mg/l (1112). Using highly turbid water with mosquito-fish (*Gambusia affinis*) as the test organism, Wallen et al. (2940) found the 24-, 48-, and 96-hour TL_m values all to be 65 mg/l.

For *Daphnia* exposed for two days at 24°C, the median threshold of harmful effect occurred at 120 mg/l of amyl acetate; for *Scenedesmus* at 180 mg/l during 4 days exposure at 24°C; but for *Escherichia coli*, 1000 mg/l at 27°C had no apparent effect (2977).

AMYL ALCOHOL $C_5H_{11}OH$

Normal amyl alcohol is a liquid used in organic syntheses and as a solvent for resins, varnishes, lacquers, fats, and oils. It is slightly soluble in water and occurs in chemical wastes and some distilling wastes. The oral toxicity toward rats has been reported (3248) as 3.3 mg/kg of body weight.

The toxicity of n amyl alcohol toward fish has been reported as high as 1000 mg/l (2920) and as low as 1.0 mg/l (313). Ellis (313) found that concentrations of iso-amyl alcohol of 100 mg/l in hard water killed gold-

VII

APPENDIX VIII

buffalo
COLOR CORPORATION
one garret mountain plaza / west paterson, new jersey 07424
201-881-1700

June 2, 1981

United States Environmental
Protection Agency
Region 2
Sites Notification
New York, NY 10007

Dear Sir:

Pursuant to Section 103(c) of PL 96-510- "The Comprehensive Environmental Response, Compensation and Liability Act", we have attached three (3) "Notification of Hazardous Waste Sites" forms relating to our Buffalo, New York plant.

We have reviewed our files and have made inquiries of present and former employees and to the best of our knowledge these are a complete list of hazardous waste disposal sites at the Buffalo Color facility.

Please note that the sites involved are inactive disposal sites and have not been in use for some years. If there are any questions, please call me.

Very truly yours,

A. J. ten Braak
Vice President
Administration

AJT/chs

cc: D. Griffin
J. Gouck

VIII

Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Buffalo Color Corporation
Street: 340 Elk Street
City: Buffalo State: N.Y. Zip Code: 14210

Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site: Area D Iron Sludge Ponds
Street: 340 Elk Street
City: Buffalo County: Erie State: NY Zip Code: 14210

Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Gouck, James A. Mgr. Environmental Services & Safety
Phone: 716-827-4527

Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1920 To (Year): 1975

Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☒ Organics
2. ☒ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

Iron Oxide

Source of Waste: Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☒ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☐ Other (Specify)

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

NOT HAZARDOUS

VIII

Form Approved
OMB No. 2000-0139
EPA Form 8900-1

10027 - Pond

Notification of Hazardous Waste Site — Side Two

Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☒ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet: 300,000

gallons: _____

Total Facility Area

square feet: 15,000

acres: _____

Known, Suspected or Likely Releases to the Environment:

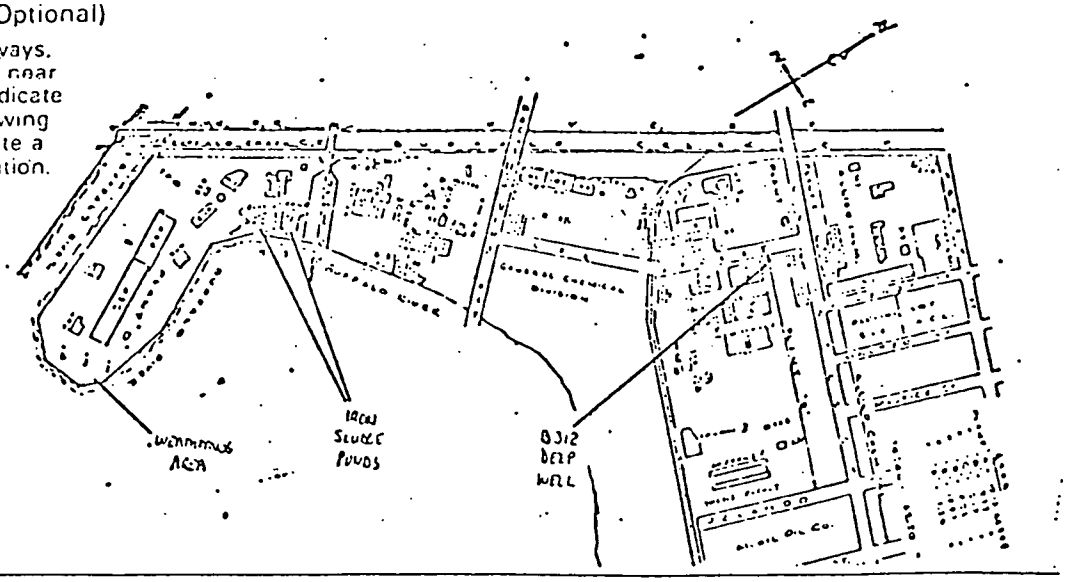
Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☒ Suspected ☐ Likely ☐ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.



Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

Iron Oxide sludge from aniline and H Acid manufacture was pumped to two ponds where it dewatered to the river. The sludge was loaded on trucks for transfer to facilities of other firms which purchased it for recovery of the iron. Operations ended in 1975 and the property was sold to Buffalo Color Corporation in 1977.

VIII

Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person

Name: Buffalo Color Corporation

Street: 340 Elk Street

City: Buffalo State: NY Zip Code: 14210

Signature: [signature] Date: 6/1/81

- ☒ Owner, Present
- ☐ Owner, Past
- ☐ Transporter
- ☐ Operator, Present
- ☐ Operator, Past
- ☐ Other

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Buffalo Color Corporation
Street: 340 Elk Street
City: Buffalo State: N.Y. Zip Code: 14210

Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site: Area D Weathering Station
Street: 340 Elk Street
City: Buffalo County: Erie State: N.Y. Zip Code: 14210

Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Gouck, James A. Mgr. Environmental Service & Safety
Phone: 716-827-4527

Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1920 To (Year): 1976

Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☒ Organics
2. ☒ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

Heavy Metal, Dystuffs

Source of Waste: Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☒ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☐ Other (Specify)

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

NOT HAZARDOUS VIII

Form Approved
OMB No. 2000-0138
EPA Form 8900-1

Notification of Hazardous Waste Site — Side Two

Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☒ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet: 337,500

gallons: _____

Total Facility Area

square feet: 22,500

acres: _____

Known, Suspected or Likely Releases to the Environment:

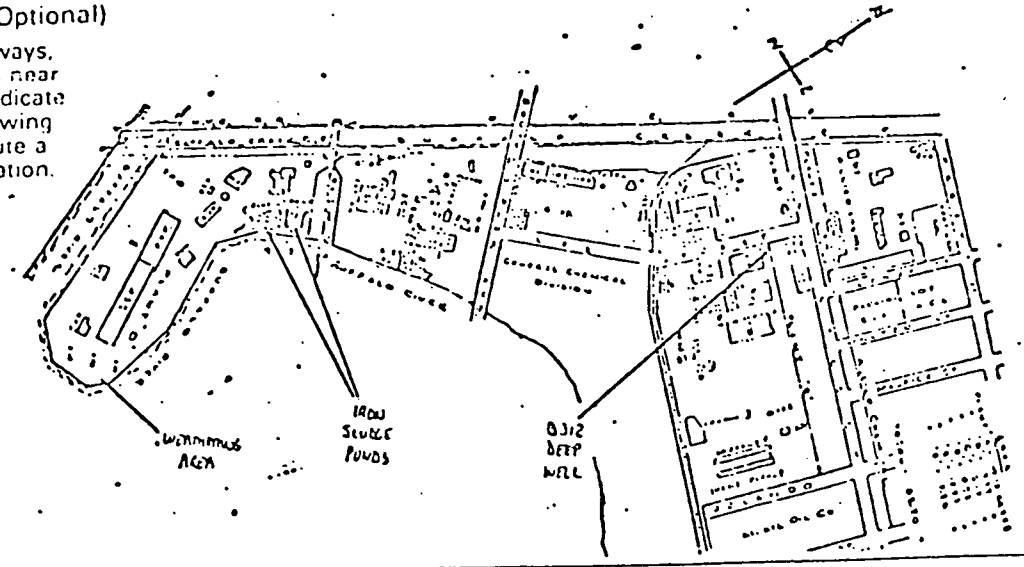
Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☒ Likely ☐ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.



Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

Heavy metals sludges from dyestuff manufacture were brought to the weathering area for storage until they could be loaded on trucks for transfer to the facilities of other firms which purchased the sludges for recovery of the metals. Operations ended in 1976 and property was sold to Buffalo Color Corporation in 1977.

VIII

Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the

Name: Buffalo Color Corporation

Street: 340 Elk Street

City: Buffalo State: NY Zip Code: 14210

Date: 6/1/81

☒ Owner, Present
☐ Owner, Past
☐ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

EPA Notification of Hazardous Waste Site

United States
Environmental Protection
Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Buffalo Color Corporation
Street: 340 Elk Street
City: Buffalo State: N.Y. Zip Code: 14210

Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site: Area E Deep Well
Street: 340 Elk Street
City: Buffalo County: Erie State: N.Y. Zip Code: 14210

Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Gouck, James A. Mgr. Environmental Services & Safety
Phone: 716-827-4527

Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): 1957 To (Year): 1963

[redacted]

Waste Type: Choose the option you prefer to complete

Option I: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☒ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
0. ☐ Unknown
1. ☐ Other (Specify)

Ammonium Sulfate
0,000 GPD 10,000 gpd
[redacted]olution

Source of Waste: Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☒ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☐ Unknown
18. ☐ Other (Specify)

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

NOT HAZARDOUS

VIII

Form Approved
OMB No. 2000-0138

Notification of Hazardous Waste Site — Side Two

Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☒ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet _____

gallons 21,900,000

Total Facility Area

square feet 1

acres _____

Known, Suspected or Likely Releases to the Environment:

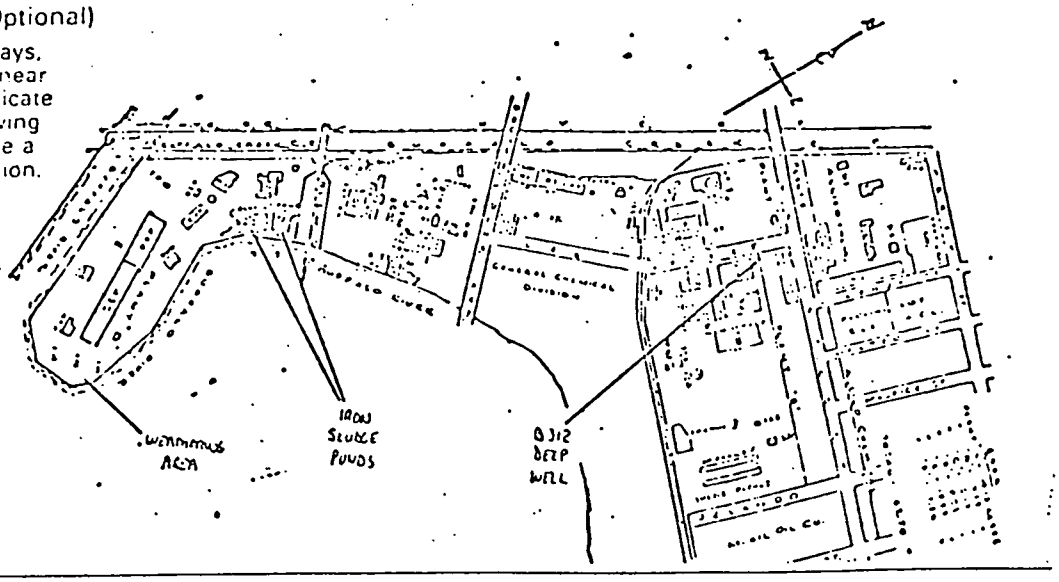
Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ Non

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessir hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.



Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

Ammonium sulfate waste solution from synthetic organic chemicals manufacture was treated with activated carbon, then pumped about 700 feet into the ground. The pipe collapsed and the practice was discontinued in 1963. The property was sold to Buffalo Color Corporation in 1977 and the well was capped and welded shut in 1980.

VIII

ature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required

Name Buffalo Color Corporation

Street 340 Elk Street

City Buffalo State NY Zip Code 14210

Signature _____ Date 6/1/81

☒ Owner, Present
☐ Owner, Past
☐ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

APPENDIX IX

New York State Department of Environmental Conservation
50 Delaware Avenue Buffalo, New York 14202

Robert F. Flacke
Peter A. A. Berle
Commissioner

October 29, 1979

Mr. James Gouck
Buffalo Color Corporation
P.O. Box 7077
Buffalo, New York 14240

Dear Mr. Gouck:

Deep Well and Plant "D" Weathering Sites

On October 3, 1979 Ron Koczaja from Erie County inspected the deep well and Plant "D" weathering sites.

This report stated the weathering area is covered by gravel but the soil beneath it is heavily stained. Erosion was also noted along the bank, with staining, from the run-off to the Buffalo River adjacent to this site.

This office has the two following requests. The first is that the deep well be sealed (concrete plug or welded cap) to prevent future use. And secondly, that it be demonstrated that the weathering site soil causes no problems, or submit a plan for clean-up and disposal of contaminated soil.

If you have any questions, please contact me at 716/842-5041.

Very truly yours,

John L Beecher

John L. Beecher, P.E.
Associate Chemical Engineer

PD:egb
cc: Mr. Voell - ECDEP
Mr. Counterman

IX

APPENDIX IX

BUFFALO
COLOR CORPORATION
p o box 7027 / buffalo, new york 14240
716 827 3700

January 17, 1980

Mr. John L. Beecher, P.E.
Associate Chemical Engineer
New York State Department
of Environmental Conservation
584 Delaware Avenue
Buffalo, New York 14202

RE: Deep Well
Plant D Weathering Site
Buffalo Color Corp.

Dear Sir:

During the last quarter of 1979, Mr. R. Koczaja, Erie County DEP, inspected subject areas at our facility. Subsequently, you issued a request that we take steps to demonstrate that the weathering site did not present a problem.

The deep well, has been sealed with a welded cap. The product mix made at the plant and that being considered have no wastes that would be amenable to this type of disposal and there are no plans for any such operation at the site.

In August, 1979, three monitoring wells at the Plant D weathering site were installed. These wells would allow sampling of the permanent water table for laboratory analysis. Since installation of the wells, two samples from each well has been analyzed for seventeen metals. The data, copy attached, indicate that the levels found are well below standards as found in "Quality Criteria for Water", U.S. Environmental Protection Agency, July 1976. It is our judgement that the weathering area poses no environmental impact on surrounding waters and nothing further is proposed.

If there are any questions, please call me.

Very truly yours,

BUFFALO COLOR CORPORATION

J. A. Couck
Manager-Environmental Services

IX

JAG/r

cc: C. W. Kitto, L. J. Franckowiak

Dear. Please make sure that Albany has a copy of this report - if not, copy & send back to Mark

buffalo
COLOR CORPORATION
one garret mountain plaza / west paterson, new jersey 07424
201-881-1700

May 5, 1982

Ms. Barbara Guibord, Esq.
Assistant Counsel
New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, NY 14202

Dear Ms. Guibord:

Pursuant to the agreement between the Department of Environmental Conservation and Buffalo Color Corporation signed April 13, 1982, we are herewith submitting a report of our findings regarding the Deep Well called "The Deep Well Report" dated May 4, 1982. This report addresses itself to all the questions raised in Article 10, as well as your request of October 29, 1979 that the Deep Well be sealed.

We trust you will concur with our findings that the Deep Well does not contain hazardous materials, does not pose a threat to health or environment, and therefore, reclassification of this inactive site is respectfully requested.

Very truly yours,

Anthony J. ten Braak
Vice President

AJT/chs

cc: Mr. J. Greenthal, Bureau Hazardous Control
Mr. J. Gouck, BCC
Mr. D. Griffin, Battle-Fowler

IX

APPENDIX X

August 14, 1957

Commissioner of Health
County of Erie
601 City Hall
Buffalo 2, New York

Dear Sir:

Please refer to our letter of June 10, 1957 which transmitted our application for a permit to discharge waste ammonium sulfate solution into a test well on our property. Mr. Charles C. Spencer's letter of June 13, 1957 gave us permission to conduct this test.

To date the test has been succesful in that the well will accept 10,000 gallons per day with no build up of pressure at the head of the well. Since beginning operations on July 9, 1957, we have discharged 78,500 gallons of this waste into the well. Pressure at the head of the well has been constant at 15 pounds per square inch gauge.

We are continuing the test to further determine the desirability of this method of disposal, but we feel that the data to date justifies the drilling of a new well closer to the area where this waste is produced. Therefore, we are enclosing in this letter two completed copies of Form San. No. 6 and two sketches showing the proposed well in cross section and the location of the well on our property.

The new well will be about 160 feet deep to enable us to get into the same stratum that is being used at present. The attached sketch shows the proposed construction of the well. Based on test borings that have been made near the area of the well, the following information is given:

4 ft. of fill
4 ft. of medium yellow clay
31 ft. of soft blue clay
1 ft. of medium to coarse sand and gravel
Limestone starts at 40 feet.

(In the area near the site of the proposed well we have drilled 10 feet into the limestone. The test well now in use was originally drilled to a depth of 250 feet and was still in limestone at the bottom).

We propose to case the new well with eight inch pipe to rock and then case with six inch pipe from ground level to a depth of ninety feet.

The relationship of the well to Lake Erie and the Buffalo River is best demonstrated by giving all elevations in relation to mean tide at New York City.

Ground level at site of well	- 585.0 feet
Low water datum at Buffalo	- 570.5 feet
Bottom of Buffalo River	- 549.5 feet
Bottom of 8 in. casing	- 545.0 feet
Bottom of 6 inch casing	- 495.0 feet
Bottom of Lake Erie - average elevation	- 480.5 feet
Bottom of well - estimated	- 425.0 feet

Your consideration and helpfulness in this matter are greatly appreciated.

Very truly yours,

NATIONAL ANILINE DIVISION
Allied Chemical & Dye Corporation

J. F. Daly
Plant Manager

per ORIGINAL SIGNED
A. A. KRIVIAN

A. A. Krivian

CJC:lh

Enclosures (4)

3 Location of mill or factory 1051 South Park Avenue adjacent to the Buffalo River
(Describe with respect to streams, prominent highways and railroads, stating approximate distances)

4 Number of employees 2,000 - 3,000

5 Character and amount of wastes average of 10,000 gallons per day of a 40% ammonium sulfate solution
(State amount and character of chemicals used per day or month in manufacturing processes. Also state the relative proportion of the total amount of each chemical used in the manufacturing process that is discharged into the stream. State also, if possible, the quantity of water used per day or month in processes, and discharged into streams)

6 Is any sewage from shower baths, sinks or water-closets discharged with factory wastes No
If so, state number of persons contributing such sewage)

7 Is any portion of trade wastes or sewage treated? Not in this case, see various reports to the State Health Department.
(If so, state proportion and describe the process used)

8 Location of outlet or outlets See various reports to the State Health Department.
(Describe and give sketch stating relative volume of total wastes that are discharged through each outlet)

9 Estimated cost of the work: Waste pipes $ ..... Disposal works $ 2500

10 Remarks It is desired to discharge ammonium sulfate liquors into an underground stratum to avoid stream pollution. This method of disposal is under investigation in another location of our plant as permitted by Mr. Spencer's letter of June 13, 1957.

Name and address of designing engineer No design involved.

Engineer's license number .....

Signatures and official titles: James F Daly
Plant Manager
National Aniline Division
Allied Chemical & Dye Corporation
P.O. Box 975 (Mailing address) Buffalo 5, N.Y.

This application must be signed by the owner or executive officer of the company. The signature of the designing engineer or other agent will be accepted if accompanied by a letter of authorization.

Note. All plans must be submitted in triplicate,* the set intended for filing with the State to be on cloth. On request of the applicant, preliminary plans on paper will, however, be informally examined prior to the submission of the final plans in triplicate. One copy of such preliminary plans must be left in this office.

The plans must be accompanied by one application, properly filled out; one set of specifications and a report of the designing engineer indicating the basis of design and describing the proposed installation and method of operation; and must comply in all respects with the Rules and Regulations for the Preparation and Submission of Plans for Systems of Sewerage and Sewage and Waste Disposal.

Please review carefully the appropriate division of the above mentioned rules and regulations.

* The plans should be in quadruplicate for installations on lakes or streams used as a source of public water supply such as Canisteo, Onaseo and Canandaigua lakes.

APPENDIX XI

NEW YORK STATE DEPARTMENT OF HEALTH

WATER POLLUTION CONTROL BOARD

HERMAN E. HILLEBOE, M.D., *Chairman*
Commissioner of Health
Albany 1, N. Y.

RECEIVED
AUG 20 1957
N. Y. STATE DEPT. OF HEA
BUFFALO REGIONAL OFFI

APPLICATION for the approval of plans and for a permit to discharge refuse or waste matter from an industrial establishment into the waters of the State.

Application must be made upon this form. Failure to do so, or to completely fill in all blank spaces and furnish all information required will necessarily delay the examination and approval of the plans.

August 14, 19 57

To the Water Pollution Control Board - Via Erie County Commissioner of Health
ALBANY, N. Y.

Gentlemen:

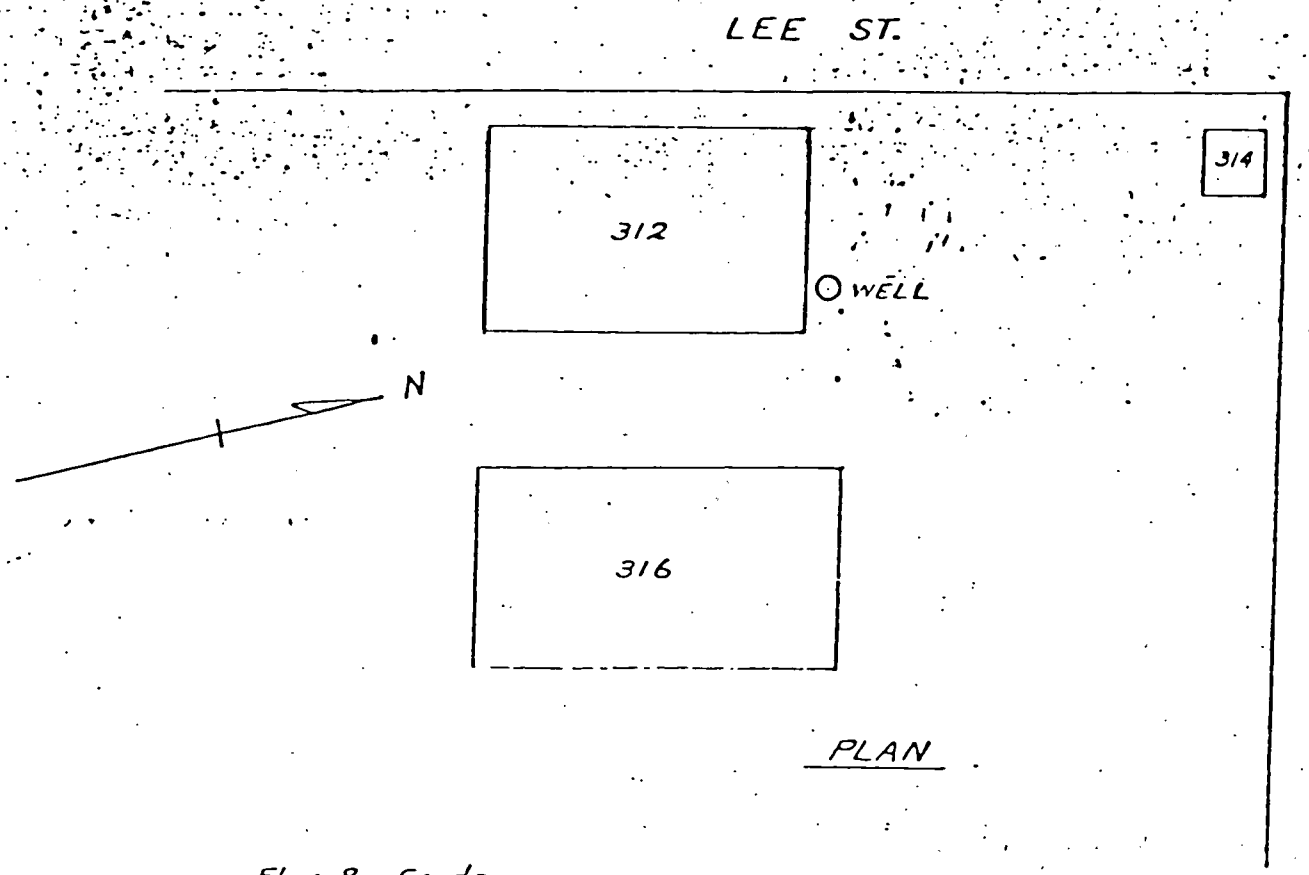
12

Under the provisions of Article 7 of the Public Health Law, application is hereby made by National Aniline Division, Allied Chemical & Dye Corporation
(Name of proprietor or member of firm, president or secretary of corporation owning or operating the shop, factory, mill or industrial establishment)
on behalf of the Buffalo Plant
(Name of establishment) to the Water Polution Control Board for a permit to discharge refuse or waste matter, in accordance with the accompanying plans, from said Buffalo Plant
(Shop, factory, etc.) to the ////// underground stratum
(Name of stream, watercourse or body of water)
at approximately 160 feet below ground level at 1051 South Park
(State location of point of discharge and the city, village or town in which point of discharge is located)
Avenue, Buffalo, New York

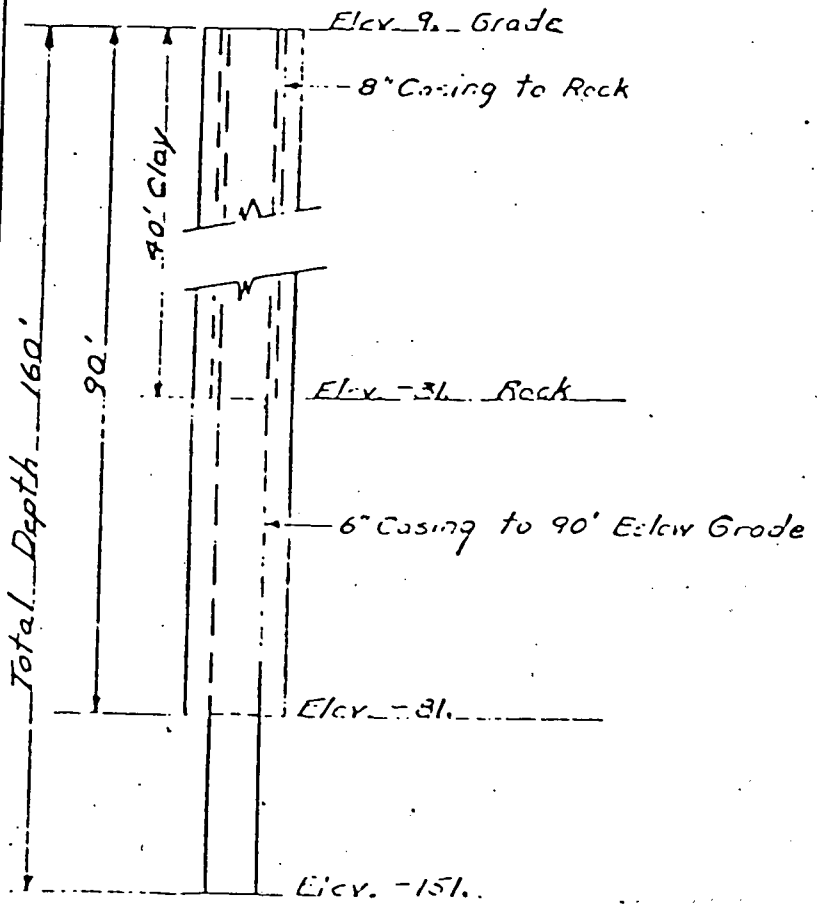
1 The Buffalo Plant
(Name of establishment) is situated on 1051 South Park Avenue
////// in the City / Village } of Buffalo Town of , County
of Erie

2 The Buffalo Plant
(Shop, factory, etc.) is used for, or is at
present and has been since //1878 used for the manufacture
(Manufacture, production or preparation) of organic chemicals and
dyestuffs employing or using the unit processes and unit
(Give general statement of method, process, or system used for each line of manufacture carried on) operations commonly used in the chemical industry

(OVER)



PLAN



CROSS SECTION OF WELL
NO SCALE

NOTE: — ALL ELEVATIONS ARE REFERRED TO CITY OF BUFFALO DATUM 0.00' WHICH IS 576.01' ABOVE MEAN LOW WATER AT N.Y.C.

NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION
BUFFALO, N.Y.
PROPOSED WELL - PLANT E
SCALE - 1" - 100' 5-5-57

AUG 6 1957

APPENDIX XII

COUNTY OF ERIE

HEALTH DEPARTMENT

August 19, 1957

National Anilins Division
Allied Chemical & Dye Corporation
P. O. Box 975
Buffalo 5, New York

Attn: Mr. A. A. Krivian

Gentlemen:

This will acknowledge receipt of your letter of August 14th, together with application and a sketch covering discharge of about 10,000 g.p.d. of ammonium sulphate solution into a well on your property.

In view of the fact that there are no known sources of potable water being taken from the underground strata in this neighborhood and since disposal wells of this type have been used by other companies in the area, we feel justified approving this application.

A copy of the application and the sketch together with your letter are being sent to the State Health Department for their information.

Very truly yours,

Charles C. Spencer, P. E. Director
Division of Environmental Sanitation

CCS:vp

cc: Regional Office

REPORT

TO THE

NATIONAL ANILINE DIVISION

ALLIED CHEMICAL & DYE CORP.

BUFFALO, NEW YORK

ON THE

FOUNDATIONS OF PROPOSED STRUCTURES

Moran, Proctor, Freeman & Mueser
Consulting Engineers
420 Lexington Avenue
New York, 17, New York

February 1, 1946

1. A surface layer of artificial fill approximately 9'-0" in thickness. (Ground surface elev. + 9.0 ±)

2. A bed of silty fine sand 8'-0" in thickness.

3. An alluvial deposit of sand and gravel 5'-0" in thickness.

4. A stratum of soft to very soft dark gray silty clay of sedimentary origin and varved in structure, approximately 19'-0" in thickness. Interbedded in the gray silty clay are thin layers of silty fine sand. This stratum is predominately soft clay and is highly compressible in character.

5. A 19'-6" bed of soft red silty clay, also of sedimentary origin and varved in structure. Interbedded in this stratum are thin layers of silty fine sand. The silty clay fraction again predominates and is highly compressible.

6. A 2'-6" bed of clayey sand and gravel overlying bedrock.

The boring is in reasonable agreement with those made under our supervision in the same area early in 1942, and discussed in our report of March 1942. The extent in depth, however, of the surface fill is not as clearly defined in boring #4. Based on our review of other borings in the area an average depth of ten feet appears likely. No undisturbed samples of the dark gray silty clay were obtained, so that no estimate of probable consolidation under load could be made.

XIII. FOUNDATIONS FOR PROPOSED STRUCTURES

(a) Dryer Building - This building is to be located in approximately the center of the peninsula area. The shaded area shown on attached Plate #7 indicates the location of the high multiple story portion of the proposed structure which is to house the initial four dryer unit installation. This sketch was prepared for the purpose of showing the relative position of this structure, Test Pile #1 and existing buildings Nos. 412, 413 & 432, as well as to indicate the limit of discernible vibration noted during the driving of Test Pile #1. The outer walls of the adjacent one story section of the building are to be supported on continuous spread footings. Column loads given to us for the

1. An artificial surface fill of ashes, cinders, mud, wood, brick, clay, etc. running from a minimum thickness of 4'-3" at boring #2 to a maximum of about 4'-9" at boring #1 (Average Ground Elev. = +8.4).

2. Immediately below the artificial fill is a relatively stiff stratum of light grayish brown silty clay, of sedimentary origin and varved in structure. Interbedded in the silty clay are thin layers of silt and fine sand ranging from 1/16" to 1/2" in thickness and irregularly spaced. This stratum varies in thickness between a minimum of 3'-0" at boring #1 to a maximum of 4'-6" at boring #3. Its stiffness may have resulted from drying stresses as its surface is above ground water and as in all probability it was originally the upper stratum of a sedimentary deposit.

3. Below the stiff brown silty clay is found a stratum of soft relatively uniform dark reddish gray to light gray silty clay, also of sedimentary origin and varved in structure. It will be noted that this stratum varies in thickness between a minimum of 28'-0" at boring #3 to a maximum of 36'-2" at boring #2. Interbedded in the silty clay are layers of silty fine sand 1/8" to 1/2" in thickness. This varved formation, however, is predominately soft clay and is definitely highly compressible in character. It is not suitable for the support of spread footings. Upon the application of load, either directly or through the medium of the overlying strata, settlements will occur. It does, however, have adequate strength for the lateral support of piles.

4. Under the varved silty clay and overlying what is believed to be bedrock the borings encountered a stratum of clayey sand and gravel. This stratum has a thickness of from 2-1/2 to 3 feet.

5. The boring logs indicate refusal on rock or boulders at depths of 42'-6", 47'-0" and 39'-0" for boring Nos. 1, 2, and 3 respectively.

At Plant Site D - Boring #4 was made for the purpose of disclosing the nature of the sub-soil under load test #3 which is located in the vicinity of the Dryer Building. The soil formations at this location may be briefly summarized as follows:-

the strata, in which undisturbed samples should be taken. Similarly, no provision was made in the specifications for verifying the existence of rock by coring in area E.

XI. CLASSIFICATION OF SOIL SAMPLES

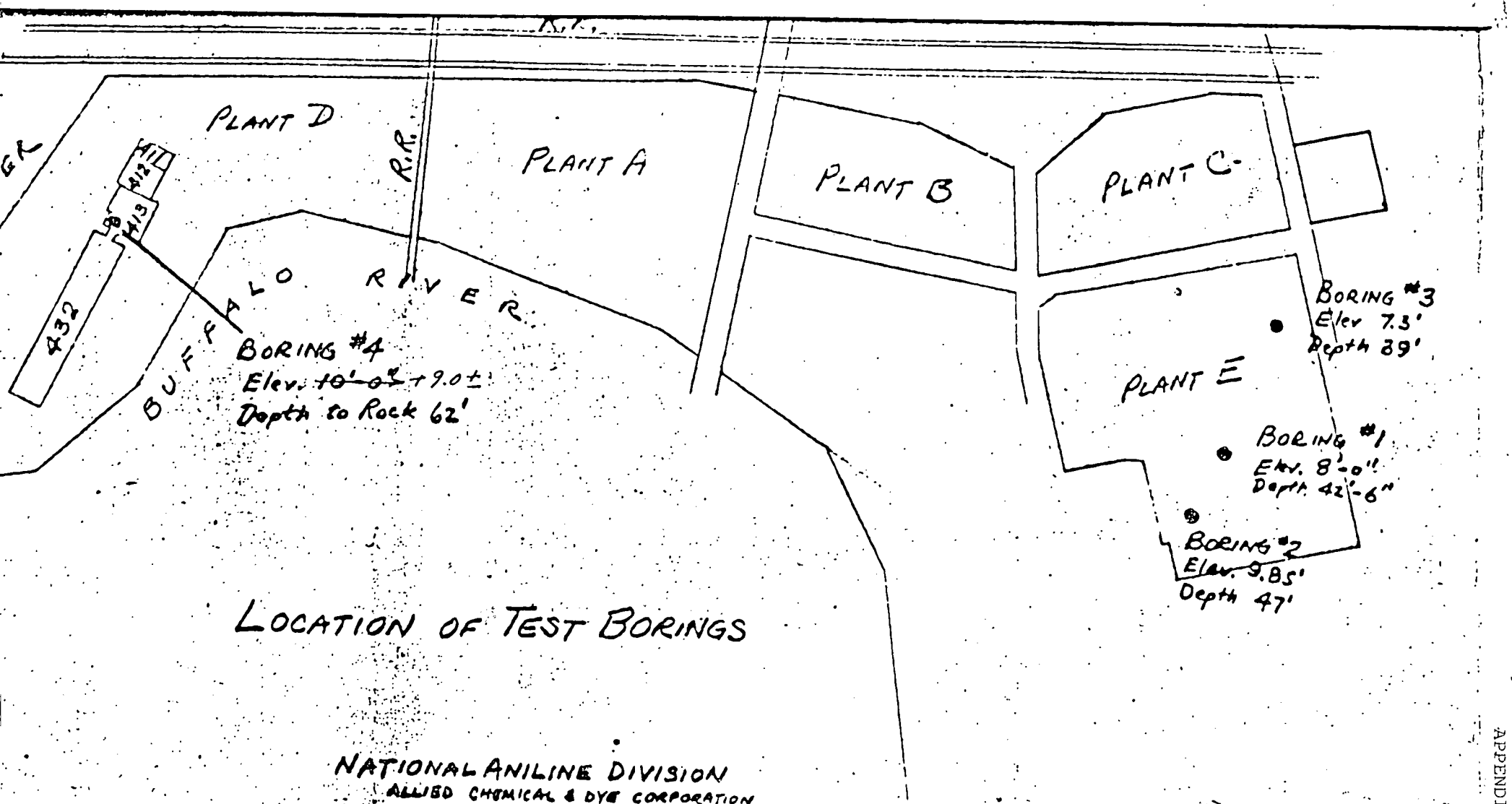
All of the dry samples and nine undisturbed samples obtained from the borings above discussed were carefully examined and classified in our laboratory. A classification data sheet for each boring was prepared and is attached to this report in Appendix A.

From each of the nine undisturbed samples a thin longitudinal section was cut and allowed to slowly dry under natural atmospheric conditions to determine any stratification or variation in homogeneity as well as any disturbance resulting from the sampling operations. A period of from one to two days was required in the drying out process before the constituent strata exhibited a maximum contrast. The leaner strata appear light and the fat strata dark. A series of six photographs were taken of these thin sections and are shown on Plate 6. The remaining three so-called undisturbed samples from Boring #4 were either silt, sand or sand and gravel, and showed excessive disturbance so were not photographed. These photographs are particularly valuable in classifying the samples as well as in studying the reliability and degree of application of the individual detail laboratory tests. They clearly show the varved nature of the deposits encountered and indicate that appreciable disturbance resulted from the sampling operations.

The samples from the lower bed of varved clay, as disclosed by the photographs of the deeper samples from each of the three Plant E area borings, are similar to those obtained in our 1942 studies in the peninsula area and indicate the continuity of this sedementary deposit throughout the entire plant site.

XII. SOIL FORMATIONS

At Plant Site E - In view of the size of Plant E site (approximately 12.5 acres) it is evident that the data obtained from the logs of three borings and an examination of the soil samples obtained therefrom, give but a very general knowledge of the overall area and that we must rely on interpolation for a knowledge of the soil between borings. The soil formations underlying Plant E insofar as may be disclosed by Boring Nos. 1, 2, and 3 are as follows:-



LOCATION OF TEST BORINGS

NATIONAL ANILINE DIVISION
ALLIED CHEMICAL & DYE CORPORATION

SCALE 1" ≡ 400'
DRN - JOG - 12-6-45

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BUFFALO, N. Y.

File No. 876

APPENDIX A-1

CLASSIFICATION DATA
BORING NO. 1

AMPLE NO.	DEPTH	DESCRIPTION	NOTES
ndisturbed	6'0" to 7'6"	Stiff light grayish brown clay with an occasional thin layer of silty fine sand (Varved). Lenses 1/16" to 1/2" thick.	*Distorted lenses and shear cracks indicate serious disturbance.
2	10'0"	Soft plastic dark gray silty clay with an occasional thin layer of silty fine sand (Varved).	
3	15'0"	Same as Sample No.2	
disturbed	20'0" to 21'6"	Soft plastic dark gray silty clay with thin layers of silty fine sand (1/8" to 1/2" thick) Varved.	*Very badly distorted lenses. Appreciable amount of free water surrounding sample when received.
4	25'0"	Very soft plastic reddish gray silty clay with thin layers of gray silt.	Dry sample too badly remolded to see varved structure.
5	30'0"	Same as Sample No.4	
6	35'0"	Same as Sample No.4	
7	40'0"	Very soft reddish gray silty clay with occasional thin layers of gray silt and gray clay. Varved structure.	Varved structure clearly defined.

TE:
a) Samples listed as "Undisturbed" were obtained with a liner tube type Moran & Proctor open sampler and were retained in 3" O.D. brass tubing, 16" in length.
b) All other samples are dry samples obtained with a 2" O.D. standard Cow sampler and retained in glass jars.
c) All samples were examined and classified in the laboratory of Moran, Proctor, Freeman & Mueser.
d) Photographs were made of thin sections from the samples so

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APPENDIX A-2

CLASSIFICATION DATA
BORING NO. 2

SAMPLE NO.	DEPTH	DESCRIPTION	NOTES
Undisturbed	6'0" to 7'6"	Stiff light grayish brown clay with occasional thin layers of silty fine sand (Varved). Lenses 1/16 to 1/2" in thickness.	*Distorted lenses and shear cracks indicate some disturbance.
2	10'0"	Soft dark gray silty clay with thin layers of silty fine sand (Varved).	
3	15'0"	Same as Sample No.2	
Undisturbed	20'0" to 21'6"	Medium to soft dark gray and reddish gray silty clay (varved) with numerous thin layers of silty fine sand.	*Distorted lenses and shear cracks indicate some disturbance.
5	25'0"	Soft plastic dark reddish gray silty clay with occasional thin layers of gray silt (Varved).	
6	30'0"	Very soft reddish gray silty clay with thin layers of sandy silt (Varved).	
7	35'0"	Same as Sample No. 6	
8	40'0"	Same as Sample No. 6	

NOTES:-

a) Samples listed as "Undisturbed" were obtained with a liner tube type Moran & Proctor open sampler and were retained in 3" O.D. brass tubing, 16" in length.

b) All other samples are dry samples obtained with a 2" O.D. standard Cow sampler and retained in glass jars.

c) All samples were examined and classified in the laboratory of Moran, Proctor, Freeman & Mueser.

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APPENDIX A-3

CLASSIFICATION DATA
BORING NO. 3

SAMPLE NO.	DEPTH	DESCRIPTION	NOTES
1	6'0"	Stiff light grayish brown clay with thin layers of silty fine sand (Varved).	Sample partially dried out.
Undisturbed	6'0" to 7'6"	Stiff light grayish brown clay with thin layers of silty fine sand (Varved).	*Some distortion.
2	10'0"	Soft gray silty clay with thin layers of gray silt (Varved).	Remolded so badly varved structure only slightly evident.
3	15'0"	Soft plastic dark gray silty clay with thin layers of fine sandy silt (Varved).	
4	20'0"	Soft reddish gray silty clay with thin layers of sandy silt softer than Samples Nos. 2 & 3.	
Undisturbed	20'0" to 21'6"	Soft reddish gray silty clay with thin layers of sandy silt and gray clay.	*Very badly disturbed varved nature almost completely unidentifiable. Excess water present.
5	25'0"	Very soft reddish gray silty clay with thin layers of sandy silt (Varved).	Loses strength when remolded and becomes very sticky.
6	30'0"	Same as Sample No.5	

NOTES:
a) Samples listed as "Undisturbed" were obtained with a liner tube type Moran & Proctor open sampler and were retained in 3" O.D. brass tubing, 16" in length.
b) All other samples are dry samples obtained with a 2" O.D. standard Cow sampler and retained in glass jars.

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APPENDIX A-4

CLASSIFICATION DATA
BORING NO. 4

SAMPLE NO.	DEPTH	DESCRIPTION	NOTES
1	5'0"	Silty fine sand.	
Undisturbed	6'0" to 7'6"	Dark brown silt with a trace of fine sand.	Degree of disturbance not visually ascertainable because of uniform color
Undisturbed	12'0" to 13'6"	Silty fine sand with few thin layers of silty clay. Largely sand.	Evidence of disturbance indicated by distorted silty clay lenses.
2	15'0"	Silty fine sand.	
Undisturbed	18'0" to 19'6"	Medium to coarse sand and fine gravel.	Because of nature of soil, disturbance is unavoidable.
3	25'0"	Soft gray silty clay.	Probably varved but too badly disturbed to show.
4	30'0"	Very soft dark gray silty clay with thin layers of silty fine sand (varved).	
5	35'0"	Same as Sample No.4	
6	40'0"	Very soft reddish gray silty clay with thin layers of gray silt and silty fine sand (Varved).	Badly remolded.
7	45'0"	Soft red silty clay with thin layers of gray silt and silty fine sand (Varved).	
8	50'0"	Same as Sample No.7	
9	55'0"	Same as Sample No.7	