

Detroit
Edison

Douglas R. Gipson
Senior Vice President
Nuclear Generation

Fermi 2
6400 North Dixie Highway
Newport, Michigan 48166
(313) 586-6249

April 20, 1994
NRC-94-0022

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

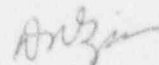
Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Submittal of Fermi 2 NPDES Permit

In accordance with Section 3.2 of the Fermi 2 Environmental Protection Plan, please find enclosed a copy of Detroit Edison's application for renewal of NPDES Permit No. M10037028 for Fermi 2.

If you should have any questions regarding this report, please contact Kathleen M. Shields, Environmental Engineer at (313) 586-5577.

Sincerely,



Enclosure

cc: T. G. Colburn
J. B. Martin
M. P. Phillips
K. R. Riemer
Region III

9404290263 940420
PDR ADOCK 05000341
P PDR

COO1

SECTION I

EPA I.D. NUMBER

PERMIT NUMBER

MI 0 0 3 7 0 2 8

APPLICATION FOR DISCHARGE PERMIT IS:

MODIFICATION EXISTING NEW INCREASED USE REISSUANCE

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 1

PHYSICAL LOCATION ADDRESS AND INFORMATION

A. PARENT COMPANY/DEPT./OWNER THE DETROIT EDISON COMPANY

B. DIV./BUREAU NUCLEAR GENERATION

C. PLANT OR FACILITY FERMIL 2 PP

D. TYPE OF FACILITY NUCLEAR POWER PL 4911

E. STANDARD INDUSTRIAL CLASSIFICATION (REFER TO TABLE III)

F. STREET NUMBER 6400

G. STREET NAME DIXIE HWY

H. CITY NAME NEWPORT

I. ZIP CODE MI 48166

J. TOWNSHIP FRENCHTOWN

K. COUNTY (REFER TO TABLE I) MONROE

L. NAME OF AUTHORIZED CONTACT PERSON ARTHUR HEIDRICH JR

M. TITLE ADMIN. WATER

N. TELEPHONE NUMBER 313 237 7021

O. ADDRESS (IF DIFFERENT FROM ABOVE) 2000 SECOND 485 WCB

P. CITY NAME DETROIT

Q. STATE MI

R. ZIP CODE 48226

S. TYPE OF TREATMENT FACILITY (REFER TO TABLE I) 4A 1V 1Z 2E 2K

T. PROGRAM FOR EFFECTIVE RESIDUALS MANAGEMENT

U. BACK-UP POWER SOURCE YES NO N.A.

V. POLLUTION INCIDENT PREVENTION PLAN

W. NUMBER OF EMPLOYEES 1000

X. TYPE OF DISCHARGE GROUNDWATER SURFACE WATER

Y. DO YOU HAVE A CERTIFIED OPERATOR? YES NO

OPERATOR'S NAME SEE ATTACHED S.S.#

FACILITY # 58107915 CERTIFICATION # LM

ITEM 2

MAILING ADDRESS OF APPLICANT

A. NAME FRANK E. AGOSTI

B. NAME THE DETROIT EDISON COMPANY

C. STREET ADDRESS OR POST OFFICE BOX 2000 SECOND AVE 2427 WCB

D. CITY NAME DETROIT

E. STATE MI

F. ZIP CODE 48226

REQUIRED SIGNATURE

I, the applicant, certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

SIGNATURE OF APPLICANT

SIGNATURE: *Frank E. Agosti* DATE: 3-31-74
 NAME: Frank E. Agosti Sr. Vice Pres. Power Supply

SIGNATURE OF LOCAL GOVERNMENTAL REPRESENTATIVE (SEE NOTE ON REVERSE SIDE)

SIGNATURE: _____ DATE: _____
 NAME: _____ TITLE: _____

FERMI 2 ENERGY CENTER

SECTION 1 (Y)

CERTIFIED OPERATOR

LICENSED WASTE WATER TREATMENT OPERATORS

<u>NAME</u>	<u>CERTIFICATION</u>	<u>S.S. #</u>
John M. Yokom	W2727	373-72-1276
Daryll J. Grimes	W2718	364-72-1129
Kathleen M. Shields	W3557	363-62-3634

SECTION 1

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 3

SOURCE OF WATER SUPPLY

A. MUNICIPAL	NAME	NONE	
	QUANTITY (MAX.)		GALLONS/DAY
B. SURFACE WATER INTAKE	NAME OF WATERWAY	LAKE ERIE	
	QUANTITY (MAX.)	7,000,000	GALLONS/DAY
C. PRIVATE WELL	NAME	NONE	
	QUANTITY (MAX.)		GALLONS/DAY
D. OTHER	SPECIFY		
	QUANTITY (MAX.)		GALLONS/DAY

ITEM 4

FACILITY WATER USAGE

A. PROCESS WATER (INCLUDING CONTACT COOLING WATER)	QUANTITY (MAX.)	1,033,680	GALLONS/DAY
B. NONCONTACT COOLING WATER	QUANTITY (MAX.)	5,863,800	GALLONS/DAY
C. SANITARY WATER	QUANTITY (MAX.)	6,000	GALLONS/DAY
D. OTHER	SPECIFY		
	QUANTITY (MAX.)		GALLONS/DAY

ITEM 5

CRITICAL MATERIALS & PRIORITY POLLUTANTS USED • STORED • PRODUCED

REFER TO TABLES IV & V

UNITS CODE
1 POUNDS
2 GALLONS
3 CUBIC YARDS
4 TONS

MATERIAL 1	NAME OF SUBSTANCE	Sodium Hypochlorite 16%
	PARAMETER NUMBER	CLASS 014
	QUANTITY	21,900 UNITS / YEAR
MATERIAL 2	NAME OF SUBSTANCE	Chromium Compounds
	PARAMETER NUMBER	CLASS 015
	QUANTITY	2 UNITS / YEAR
MATERIAL 3	NAME OF SUBSTANCE	Cadmium Compounds
	PARAMETER NUMBER	CLASS 013
	QUANTITY	0.3 UNITS / YEAR
MATERIAL 4	NAME OF SUBSTANCE	Cobalt Compounds
	PARAMETER NUMBER	CLASS 016
	QUANTITY	0.3 UNITS / YEAR
MATERIAL 5	NAME OF SUBSTANCE	Copper Compounds
	PARAMETER NUMBER	CLASS 017
	QUANTITY	2 UNITS / YEAR
MATERIAL 6	NAME OF SUBSTANCE	Mercury Compounds
	PARAMETER NUMBER	CLASS 021
	QUANTITY	40 UNITS / YEAR
MATERIAL 7	NAME OF SUBSTANCE	Nickel Compounds
	PARAMETER NUMBER	CLASS 022
	QUANTITY	1 UNITS / YEAR

SECTION 1

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 3

SOURCE OF WATER SUPPLY

MUNICIPAL	NAME	LAKE ERIE	
	QUANTITY (MAX.)		GALLONS/DAY
B. SURFACE WATER INTAKE	NAME OF WATERWAY	LAKE ERIE	
	QUANTITY (MAX.)		GALLONS/DAY
C. PRIVATE WELL	QUANTITY (MAX.)		GALLONS/DAY
D. OTHER	SPECIFY		GALLONS/DAY
	QUANTITY (MAX.)		GALLONS/DAY

ITEM 4

FACILITY WATER USAGE

A. PROCESS WATER (INCLUDING CONTACT COOLING WATER)	QUANTITY (MAX.)		GALLONS/DAY
B. NONCONTACT COOLING WATER	QUANTITY (MAX.)		GALLONS/DAY
C. SANITARY WATER	QUANTITY (MAX.)		GALLONS/DAY
D. OTHER	SPECIFY		GALLONS/DAY
	QUANTITY (MAX.)		GALLONS/DAY

ITEM 5

CRITICAL MATERIALS & PRIORITY POLLUTANTS USED STORED PRODUCED

REFER TO TABLES IV & V

UNITS CODE
1 POUNDS
2 GALLONS
3 CUBIC YARDS
4 TONS

MATERIAL 1	NAME OF SUBSTANCE	Silver Compounds
	PARAMETER NUMBER	C, L, A, S, S, 0, 2, 4
	QUANTITY	1 UNITS / YEAR
MATERIAL 2	NAME OF SUBSTANCE	Zinc Compounds
	PARAMETER NUMBER	C, L, A, S, S, 0, 2, 7
	QUANTITY	1 UNITS / YEAR
MATERIAL 3	NAME OF SUBSTANCE	Toluene
	PARAMETER NUMBER	0, 0, 1, 0, 8, 8, 8, 3
	QUANTITY	1.5 UNITS / YEAR
MATERIAL 4	NAME OF SUBSTANCE	P-Xylene
	PARAMETER NUMBER	0, 1, 3, 3, 0, 2, 0, 7
	QUANTITY	4 UNITS / YEAR
MATERIAL 5	NAME OF SUBSTANCE	Hydrazine
	PARAMETER NUMBER	0, 0, 3, 0, 2, 0, 1, 2
	QUANTITY	1.5 UNITS / YEAR
MATERIAL 6	NAME OF SUBSTANCE	Asbestos
	PARAMETER NUMBER	0, 1, 3, 3, 2, 2, 1, 4
	QUANTITY	1.0 UNITS / YEAR
MATERIAL 7	NAME OF SUBSTANCE	
	PARAMETER NUMBER	
	QUANTITY	

SEE INSTRUCTIONS
ON REVERSE SIDE

**ITEM
6**

DESCRIPTION

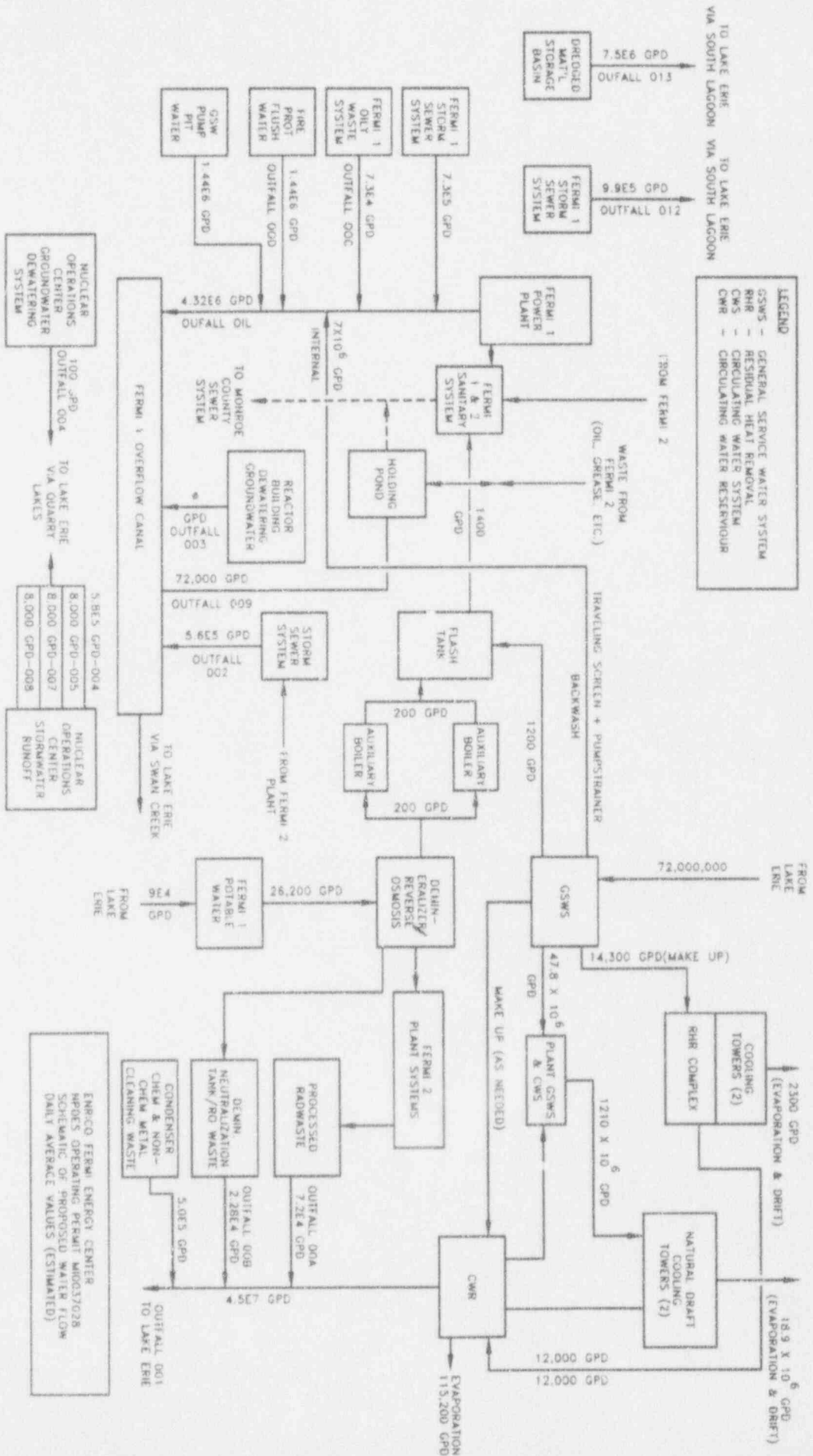
AND

DIAGRAM

- A. PROVIDE A BRIEF DESCRIPTION AND LINE DIAGRAM SHOWING THE WATER FLOW THROUGH YOUR FACILITY FROM INTAKE TO DISCHARGE. SHOW ALL OPERATIONS CONTRIBUTING WASTEWATER, INCLUDING PROCESS AND PRODUCTION AREAS, SANITARY FLOWS, COOLING WATER, AND STORMWATER RUNOFF. YOU MAY GROUP SIMILAR OPERATIONS INTO A SINGLE UNIT. THE WATER BALANCE SHOULD SHOW AVERAGE FLOWS. SHOW ALL SIGNIFICANT LOSSES OF WATER TO PRODUCTS, ATMOSPHERE, AND DISCHARGE. YOU SHOULD USE ACTUAL MEASUREMENTS WHENEVER AVAILABLE; OTHERWISE USE YOUR BEST ESTIMATE.

SEE ATTACHMENT

INPUTS INTO NPDES OUTFALLS



SECTION I

PERMIT
NUMBER



MI0037028

SEE INSTRUCTIONS
ON REVERSE SIDE

ITEM
7

A. PROVIDE A MAP OF THE TREATMENT FACILITY LOCATION, SHOWING THE LOCATION OF THE DISCHARGE POINT(S) AND OTHER INFORMATION REQUESTED ON REVERSE SIDE OF PAGE.

SEE ATTACHMENT

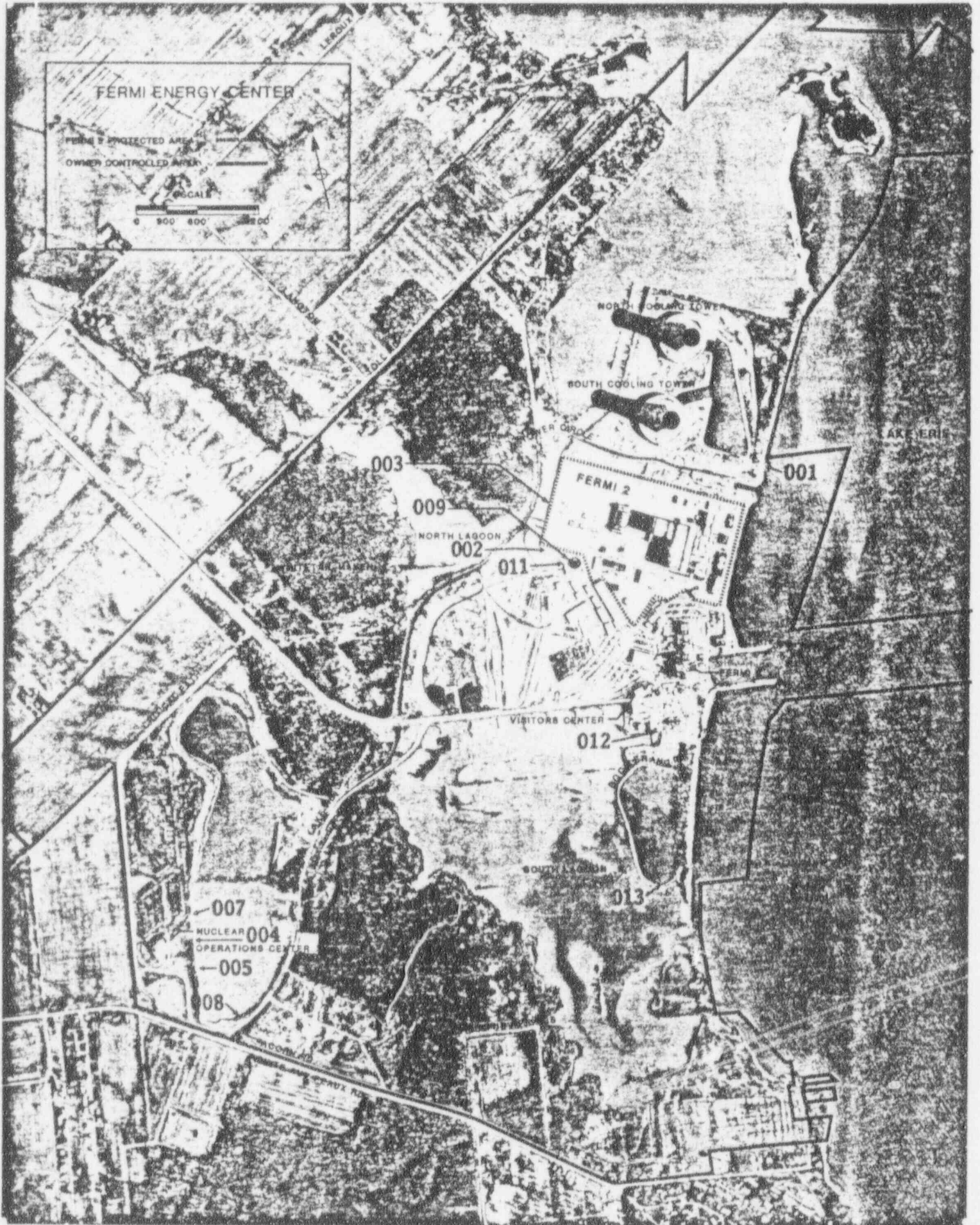
LOCATION

MAP

FIGURE 1



FIGURE 1



SECTION I

PERMIT NUMBER →

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 8

CONCENTRATED ANIMAL FEEDING OPERATION

A. DO YOU OPERATE A CONCENTRATED ANIMAL FEEDING FACILITY? (IF NO CONTINUE TO ITEM 10)	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						
B. NUMBER OF ACRES USED FOR CONFINEMENT FEEDING?	<div style="display: flex; justify-content: space-between;"> _____ . _____ ACRES </div>						
C. IF THERE IS OPEN CONFINEMENT, HAS A RUNOFF DIVERSION AND CONTROL SYSTEM BEEN CONSTRUCTED? (IF NO, CONTINUE TO ITEM 9)	<input type="checkbox"/> YES <input type="checkbox"/> NO						
D. WHAT IS THE DESIGN BASIS FOR THE CONTROL SYSTEM? CHECK ONE OF THE FOLLOWING AND ENTER NUMBER OF INCHES OF RAIN?	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;"><input type="checkbox"/> 10 YEAR, 24 HOUR STORM</td> <td style="width: 50%; padding: 2px; text-align: right;">_____ . _____ INCHES</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> 25 YEAR, 24 HOUR STORM</td> <td style="padding: 2px; text-align: right;">_____ . _____ INCHES</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> OTHER (SPECIFY)</td> <td style="padding: 2px; text-align: right;">_____ . _____ INCHES</td> </tr> </table>	<input type="checkbox"/> 10 YEAR, 24 HOUR STORM	_____ . _____ INCHES	<input type="checkbox"/> 25 YEAR, 24 HOUR STORM	_____ . _____ INCHES	<input type="checkbox"/> OTHER (SPECIFY)	_____ . _____ INCHES
<input type="checkbox"/> 10 YEAR, 24 HOUR STORM	_____ . _____ INCHES						
<input type="checkbox"/> 25 YEAR, 24 HOUR STORM	_____ . _____ INCHES						
<input type="checkbox"/> OTHER (SPECIFY)	_____ . _____ INCHES						
E. WHAT IS THE NUMBER OF ACRES OF CONTRIBUTING DRAINAGE?	<div style="display: flex; justify-content: space-between;"> _____ . _____ ACRES </div>						
F. WHAT IS THE DESIGN SAFETY FACTOR FOR THIS CONTROL SYSTEM?	_____ . _____						

ITEM 9

TYPE & NUMBER OF ANIMALS IN OPEN AND HOUSED CONFINEMENT

TYPE 1	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____
TYPE 2	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____
TYPE 3	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____
TYPE 4	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____
TYPE 5	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____
TYPE 6	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____
TYPE 7	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____
TYPE 8	A. LIST TYPE OF ANIMAL.	_____
	B. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN OPEN CONFINEMENT.	_____
	C. GIVE THE NUMBER OF THIS TYPE OF ANIMAL IN HOUSED CONFINEMENT.	_____

SECTION I

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 10

AQUATIC ANIMAL PRODUCTION FACILITY

A. DO YOU OPERATE AN AQUATIC ANIMAL PRODUCTION FACILITY? (IF NO, CONTINUE TO ITEM 12) YES NO

B. INDICATE THE TOTAL NUMBER OF PONDS, RACEWAYS AND SIMILAR STRUCTURES AT YOUR FACILITY.

_____ POUNDS
 _____ RACEWAYS
 _____ OTHER

C. INDICATE IN WHICH CALENDAR MONTH MAXIMUM FEEDING OCCURS.

D. ENTER THE TOTAL NUMBER OF POUNDS OF FOOD FED DURING THIS MONTH? _____ POUNDS

ITEM 11

SPECIES OF AQUATIC ANIMALS PRODUCED AT THIS FACILITY

SPECIES 1	A. IS THIS SPECIE A WARM OR COLD WATER SPECIE? <input type="checkbox"/> WARM <input type="checkbox"/> COLD
	B. GIVE THE NAME OF THIS SPECIE. _____
	C. ENTER THE TOTAL HARVESTABLE WEIGHT OF THIS SPECIE PRODUCED BY THIS FACILITY PER YEAR IN POUNDS. _____ POUNDS
	D. ENTER THE MAXIMUM WEIGHT PRESENT FOR THIS SPECIE WHICH WOULD REPRESENT YOUR NORMAL OPERATION. _____ POUNDS
SPECIES 2	A. IS THIS SPECIE A WARM OR COLD WATER SPECIE? <input type="checkbox"/> WARM <input type="checkbox"/> COLD
	B. GIVE THE NAME OF THIS SPECIE. _____
	C. ENTER THE TOTAL HARVESTABLE WEIGHT OF THIS SPECIE PRODUCED BY THIS FACILITY PER YEAR IN POUNDS. _____ POUNDS
	D. ENTER THE MAXIMUM WEIGHT PRESENT FOR THIS SPECIE WHICH WOULD REPRESENT YOUR NORMAL OPERATION. _____ POUNDS
SPECIES 3	A. IS THIS SPECIE A WARM OR COLD WATER SPECIE? <input type="checkbox"/> WARM <input type="checkbox"/> COLD
	B. GIVE THE NAME OF THIS SPECIE. _____
	C. ENTER THE TOTAL HARVESTABLE WEIGHT OF THIS SPECIE PRODUCED BY THIS FACILITY PER YEAR IN POUNDS. _____ POUNDS
	D. ENTER THE MAXIMUM WEIGHT PRESENT FOR THIS SPECIE WHICH WOULD REPRESENT YOUR NORMAL OPERATION. _____ POUNDS
SPECIES 4	A. IS THIS SPECIE A WARM OR COLD WATER SPECIE? <input type="checkbox"/> WARM <input type="checkbox"/> COLD
	B. GIVE THE NAME OF THIS SPECIE. _____
	C. ENTER THE TOTAL HARVESTABLE WEIGHT OF THIS SPECIE PRODUCED BY THIS FACILITY PER YEAR IN POUNDS. _____ POUNDS
	D. ENTER THE MAXIMUM WEIGHT PRESENT FOR THIS SPECIE WHICH WOULD REPRESENT YOUR NORMAL OPERATION. _____ POUNDS
SPECIES 5	A. IS THIS SPECIE A WARM OR COLD WATER SPECIE? <input type="checkbox"/> WARM <input type="checkbox"/> COLD
	B. GIVE THE NAME OF THIS SPECIE. _____
	C. ENTER THE TOTAL HARVESTABLE WEIGHT OF THIS SPECIE PRODUCED BY THIS FACILITY PER YEAR IN POUNDS. _____ POUNDS
	D. ENTER THE MAXIMUM WEIGHT PRESENT FOR THIS SPECIE WHICH WOULD REPRESENT YOUR NORMAL OPERATION. _____ POUNDS
SPECIES 6	A. IS THIS SPECIE A WARM OR COLD WATER SPECIE? <input type="checkbox"/> WARM <input type="checkbox"/> COLD
	B. GIVE THE NAME OF THIS SPECIE. _____
	C. ENTER THE TOTAL HARVESTABLE WEIGHT OF THIS SPECIE PRODUCED BY THIS FACILITY PER YEAR IN POUNDS. _____ POUNDS
	D. ENTER THE MAXIMUM WEIGHT PRESENT FOR THIS SPECIE WHICH WOULD REPRESENT YOUR NORMAL OPERATION. _____ POUNDS

SECTION I

PERMIT
NUMBER

MI0037028

LIST NAME AND MAILING ADDRESS OF ALL PROPERTY OWNERS ADJACENT TO THE TREATMENT FACILITY AND OR DISCHARGE/DISPOSAL AREA.

ITEM
12

MAILING

LIST

OF

ADJACENT

PROPERTY

OWNERS

58-07-852-001-00 BERNS LOUIS & CLARE 4720 LONG RD NEWPORT MI 48166	58-07-852-013-00 GERF & LONNY & LINDA 4334 LONG DR NEWPORT MI 48166
58-07-852-002-00 DUALY JOHN & CAROL 4730 LONG RD NEWPORT MI 48166	58-07-852-014-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226
58-07-852-004-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226	58-07-852-015-00 CITY OF MONROE 120 E FIRST ST MONROE MI 48161
58-07-852-005-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226	58-07-852-018-00 LONG EST SUMMER RESORT ASSOC TREAS 4802 LONG RD NEWPORT MI 48166
58-07-852-006-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226	58-07-852-019-00 LONG EST SUMMER RESORT ASSOC TREAS 4802 LONG RD NEWPORT MI 48166
58-07-852-008-00 FELC ELEANOR 4772 LONG DR NEWPORT MI 48166	58-07-024-568-20 FRENCHTOWN CHARTER TOWNSHIP WATER TOWER 2744 OTVIAN RD MONROE MI 48161
58-07-852-009-00 LITTEL THOMAS & ANNE 4802 LONG ST NEWPORT MI 48166	58-07-024-568-10 FRENCHTOWN CHARTER TOWNSHIP FIRE HALL #1 2744 OTVIAN RD MONROE MI 48161
58-07-852-010-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226	58-07-028-509-00 CITY OF MONROE WATER WORKS 120 E FIRST ST MONROE MI 48161
58-07-852-011-00 LANE EDWARD J 2040 BRINDLEY PARK ST DEARBORN MI 48124	58-07-893-001-00 STATE OF MICHIGAN P O BOX 30028 LANSING MI 48933
58-07-852-012-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226	58-07-893-076-00 STATE OF MICHIGAN P O BOX 30028 LANSING MI 4890

ITEM
12MAILING
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OWNERS

LIST NAME AND MAILING ADDRESS OF ALL PROPERTY OWNERS ADJACENT TO THE TREATMENT FACILITY AND OR DISCHARGE/DISPOSAL AREA.

58-07-892-577-00 STATE OF MICHIGAN P O BOX 30028 LANSING MI 48933	58-07-530-051-00 SISUNG BEATRICE 5701 POST RD R 2 NEWPORT MI 48166
58-07-892-601-00 STATE OF MICHIGAN PO BOX 30028 LANSING MI 48909	58-07-530-049-00 SISUNG BEATRICE 5701 POST RD R 2 NEWPORT MI 48166
58-07-020-503-00 MORRIS RONALD & VERA ETAL 4911 BATHERINE ST DEARBORN HTS MI 48125	58-07-530-050-00 SISUNG BEATRICE 5701 POST RD NEWPORT MI 48166
58-07-528-013-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226	58-07-530-050-00 SISUNG BEATRICE 5701 POST RD NEWPORT MI 48166
58-07-529-021-00 MASSEFRANT RANDY 4001 TOLL RD NEWPORT MI 48166	58-07-530-050-10 SISUNG BEATRICE RUTH 5701 POST RD NEWPORT MI 48166
58-07-529-010-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226	58-07-530-050-00 DETROIT EDISON CO 2000 SECOND AVE DETROIT MI 48226
58-07-529-015-00 FIX BERNICE 6394 FERDUX RD R 2 NEWPORT MI 48166	58-07-530-017-00 LADDUM VALARIAN & SHIRLEY 6445 FERDUX RD R 2 NEWPORT MI 48166
58-07-529-019-10 HOLMES JIMMY & BELOVED 4200 LANSTON RD NEWPORT MI 48166	58-07-924-001-00 HATFLEY THOMAS & TERESA 3054 GRANDVIEW DR MONROE MI 48161
58-07-529-019-20 NEWPORT BEACH MARINA, LTD 13205 E FOURTEEN MILE RD STERLING HEIGHTS MI 48312	58-07-924-001-10 HATFLEY THOMAS & TERESA 3054 GRANDVIEW DR MONROE MI 48161
58-07-529-019-00 FIX HOWARD & ABINA TRUSTEES NEWPORT BEACH MARINA, LTD (C) 13205 E FOURTEEN MILE RD STERLING HEIGHTS MI 48312	58-07-924-010-00 BELED ROBERT & LUANA 23067 ERBETT TAYLOR MI 48180

SECTION I

PERMIT
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MI0037028

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ITEM
12MAILING
LIST
OF
ADJACENT
PROPERTY
OWNERS

58-07-924-015-00 LAFEN LEON FOLEY FRANCIS & CHRISTINE (C) 6376 STERLING DR NEWPORT MI 48166	58-07-887-003-00 VARNEY SHIRLEY 6098 POINTE AUX PEAUX RD NEWPORT MI 48166
58-07-827-002-00 LEIGER ELIZABETH & DON 1160 SHERIDAN #315 Plymouth MI 48170	58-07-887-005-00 VARNEY SHIRLEY 6098 POINTE AUX PEAUX RD NEWPORT MI 48166
58-07-827-005-00 MOODY LLOYD B JR & JEAN B 6243 HIGHLAND NEWPORT MI 48166	58-07-887-006-00 YOUNG LOWELL & ALICE 6060 POINTE AUX PEAUX RD NEWPORT MI 48166
58-07-827-007-00 EDWY LAJL & ROBIN 6111 HIGHLAND NEWPORT MI 48166	58-07-887-007-00 YOUNG LOWELL & ALICE 6060 POINTE AUX PEAUX RD NEWPORT MI 48166
58-07-827-003-00 MASSERANT JEROME & JANIS 6255 HIGHLAND DR NEWPORT MI 48166	58-07-887-008-00 YOUNG LOWELL & ALICE 6060 POINTE AUX PEAUX RD NEWPORT MI 48166
58-07-827-010-00 STYLES ELEANOR 6191 HIGHLAND BLVD NEWPORT MI 48166	58-07-887-009-00 LALONDE KETTY & KIMBERLY 4795 N LAKE DR NEWPORT MI 48166
58-07-827-012-00 DRUMMOND DONALD & PATRICIA 4148 POINTE AUX PEAUX RD NEWPORT MI 48166	58-07-887-019-00 LALONDE KEITH & KIMBERLY 4190 N LAKE DR NEWPORT MI 48166
58-07-827-020-00 LACHET JEAN S 6200 HIGHLAND NEWPORT MI 48166	58-07-887-287-10 RACI PETER & KATHERINE 2430 WOODSIDE DR FORT LAUDERDALE FL 33312
58-07-827-027-00 VERNETTE RONALD & CHRISTINE 6200 HIGHLAND NEWPORT MI 48166	58-07-783-001-00 UMER APALTI O F 1140 RIVER FOREST POINT MI 48532
58-07-887-002-00 FRANCISCO JAMES A & VIRGINIA 7358 CHIPPEWA II MONROE MI 48161	58-07-889-002-00 SCUIRE ROBERT & BETH 6870 POINTE AUX PEAUX NEWPORT MI 48166

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ITEM
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OF
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OWNERS

LIST NAME AND MAILING ADDRESS OF ALL PROPERTY OWNERS ADJACENT TO THE TREATMENT FACILITY AND OR DISCHARGE/DISPOSAL AREA.

58-07-789-003-00	58-07-789-213-00
SQUIRE ROBERT & BETH 5820 POINTE AUX PEAUX NEWPORT MI 48166	BURDOCK JOSEPH 4521 HEWLEY RD NEWPORT MI 48166
58-07-789-004-00	58-07-789-214-00
MIDDLETON DONALD & JOAN 5838 POINTE AUX PEAUX NEWPORT MI 48166	GASSIS NABIH & JULIET 647 JOHN KOLFE DR MONROE MI 48161
58-07-789-005-00	58-07-789-215-00
MIDDLETON DONALD & JOAN 5838 POINTE AUX PEAUX RD NEWPORT MI 48166	GASSIS NABIH & JULIET 647 JOHN KOLFE MONROE MI 48161
58-07-789-007-00	
MIDDLETON DONALD & JOAN 5838 POINTE AUX PEAUX RD NEWPORT MI 48166	
58-07-789-008-00	
NETTI - FERNAND 12771 HARBIS CAPLETON MI 48117	
58-07-789-023-00	
PALEZZO A SALVATORE LOCKWOOD GAROLD & LINDA 4128 10TH STREET NEWPORT MI 48166	
58-07-789-027-00	
CARLOW SAM & NETTIE 20007 HOLIDAY RD GROSSE POINTE WOODS MI 48236	
58-07-789-029-00	
CARLOW SAM & NETTIE 20007 HOLIDAY RD GROSSE POINTE WOODS MI 48236	
58-07-789-174-00	
GASSIS NABIH & JULIET 647 JOHN KOLFE MONROE MI 48161	
58-07-789-176-00	
GASSIS NABIH & JULIET 647 JOHN KOLFE MONROE MI 48161	

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

<p>ITEM 1</p> <p>DISCHARGE LOCATION</p> <p>SCHEDULE</p> <p>FLOW RATE</p> <p>WASTEWATER TYPE CODE</p> <p>1 CONTACT COOLING</p> <p>2 NONCONTACT COOLING</p> <p>3 PROCESS</p> <p>4 SANITARY</p> <p>5 STORMWATER</p> <p>UNIT CODE</p> <p>1 MGY</p> <p>2 MGD</p> <p>3 GPD</p>	<p>CUTFALL NUMBER</p> <p>0,0,1</p>
	<p>A. LOCATION OF DISCHARGE</p> <p>S.E. & S.W. SECTION 16, TOWN 6S, RANGE 10E</p>
	<p>B. NAME OF RECEIVING WATER (IE. GROUNDWATER OR NAME OF SURFACE WATER)</p> <p>LAKE FRILE</p>
	<p>C. DO YOU DISCHARGE SEASONALLY? (IF NO, CONTINUE TO E)</p> <p><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p>
	<p>D. IF YES, LIST DISCHARGE PERIODS</p> <p>MO. / DAY</p> <p>THROUGH</p> <p>THROUGH</p> <p>THROUGH</p>
	<p>E. LAND APPLICATION RATE</p> <p>IN./HR. HR./DAY IN./WK.</p> <p>THROUGH THROUGH THROUGH</p> <p><input checked="" type="checkbox"/></p>
	<p>F. TYPE OF WASTEWATER DISCHARGE</p> <p>WASTEWATER TYPE CODE</p> <p>3 2 5</p>
	<p>G. DISCHARGE SCHEDULE (YEARLY AVERAGE)</p> <p>HOURS/DAY DAY/YEAR</p> <p>24 365</p>
	<p>H. DISCHARGE FLOW RATE</p> <p>TOTAL YEARLY DAILY MINIMUM DAILY MAXIMUM</p> <p>1,646,000 0 4,509,4</p> <p>UNIT CODE 1 2 2</p>
	<p>I. THE MAXIMUM DISCHARGE FLOW RATE TO BE AUTHORIZED IN PERMIT.</p> <p>AUTHORIZED</p> <p>4,509,4</p> <p>UNIT CODE 2</p>
<p>J. MAXIMUM DESIGN DISCHARGE FLOW RATE.</p> <p>DESIGN</p> <p>4,509,4</p> <p>UNIT CODE 2</p>	
<p>ITEM 2</p> <p>WATER TREATMENT ADDITIVES</p> <p>UNITS CODE</p> <p>1 Mg/l</p> <p>2 Ug/l</p>	<p>A. DO YOU USE WATER TREATMENT ADDITIVES TO TREAT YOUR DISCHARGE? (IF NO, CONTINUE TO ITEM 3)</p> <p><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p>
	<p>B. NAME, FUNCTION, AND CHEMICAL COMPOSITION OF THESE ADDITIVES.</p> <p>SEE ATTACHED</p> <p>NAME FUNCTION</p>
	<p>C. NAME AND ADDRESS OF MANUFACTURERS OF THESE ADDITIVES.</p> <p>SEE ATTACHED</p>
	<p>D. EXPECTED DISCHARGE CONCENTRATION OF ADDITIVES.</p> <p>MINIMUM UNITS CODE AVERAGE UNITS CODE MAXIMUM UNITS CODE</p> <p>ADDITIVE NAME</p> <p>ADDITIVE NAME SEE ATTACHED</p> <p>ADDITIVE NAME</p>
	<p>E. DO YOU TREAT THE DISCHARGE TO REMOVE ADDITIVES?</p> <p><input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p>
	<p>F. WHAT IS THE REMOVAL EFFICIENCY AND DISCHARGE FREQUENCY?</p> <p>REMOVAL DISCHARGE FREQUENCY</p> <p>HRS./DAY DAYS/WK.</p> <p>ADDITIVE NAME</p> <p>ADDITIVE NAME SEE ATTACHED</p> <p>ADDITIVE NAME</p>
	<p>G. AS AN ATTACHMENT TO THIS APPLICATION PROVIDE SPECIFIC MAMMALIAN OR AQUATIC TOXICOLOGICAL DATA OR REFERENCE WHICH ARE AVAILABLE AND INFORMATION ON THE RATE OF DEGRADATION OF THE PRODUCTS FOR EACH ADDITIVE.</p>

MI0037028
 Outfall 001

SECTION II, ITEM 2.C.

Chemical Additive	Supplier
Sodium Hypochlorite	High-Po-Chlor Inc.
Calcium Hypochlorite	High-Po-Chlor Inc.
BCDMH	Betz Industrial Buckman Laboratories
Sodium Bromide	Betz Industrial Buckman Laboratories
HEDP	Betz Industrial Buckman Laboratories
Sulfuric Acid	Coulton Chemical
Sodium Hydroxide	Jones Chemicals Inc.

Supplier Addresses

High-Po-Chlor Inc.
 36801 Wabash
 Romulus, MI 48714

Betz Industrial
 4636 Somerton Rd.
 Trevose, PA 19053

Buckman Laboratories
 1256 N. McLean Blvd.
 Memphis, TN 38108

Coulton Chemical
 6600 Sylvania Ave
 Sylvania, OH 43560

Jones Chemicals Inc.
 18000 Payne Ave.
 Riverview, MI 48192

SECTION II ITEM 2B

<u>NAME</u>	<u>FUNCTION</u>
Sodium Hypochlorite	Biocide
BCDMH (1-Bromo-3-Chloro-5,5-Dimethylhydantoin)	Biocide
Sodium Bromide	Biocide
Calcium Hypochlorite	Biocide
Betz Clem Trol CT-1	Biocide
Sulfuric Acid	pH Adjustment
Sodium Hydroxide	pH Adjustment
Betz Powerline 3461	Scale Inhibitor
Betz Powerline 865	Scale Inhibitor
HEDP [Phosphoric Acid, (1-Hydroxyethylidene) - Bis (HEDP)]	Scale Inhibitor
Betz Powerline 3690	Deposit Control Agent
Buckman DMAD	Deposit Control Agent
Betz Foam Trol	Defoaming Agent

MI0037028

SECTION II, ITEM 2 D.

Additive Name	Minimum	Units Code	Average	Units Code	Maximum	Units Code
Sodium Hypochlorite	0	1	0.1 *	1	0.2 *	1
Calcium Hypochlorite	0	1	0.1 *	1	0.2 *	1
Sodium Bromide	0	1	0.1 *	1	0.2 *	1
BCDMH	0	1	0.1 *	1	0.2 *	1
Betz Clam-Trol CT-1	0	1	0.08	1	0.08 **	1
Betz Powerline 3461	0	1	6	1	20	1
Betz Powerline 865	0	1	180	1	200	1
HEDP	0	1	50	1	100	1
Betz Powerline 3690	0	1	10	1	15	1
Buckman DMAD	0	1	0.5	1	1.0	1
Betz Foam-Trol 229	0	1	0.5	1	5	1

* Discharge time limited to 120 minutes in the current permit.

** Detection level 0.1 mg/l

SECTION II, ITEM 2 F.

Additive Name	% Removal	Hours/Day	Days/Week
Sodium Hypochlorite	100	24	7
Calcium Hypochlorite	100	24	7
Sodium Bromide	100	24	7
BCDMH	100	24	7
Betz Clam-Trol CT-1	100	+	++

+ Reservoir treated as a entire batch prior to discharge.

++ May be performed up to 6 times per year

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 3

PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

UNITS CODE
POUNDS
GALLONS
CUBIC
YARDS
TONS
MGY
MGD
GPD

TIME
HOUR
DAY
WEEK
MONTH
YEAR

OUTFALL NUMBER		101011		
PROCESS 1	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	001A RADWASTE 4911		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24	DAYS/YEAR 365	
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	2628	5
		DAILY MINIMUM	0	7
DAILY MAXIMUM		72000	7	
D. PROCESS PRODUCTION RATE			UNITS/TIME	
PROCESS 2	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	00B DEMIN WST 4911		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24	DAYS/YEAR 365	
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	832	5
		DAILY MINIMUM	0	7
DAILY MAXIMUM		22800	7	
D. PROCESS PRODUCTION RATE			UNITS/TIME	
PROCESS 3	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	CHEM METALLIC LN 4911		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24	DAYS/YEAR 110	
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	5	5
		DAILY MINIMUM	0	7
DAILY MAXIMUM		50000	7	
D. PROCESS PRODUCTION RATE			UNITS/TIME	
PROCESS 4	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	NON CHEM METAL 4911		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24	DAYS/YEAR 110	
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	5	5
		DAILY MINIMUM	0	7
DAILY MAXIMUM		50000	7	
D. PROCESS PRODUCTION RATE			UNITS/TIME	
PROCESS 5	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	RO WASTE 4911		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 10	DAYS/YEAR 365	
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	329	5
		DAILY MINIMUM	0	7
DAILY MAXIMUM		9000	7	
D. PROCESS PRODUCTION RATE			UNITS/TIME	

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 4

GROUNDWATER DISCHARGE INFORMATION

OUTFALL NUMBER

0,0,1

- A. IS THE DISCHARGE FROM THIS OUTFALL DIRECTED TO THE GROUND OR GROUNDWATERS? (IF NO, CONTINUE TO ITEM 5) YES NO
- B. HAS A HYDROGEOLOGICAL STUDY OR ITS EQUIVALENT BEEN PERFORMED OR IS THERE SUFFICIENT CURRENT HYDROGEOLOGICAL INFORMATION AVAILABLE AS REQUIRED BY THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES OF AUGUST 14, 1980 R. 323.2207 (PAGE 45) FOR THIS EXISTING OR PROPOSED DISCHARGE? IF YES ATTACH A COPY OF THE REPORT. YES NO
- C. ARE YOU REQUESTING AN EXEMPTION FROM SUBMITTING A HYDROGEOLOGICAL REPORT UNDER RULE R. 323.2207 (10) (PAGE 45) OR FROM GROUNDWATER MONITORING REQUIREMENTS UNDER RULE R. 323.2206 (5) (PAGE 42) OF THE PART 22 RULES. IF "YES" ATTACH DOCUMENTS AND EXPLANATION TO DEMONSTRATE THAT YOUR DISCHARGE WOULD QUALIFY FOR AN EXEMPTION. YES NO
- D. ARE YOU REQUESTING A VARIANCE FROM RULE 323.2205 (PAGE 45) (NONDEGRADATION) OF THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES? IF YES, ATTACH SUCH DOCUMENTS AS NECESSARY TO DEMONSTRATE THE NEED FOR A VARIANCE IN TERMS OF THE CRITERIA SPECIFIED IN RULE 323.2210 (PAGE 42) OF THE PART 22 RULES. YES NO
- E. LIST ALL CHEMICAL SUBSTANCES WHICH ARE IN MICHIGAN'S CRITICAL MATERIALS REGISTER TABLE IV (PAGE 6) AND/OR U.S. EPA'S PRIORITY POLLUTANT LIST TABLE V (PAGE 7) OR ANY OTHER SUBSTANCES WHICH ARE OR MAY BECOME INJURIOUS TO THE DESIGNATED USES OF THE GROUNDWATER OR TO THE PUBLIC HEALTH THAT ARE DISCHARGED OR EXPECTED TO BE DISCHARGED TO THE GROUNDWATER BY THIS FACILITY. ESTIMATE THE FINAL EFFLUENT CONCENTRATION AND RECORD ALL DATA IN ITEM 7 OF SECTION II IN THIS BOOKLET. NOT APPLICABLE/BEING ABSENT
 PRESENT, DATA PROVIDED IN ITEM 7

THE APPLICANT MAY BE REQUIRED TO DO ADDITIONAL WASTE ANALYSES.

ITEM 5

EXPECTED WASTEWATER CHARACTERISTICS

UNITS CODE

- Mg/l
- Ug/l
- COUNTS
- 100 ml
- S.U.
- °F
- LBS DAY

SAMPLE TYPE
1 GRAB
2 24 HOUR COMPOSITE

A. DISCHARGE CHARACTERISTICS	CONCENTRATION		UNITS	CODE #	ANALYSES	SAMPLE TYPE
	AVE	MAX				
*BOD ₅ (FIVE DAY BIOCHEMICAL OXYGEN DEMAND)	_____	_____				
*COD (CHEMICAL OXYGEN DEMAND)	_____	_____				
*TOD (TOTAL ORGANIC DEMAND)	_____	_____				
*NH ₃ -N (AMMONIA NITROGEN AS N)	_____	_____				
*TOTAL SUSPENDED SOLIDS	_____	_____				
TOTAL PHOSPHORUS (AS P)	_____	_____				
TOTAL RESIDUAL CHLORINE	_____	_____				
DISSOLVED OXYGEN	_____	_____				
*pH	8.1					
FECAL COLIFORM BACTERIA	_____	_____				
*TEMPERATURE (SUMMER)	85.0	96.0				
*TEMPERATURE (WINTER)	64.0	77.0				
B. OTHER WASTEWATER CHARACTERISTICS						
DILUENT RELEASE	_____	_____				
_____	_____	_____				
_____	_____	_____				
_____	_____	_____				
_____	_____	_____				
_____	_____	_____				
_____	_____	_____				

*REQUIRED INFORMATION FOR SURFACE WATER DISCHARGES.
NOTE: SEE ATTACHMENT

SECTION II

PERMIT
NUMBER

MI0037028

SEE INSTRUCTIONS
ON REVERSE SIDEITEM
6PRIORITY
POLLUTANTS
AND
ADDITIONAL
INFORMATION
FOR
SURFACE
WATER
DISCHARGE
ONLY

OUTFALL NUMBER

0,0,1

THE FOLLOWING REQUESTED INFORMATION SHALL BE ADDRESSED BY ALL SURFACE WATER DISCHARGERS.
NOTE! NEW USE DISCHARGERS SHALL PROVIDE EXPECTED VALUES FOR THE QUANTITATIVE AND
QUALITATIVE INFORMATION REQUESTED BELOW.

A. IS THIS FACILITY A PRIMARY INDUSTRY? (REFER TO TABLE IA PAGE 41) (IF NO, GO TO E) (IF YES, GO TO B)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B. INDICATE TYPE OF PRIMARY INDUSTRY AS LISTED IN TABLE IA PAGE 41 (CONTINUE WITH C.)	STEAM ELECTRIC
C. DOES THIS OUTFALL DISCHARGE CONTAIN ANY PROCESS WASTEWATER? (IF NO, GO TO E) (IF YES, GO TO D)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. INDICATE WHICH GC/MS FRACTIONS MUST BE TESTED FOR. (REFER TO TABLE IA PAGE 41) NOTE! FOR EACH GC/MS FRACTION CHECKED, EACH SPECIFIC ORGANIC TOXIC POLLUTANT WITHIN EACH FRACTION <u>MUST</u> BE ANALYZED FOR (SEE TABLE IIA PAGE 41). IN ADDITION, ALL PRIMARY INDUSTRY APPLICANTS WITH A PROCESS WASTEWATER DISCHARGE <u>MUST</u> PROVIDE QUANTITATIVE DATA FOR EACH TOXIC POLLUTANT IN TABLE IIA PAGE 43. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET. (CONTINUE WITH E-K BELOW)	<input checked="" type="checkbox"/> VOLATILE <input type="checkbox"/> BASE/NEUTRAL <input checked="" type="checkbox"/> ACID <input type="checkbox"/> PESTICIDE
E. IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF THE TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE THAT ANY POLLUTANT LISTED IN TABLE IIA AND IVA PAGES 42-43 IS DISCHARGED FROM ANY OUTFALL, THE QUANTITATIVE DATA <u>MUST</u> BE PROVIDED. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
F. IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE ANY POLLUTANTS LISTED IN TABLE IVA PAGE 43 ARE DISCHARGED FROM ANY OUTFALL, THE APPLICANT <u>MUST</u> DESCRIBE REASONS FOR THE POLLUTANT BEING PRESENT AND PROVIDE ANY AVAILABLE QUANTITATIVE DATA. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
G. ALL SURFACE WATER DISCHARGE APPLICANTS (PRIMARY AND SECONDARY INDUSTRIES) WHO: USES OR MANUFACTURES 2, 4, 5 - TRICHLOROPHOXY ACETIC ACID (2, 4, 5-T); 2, 4, 5 - TRICHLOROPHOXY PROPANOIC ACID (SILVEX 2, 4, 5, TP); 2, 4, 5 - TRICHLOROPHOXY ETHYL 2, 4-DICHLOROPHOSPHATE (ERBON); 0, 0-DIMETHYL 0-(2, 4, 5-TRICHLOROPHENYL) PHOSPHORIC ACID (PONNELL); 2, 4, 5-TRICHLOROPHENOL (TOP); OR HEXACHLOROCYCLOHEPTANE (HCP) (ALL DATA FOR THE ABOVE MUST BE GENERATED USING STANDARD ANALYTICAL CALIBRATION PROCEDURES) OR KNOWS OR HAS REASON TO BELIEVE THAT TCDD IS OR MAY BE PRESENT IN THEIR DISCHARGE. <u>MUST</u> REPORT QUALITATIVE DATA, GENERATED WHICH USED A SCREENING PROCEDURE NOT CALIBRATED WITH ANALYTICAL STANDARDS, FOR 2, 3, 7, 8 - TETRACHLORODIBENZO-P-DIOXIN (TCDD). RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
J. IF THE SURFACE WATER DISCHARGE APPLICANT KNOWS OR HAS REASON TO BELIEVE THAT BIOLOGICAL TOXICITY TESTS WERE MADE IN THE LAST THREE (3) YEARS ON ANY OF THE APPLICANT'S DISCHARGES OR ON A RECEIVING WATER IN RELATION TO A DISCHARGE, PROVIDE THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED
K. IF A CONTRACT LABORATORY OR CONSULTING FIRM PERFORMED ANY OF THE ANALYSES REQUIRED BY THIS APPLICATION, PROVIDE THE NAME AND ADDRESS OF EACH LABORATORY OR FIRM AND THE ANALYSES PERFORMED AS AN ATTACHMENT OF THIS APPLICATION.	<input type="checkbox"/> NOT APPLICABLE <input checked="" type="checkbox"/> APPLICABLE/SEE ATTACHED
L. DO YOU DISCHARGE ANY OTHER TOXIC OR INJURIOUS CHEMICAL SUBSTANCES NOT LISTED IN TABLES IV PAGE 4 AND IIA THROUGH IVA PAGES 42-43. IF YES, THEN IDENTIFY THE CHEMICAL SUBSTANCES AND ESTIMATE THE FINAL EFFLUENT CONCENTRATIONS. SUBMIT THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED

National Environmental Testing, Inc.
Auburn Hills Division
1700 Harmon road
Auburn Hills, MI 48326Tel: (810) 391-2050
Fax: (810) 391-9698
(800) 526-4951

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

CUTFALL NUMBER

0011

ITEM 7

CRITICAL MATERIALS
•
TOXIC POLLUTANTS
•
HAZARDOUS SUBSTANCES IN DISCHARGE

A. USE THIS DATA SHEET TO RECORD INFORMATION AS REQUIRED IN: (CHECK APPROPRIATE BOX FOR WHICH INFORMATION THIS DATA SHEET REPRESENTS.)

- 1. SECTION II, ITEM 4-E. GROUNDWATER DISCHARGE INFORMATION (PAGE 55)
- 2. SECTION II, ITEM 6. PRIORITY POLLUTANTS IN SURFACE WATER DISCHARGE (PAGE 57)
- 3. B. BELOW: CRITICAL MATERIALS (TABLE IV) IN SURFACE WATER DISCHARGE (PAGE 39)

B. LIST ANY CRITICAL MATERIAL (TABLE IV PAGE 6) NOT ADDRESSED IN SECTION II ITEM 6 PRIORITY POLLUTANTS WHICH YOU KNOW OR HAVE REASON TO BELIEVE TO BE PRESENT IN THE DISCHARGE. SEE REVERSE SIDE OF THIS PAGE FOR FURTHER DIRECTIONS.

- NOT APPLICABLE
- APPLICABLE (SEE BELOW)

- UNITS CODE
- 1 Mg/l
 - 2 Ug/l
 - 3 LBS DAY
 - 4 KG DAY

- SAMPLE TYPE
- 1 GRAB
 - 2 74 HR COMP

MATERIAL	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
MATERIAL 1	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 2	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 3	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 4	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 5	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 6	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 7	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 8	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			

ADDITIONAL PAGES OF THIS ITEM 7 ARE ATTACHED FOR THE REST OF THE CRITICAL MATERIALS AND/OR PRIORITY POLLUTANTS REQUIRED TO BE REPORTED.

- YES
- NO

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047
BETZ MATERIAL SAFETY DATA SHEET
24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT : SLIMICIDE C-78P

(PAGE 1 OF 3)
EFFECTIVE DATE 07-26-89
PRINTED: 3-SEP-1989
REV: SEC. 3

PRODUCT APPLICATION : SOLID MICROBIAL CONTROL AGENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----
INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC
PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS
LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE
AND CHRONIC HAZARDS OF THIS FORMULATION.

1-BROMO-3-CHLORO-5,5-DIMETHYLHYDANTOIN***CAS#16079-88-2; OXIDIZER; EYE AND
SKIN IRRITANT; PEL: NONE; TLV: NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% DISP. (APPROX.) 4.7	ODOR: HALOGEN
FL. PT. (DEG. F): >200 SETA (CC)	SP. GR. (70F) OR DENSITY: 65 LBS. CU. FT.
VAPOR PRESSURE (MMHG): NA	VAPOR DENSITY (AIR=1): NA
VISC CPS70F: NA	% SOLUBILITY (WATER): 1
EVAP. RATE: NA WATER=1	APPEARANCE: WHITE
PHYSICAL STATE: GRANULES	FREEZE POINT (DEG. F): NA

-----SECTION 3-----REACTIVITY DATA-----

STABLE. OXIDIZER. SLOWLY RELEASES HALOGEN GASES WHEN CONTAMINATED WITH
MOISTURE. MAY REACT WITH ALKALIES, ACIDS, ORGANICS OR REDUCING AGENTS. DO
NOT CONTAMINATE. BETZ TANK CLEAN-OUT CATEGORY 'B'.

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

EFFECTIVE DATE 07-26-89

PRODUCT: SLIMICIDE C-78P

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE
MODERATELY IRRITATING. MAY BE CORROSIVE IN CONTACT WITH MOIST SKIN.ACUTE EYE EFFECTS ***
SEVERE IRRITANT TO THE EYESACUTE RESPIRATORY EFFECTS ***
DUSTS CAUSE IRRITATION TO UPPER RESPIRATORY TRACTCHRONIC EFFECTS OF OVEREXPOSURE***
NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.MEDICAL CONDITIONS AGGRAVATED ***
NOT KNOWNSYMPTOMS OF EXPOSURE ***
MAY CAUSE REDNESS OR ITCHING OF SKIN.PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***
MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***
REMOVE CLOTHING. WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER
FOR 15 MIN. IMMEDIATELY CONTACT PHYSICIANEYE CONTACT***
IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A
PHYSICIAN FOR ADDITIONAL TREATMENTINHALATION EXPOSURE***
REMOVE VICTIM FROM CONTAMINATED AREA. APPLY NECESSARY FIRST AID
TREATMENT. IMMEDIATELY CONTACT A PHYSICIAN.INGESTION***
DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF
STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***
VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. SPILLED MATERIAL
WHICH CAN NOT BE RECOVERED FOR RE-USE, SHOULD BE PLACED IN A WASTE
DISPOSAL CONTAINER AND DISPOSED OF IN AN APPROVED PESTICIDE
LANDFILL. SEE PRODUCT LABEL STORAGE AND DISPOSAL INSTRUCTIONS.
PRODUCT RELEASES CHLORINE WHEN WET. SPILL RESIDUE MAY BE
NEUTRALIZED WITH 3% HYDROGEN PEROXIDE SOLUTION.DISPOSAL INSTRUCTIONS***
WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
PRODUCT (AS IS) -DISPOSE OF IN APPROVED PESTICIDE FACILITY OR ACCORDING TO LABEL
INSTRUCTIONSFIRE EXTINGUISHING INSTRUCTIONS***
FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
APPARATUS (FULL FACE-PIECE TYPE).
FLOOD WITH WATER. USE OF CO2 OR FOAM MAY NOT BE EFFECTIVE.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

EFFECTIVE DATE 07-26-89

PRODUCT: SLIMICIDE C-78P

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
 USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
 RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***
 ADEQUATE VENTILATION TO MAINTAIN DUST CONCENTRATIONS BELOW THE EXPOSURE
 LIMIT OF 10MG/M3(PEL/TLV) FOR NUISANCE DUSTS.

RECOMMENDED RESPIRATORY PROTECTION***
 IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
 USE RESPIRATOR WITH ORGANIC VAPOR, ACID GASSES & DUST/MIST CARTRIDGES

RECOMMENDED SKIN PROTECTION***
 GAUNTLET-TYPE NEOPRENE GLOVES, CHEMICAL RESISTANT APRON
 WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***
 AIRTIGHT CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***
 KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.
 KEEP DRY. DO NOT STORE AT HIGH TEMPERATURE OR NEAR OXIDIZABLES OR
 COMBUSTIBLES

HANDLING INSTRUCTIONS***
 GENERAL-IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE
 SPECIFIC- OXIDIZER. AVOID ALL CONTACT WITH REDUCING AGENTS, OILS, GREASES,
 ORGANICS AND ACIDS.

 THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
 HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION
 THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
 EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
 ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
 ...FIFRA(40CFR):EPA REG.NO. 5785-65-3876
 ...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:
 NOT APPLICABLE
 ...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
 IDENTIFICATION NUMBER IS: NOT APPLICABLE
 ...DOT HAZARD CLASSIFICATION: OXIDIZER
 ...DOT SHIPPING DESIGNATION IS: UN1479 OXIDIZER, N.O.S.

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
 CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS
 ...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
 ...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
 ...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND FIRE
 ...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
 NFPA/HMIS : HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 1 ; SPECIAL - OXY ; PE - C

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVÖSE, PA. 19047

9/15/89 PRODUCT: SLIMICIDE C-78P
AQUATIC TOXICOLOGY

DAPHNIA MAGNA

0% MORTALITY: MG/L
48 HR. LC50: 0.5 MG/L

RAINBOW TROUT

0% MORTALITY: MG/L
96 HR. LC50: 0.9 MG/L

FATHEAD MINNOW

0% MORTALITY: MG/L
96 HR. LC50: 2.3 MG/L

9/15/89 MAMMALIAN TOXICOLOGY

ORAL LD50 -NO DATA

DERMAL LD50 -NO DATA

SKIN IRRITATION SCORE-NO DATA

EYE IRRITATION SCORE-NO DATA

INHALATION-NO DATA



AQUATIC TOXICITY PROFILE

BUCKMAN LABORATORIES INTERNATIONAL, INC.

Bulab 6040

8/26/92

Bulab 6040

Introduction

The active ingredient in this product, Sodium bromide (NaBr), is a commonly used precursor to hypobromous acid (HOBr) in cooling water systems. When mixed with chlorine or a hypochlorite species, the bromide ion (Br⁻) is converted to hypobromous acid, which is preferred to hypochlorous acid due to lower environmental impact and greater efficacy.

Active Ingredient:

Sodium Bromide 40% by wt.

Aquatic Toxicity Information¹:

The following studies were conducted on Hypobromous acid, which is the active biocide which will be encountered in the aqueous setting. All values are concentrations of hypobromous expressed as bromine.

24 hour LC50 - <i>Daphnia magna</i>	1.05 mg/L
48 hour LC50 - <i>Daphnia magna</i>	0.71 mg/L
96 hour LC50 - Bluegill sunfish	0.52 mg/L
96 hour LC50 - Rainbow trout	0.23 mg/L
96 hour LC50 (flow through) - Sheepshead minnow	0.19 mg/L
96 hour LC50 (flow through) - Mysid shrimp	0.17 mg/L
96 hour EC50 (flow through) - Eastern oyster	0.52 mg/L

¹All environmental toxicity data for this product are the property of Great Lakes Chemical Corporation.

Environmental Toxicity Information²:

The following studies were conducted on hypochlorous acid or hypobromous acid, which are the active biocide which will be encountered in the aqueous setting.

Chlorine³

Cl₂ + NaBr⁴

<u>Chlorine³</u>		<u>Cl₂ + NaBr⁴</u>	

²All environmental toxicity data for this product are the property of Great Lakes Chemical Corporation.

³ Toxicity values based on the microequivalent total residual oxidants per liter (ueq TRO/L) or the amount of

⁴ When applied with chlorine, sodium bromide is oxidized by hypochlorous acid to hypobromous acid and sodium chloride.

				<p>The information on this Data Sheet reflects the latest toxicological information and data that we have on this product. However, no representation or warranty of any kind, express or implied, is made as to this Data Sheet or the contents hereof, and no such warranty shall be implied by law.</p> <p>The exclusive remedy against Buckman Laboratories International, Inc. for any cause of action relating to this Data Sheet is a claim for damages not to exceed any price paid for the Data Sheet, without regard to whether</p>
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Chlorine⁵

Cl. + NaBr⁶

96 Hr LC50 (flow through) - Silverside	4.03	143	0.82	65
96 Hr LC50 (intermittent) - Silverside	5.44	193	4.31	344
96 Hr LC50 (flow through) - Mysid shrimp	1.75	62	1.16	92
96 Hr LC50 (intermittent) - Mysid shrimp	5.92	210	4.60	367
96 Hr EC50 (flow through) - Mysid shrimp*	<0.59	<21	0.62	<50

⁵ Toxicity values based on the microequivalent total residual oxidants per liter (ueq TRO/L) or the amount of

⁶ When applied with chlorine, sodium bromide is oxidized by hypochlorous acid to hypobromous acid and sodium chloride.

The information on this Data Sheet reflects the latest toxicological information and data that we have on this product. Any use of this product or method or application which is not described in the Product Data Sheet is the responsibility of the user.

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047
BETZ MATERIAL SAFETY DATA SHEET
24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT : CLAM-TROL CT-1

(PAGE 1 OF 3)
EFFECTIVE DATE 05-18-89
PRINTED: 3-SEP-1989
REV: SEC. 3

PRODUCT APPLICATION : WATER-BASED MICROBIAL CONTROL AGENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----
INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC
PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS
LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE
AND CHRONIC HAZARDS OF THIS FORMULATION.

ETHYLENE GLYCOL***CAS#107-21-1; LIVER, KIDNEY AND BLOOD TOXIN; CNS
DEPRESSANT; ANIMAL TERATOGEN (HIGH ORAL DOSES); PEL/TLV: 50PPM-C.

ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE***CAS#68424-85-1; CORROSIVE (EYES);
PEL: NONE; TLV: NONE.

ISOPROPYL ALCOHOL*** (IPA); CAS#67-63-0; FLAMMABLE LIQUID; CHRONIC
OVEREXPOSURE MAY CAUSE LIVER AND KIDNEY TOXICITY;

PEL/TLV: 400PPM (500PPM-STEL).
DODECYLGUANIDINE HYDROCHLORIDE*** (DGH); CAS#13590-97-1; CORROSIVE; PEL: NONE;
TLV: NONE.

ETHYL ALCOHOL*** (ETHANOL); CAS#64-17-5; FLAMMABLE; MAY CAUSE DEFATTING
DERMATITIS, DIZZINESS AND HEADACHE; PEL: 1000PPM; TLV: 1000PPM.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS (APPROX.) 5.3	ODOR: MILD
FL. PT. (DEG. F): 116 SETA (CC)	SP. GR. (70F) OR DENSITY: 1.022
VAPOR PRESSURE (MMHG): 23	VAPOR DENSITY (AIR=1): >1
ISC CPS 70F: 23	% SOLUBILITY (WATER): 100
VAP. RATE: <1 ETHER=1	APPEARANCE: COLORLESS
PHYSICAL STATE: LIQUID	FREEZE POINT (DEG. F): <-30

-----SECTION 3-----REACTIVITY DATA-----

STABLE, MAY REACT WITH STRONG OXIDIZERS. DO NOT CONTAMINATE BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

PRODUCT: CLAM-TROL CT-1

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

CORROSIVE TO SKIN. POTENTIAL SKIN SENSITIZER

ACUTE EYE EFFECTS ***

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS, GASES, MISTS AND/OR AEROSOLS CAUSE IRRITATION TO UPPER

RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED OVEREXPOSURES MAY CAUSE: TISSUE NECROSIS; BLOOD CELL DAMAGE OR IMPAIR BLOOD CELL FUNCTION; REPRODUCTIVE SYSTEM TOXICITY; SKIN SENSITIZATION.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION OF VAPORS/MISTS/AEROSOLS MAY CAUSE EYE, NOSE, THROAT AND LUNG IRRITATION; SKIN CONTACT MAY CAUSE SEVERE IRRITATION OR BURNS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ORALLY INGESTED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CLOTHING. WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR 15 MIN. IMMEDIATELY CONTACT PHYSICIAN

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA. APPLY NECESSARY FIRST AID TREATMENT. IMMEDIATELY CONTACT A PHYSICIAN.

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE CONTAMINATED ABSORBENT SHOULD BE CONSIDERED A PESTICIDE AND DISPOSED OF IN AN APPROVED PESTICIDE LANDFILL. SEE PRODUCT LABEL STORAGE AND DISPOSAL INSTRUCTIONS.

REMOVE IGNITION SOURCES. FLUSH AREA WITH WATER. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

DISPOSE OF IN APPROVED PESTICIDE FACILITY OR ACCORDING TO LABEL INSTRUCTIONS

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE).

DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

PRODUCT: CLAM-TROL CT-1

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
 USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
 RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***
 ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS

RECOMMENDED RESPIRATORY PROTECTION***
 IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
 USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE & DUST/MIST PREFILTER

RECOMMENDED SKIN PROTECTION***
 GAUNTLET-TYPE RUBBER GLOVES, CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***
 . SPLASH PROOF CHEMICAL GOGGLES. FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
 STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS***

GENERAL- IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE

SPECIFIC- COMBUSTIBLE. DO NOT USE AROUND SPARKS OR FLAMES. BOND CONTAINERS
 DURING FILLING OR DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR
 ABOVE THE PRODUCT FLASH POINT.

 THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
 HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
 EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
 ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...FIFRA(40CFR):EPA REG.NO. 3876- 145

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
 IDENTIFICATION NUMBER IS: D001=IGNITABLE;D002=CORROSIVE

...DOT HAZARD CLASSIFICATION: CORROSIVE TO SKIN, COMBUSTIBLE

...DOT SHIPPING DESIGNATION IS: UN1760 CORROSIVE LIQUID, N.O.S.

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
 CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: ETHYLENE GLYCOL(107-21-1) , 21.0-30.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE), DELAYED(CHRONIC) AND FIRE

...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

VFPA/HMIS : HEALTH - 3 ; FIRE - 2 ; REACTIVITY - 0 ; SPECIAL - CORR ; PE - D

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047

9/15/89 PRODUCT: CLAM-TROL CT-1
 AQUATIC TOXICOLOGY

RAINBOW TROUT

0% MORTALITY: 10 MG/L
96 HR. LC50: 14.7 MG/L

DAPHNIA MAGNA

0% MORTALITY: 0.16 MG/L
48 HR. LC50: 0.4 MG/L

FATHEAD MINNOW

0% MORTALITY: 1.55 MG/L
96 HR. LC50: 3.0 MG/L

9/15/89 MAMMALIAN TOXICOLOGY

ORAL LD50 -NO DATA

DERMAL LD50 -NO DATA

SKIN IRRITATION SCORE-NO DATA

EYE IRRITATION SCORE-NO DATA

INHALATION-NO DATA

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19053
BETZ MATERIAL SAFETY DATA SHEET
EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

PRODUCT : POWERLINE 3461

(PAGE 1 OF 3)
EFFECTIVE DATE:03-18-93
PRINTED: 03-18-93

PRODUCT APPLICATION:WATER-BASED DEPOSIT CONTROL AGENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

POLYEPOXYSUCCINIC ACID, DISODIUM SALT***CAS# 109578-44-1; CORROSIVE;
PEL:NOT DETERMINED;TLV:NOT DETERMINED

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS (APPROX.)	12.6	ODOR: SLIGHT
FL.PT. (DEG.F): > 200 P-M (CC)		SP.GR. (70F): 1.246
VAPOR PRESSURE (mmHG): ~ 18.0		VAPOR DENSITY (AIR=1): > 1.00
VISC cps 70F: 26		% SOLUBILITY (WATER): 100.0
EVAP RATE: < 1.00 (ETHER=1)		APPEARANCE: YELLOW TO AMBER
PHYSICAL STATE: LIQUID		FREEZE POINT (DEG.F): 27.00

-----SECTION 3-----REACTIVITY DATA-----

STABLE. MAY REACT WITH ACIDS. DO NOT CONTAMINATE. BETZ TANK CLEAN-OUT
CATEGORY 'C'

THERMAL DECCMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT : POWERLINE 3461

-----SECTION 4-----HEALTH HAZARD EFFECTS-----
ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE
CORROSIVE TO SKIN
ACUTE EYE EFFECTS ***
CORROSIVE TO THE EYES
ACUTE RESPIRATORY EFFECTS ***
MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT
CHRONIC EFFECTS OF OVEREXPOSURE***
PROLONGED OR REPEATED CONTACT MAY CAUSE TISSUE NECROSIS AND/OR DERMATITIS.
MEDICAL CONDITIONS AGGRAVATED ***
PRE-EXISTING SKIN, LUNG AND EYE CONDITIONS
SYMPTOMS OF EXPOSURE ***
CAUSES SEVERE IRRITATION, BURNS OR TISSUE ULCERATION WITH SUBSEQUENT
SCARRING.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----
SKIN CONTACT ***
REMOVE CLOTHING. WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER FOR
15 MIN. IMMEDIATELY CONTACT PHYSICIAN
EYE CONTACT***
IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A
PHYSICIAN FOR ADDITIONAL TREATMENT
INHALATION EXPOSURE***
REMOVE VICTIM FROM CONTAMINATED AREA. APPLY NECESSARY FIRST AID
TREATMENT. IMMEDIATELY CONTACT A PHYSICIAN.
INGESTION***
DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF
STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----
SPILL INSTRUCTIONS***
VENTILATE, AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB
ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE
CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL
SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.
DISPOSAL INSTRUCTIONS****
WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
PRODUCT (AS IS) -
INCINERATE OR BURY IN APPROVED LANDFILL
FIRE EXTINGUISHING INSTRUCTIONS***
FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
APPARATUS (FULL FACE-PIECE TYPE) PROPER FIRE EXTINGUISHING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT : POWERLINE 3461

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.
VENTILATION PROTECTION***

ADEQUATE VENTILATION
RECOMMENDED RESPIRATORY PROTECTION***
IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***
GAUNTLET-TYPE NEOPRENE GLOVES, CHEMICAL RESISTANT APRON
WASH OFF AFTER EACH USE REPLACE AS NECESSARY.

RECOMMENDED EYE PROTECTION***
SPLASH PROOF CHEMICAL GOGGLES. FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
STORAGE INSTRUCTIONS***

KEEP CONTAINERS CLOSED WHEN NOT IN USE.
DO NOT FREEZE. IF FROZEN, THAW AND MIX COMPLETELY PRIOR TO USE
HANDLING INSTRUCTIONS***

ALKALINE. CORROSIVE (SKIN/EYES). DO NOT MIX WITH ACIDIC MATERIAL.

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION
THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
...REPORTABLE QUANTITY (RQ) FOR UNDILUTED PRODUCT:
NOT APPLICABLE
...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D002=CORROSIVE (SKIN, PH)
...DOT HAZARD/UN#/ER GUIDE# IS :CORROSIVE TO SKIN/UN1760/#60
...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE
...SARA SECTION 302 CHEMICALS: NONE
...SARA SECTION 313 CHEMICALS: NONE
...SARA SECTION 312 HAZARD CLASS: IMMEDIATE (ACUTE); DELAYED (CHRONIC)
...MICHIGAN CRITICAL MATERIALS: NONE
NFPA/HMIS : HEALTH - 3; FIRE - 1; REACTIVITY - 0; SPECIAL - COR; PE - D

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA 19053

PRODUCT: POWERLINE 3461

AQUATIC TOXICOLOGY

Fathead Minnow

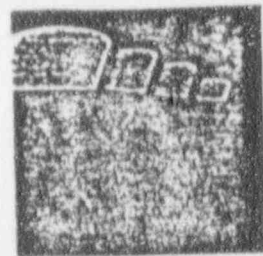
96 hour LC50: 1550 MG/L

No effect level: 1290 MG/L

Daphnia magna

48 hour LC50: 1520 MG/L

No effect level: 880 MG/L



product facts

BETZ® 860 DEPOSIT REMOVAL PRODUCT

- Excellent for removal of calcium carbonate scale from cooling water systems.
- Also effective on calcium phosphate deposits.
- Can clean cooling systems of these deposits on-line eliminating production downtime.

DESCRIPTION AND USE

Betz 860 is a unique trade secreted material designed to remove calcium carbonate and/or calcium phosphate deposits from industrial and power cooling water systems. These deposits, which contribute to lost heat transfer or reduced water velocity, can be removed safely and easily, thus aiding in restoring a cooling system to its normal operating conditions.

Betz 860 is designed as a one-time supplement to normal cooling water system treatment. It is not applicable as a continuous cooling system treatment product.

TREATMENT AND FEEDING REQUIREMENTS

This product is designed to be used in two distinct manners:

1. Recirculating through a cooling water system.
2. Fill and soak for large industrial and power equipment.

The product is not designed for small industrial heat exchangers due to packaging restrictions.

Dosage - Proper treatment levels of Betz 860 depend on the thickness of the calcium carbonate and/or calcium phosphate deposit and the size of the system. Feed of the product is not based on system or equipment water

volume. Betz will provide control parameters and monitoring guidelines for specific applications.

Feed Point - Betz 860 should be fed to the cooling tower basin if being utilized in a recirculating cooling system or to the makeup or recirculation pumps if cleaning large individual pieces of equipment (i.e.; power plant condenser).

System Parameters - Betz 860 can be fed to all cooling water systems except those containing galvanized material.

GENERAL PROPERTIES

Appearance	yellow to dark brown liquid
Density 70 °F(21 °C)	9.14 pounds per gallon
Flash Point (closed cup)	>200 °F(93 °C)
Freeze Point	26 °F(-3 °C)
Initial Crystallization	80 °F(27 °C)
pH (undiluted)	1.4
(5% solution)	2.3
Pour Point (ASTM)	31 °F(-1 °C)
Specific Gravity 70 °F(21 °C)	1.098
Viscosity 100 °F(38 °C)	9.0 CPS

PACKAGING INFORMATION

Betz 860 is a liquid material available only in bulk shipment quantities.

SAFETY PRECAUTIONS

Material Safety Data Sheets containing detailed information relative to this product are available upon request.

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19053
BETZ MATERIAL SAFETY DATA SHEET
EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

PRODUCT : BETZ 860

(PAGE 1 OF 3)
EFFECTIVE DATE 02-05-92
PRINTED: 2-Jul-1992

REVISIONS TO SECTIONS: -;EDIT:APPENDIX

PRODUCT APPLICATION : CONDENSER CONDITIONING COMPOUND.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----
INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC
PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS
LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE
AND CHRONIC HAZARDS OF THIS FORMULATION.

TRADE SECRET INGREDIENT(122);NUISANCE DUST;POSSIBLE EYE IRRITANT;
PEL/TLV:NUISANCE DUST. NOTE:MANUFACTURER'S RECOMMENDED EXPOSURE
LIMIT:10MG/M3. TSNR 125438 - 5214P
TRADE SECRET INGREDIENT(E195);EYE IRRITANT;PEL:NONE;TLV:NONE. TSNR 125438
- 5118P

TRADE SECRET INGREDIENT(222);OXIDIZER;CORROSIVE;PULMONARY DAMAGE;DENTAL
EROSION;PEL/TLV:5MG/M3(10MG/M3-STEL). TSNR 125438 - 5238P

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 1.4	ODOR: ACID
FL.PT.(DEG.F): >200	P-M(CC)	SP.GR.(70F)OR DENSITY: 1.098
VAPOR PRESSURE(mmHG): 18		VAPOR DENSITY(AIR=1): <1
VISC cps70F: ND		%SOLUBILITY(WATER): 100
EVAP.RATE: <1	ETHER=1	APPEARANCE: YELLOW TO DARK BROWN
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 26

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH ORGANICS OR ALKALINE MATERIALS.DO NOT
CONTAMINATE.BETZ TANK CLEAN-OUT CATEGORY 'D'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: BETZ 860

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS, GASES, MISTS AND/OR AEROSOLS CAUSE IRRITATION TO UPPER

RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED EXPOSURE MAY CAUSE LUNG DAMAGE AND/OR MAY CAUSE

PRIMARY IRRITANT DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION MAY CAUSE IRRITATION OF RESPIRATORY TRACT; SKIN CONTACT MAY CAUSE ITCHING AND/OR REDNESS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ORALLY INGESTED OR INHALED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: BETZ 860

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.
VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES
WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.
USE APPROVED CONTAINERS ONLY.STORE IN COOL,WELL-VENTED
AREA.CONTACT WITH METALS MAY RELEASE FLAMMABLE HYDROGEN GAS.

HANDLING INSTRUCTIONS***

CONTAINS AN OXIDIZER. AVOID ALL CONTACT WITH REDUCING AGENTS,
OILS, GREASES, ORGANICS AND ACIDS.

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY
...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:
5,466 GALLONS DUE TO (222);9,111 GALLONS DUE TO (122)
...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D002=CORROSIVE (PH,STEEL)
...DOT HAZARD/UN#/ER GUIDE# IS: CORROSIVE TO STEEL UN1760/#60
...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE
...SARA SECTION 302 CHEMICALS: TRADE SECRET--(222)INORGANIC ACID ;
...SARA SECTION 313 CHEMICALS: TRADE SECRET--(222)INORGANIC ACID , 2.0-5.0% ;
...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)
...MICHIGAN CRITICAL MATERIALS: NONE
NFPA/HMIS : HEALTH - 2 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - CORR ; PE - B

ACUTE EFFECTS OF
BETZ 865
ON THE RAINBOW TROUT, *Oncorhynchus mykiss*

(In Accordance with a Modification of Method EPA/600/4-90/027)

FINAL REPORT

AUTHOR

York Terrell

PERFORMING LABORATORY

Aqua Survey, Inc.
499 Point Breeze Road
Flemington, New Jersey 08822

LABORATORY PROJECT ID

BR93-2183B

JOB #: 93-100

STUDY SPONSOR

Betz Laboratories, Inc.
200 Witmer Road
Horsham, PA 19044

STUDY COMPLETION DATE

April 21, 1993



Acute Effects of Betz 865
on the Rainbow Trout, *Oncorhynchus mykiss*

ABSTRACT

The acute toxicity of the test substance Betz 865 to the Rainbow trout, *Oncorhynchus mykiss* was determined in a 96-hour, static daily renewal aquatic effects test. A total of 20 trout were exposed to each of 5 test substance concentrations. Tests were performed in replicates of two (10 trout per replicate). Exposure concentrations used throughout this report and in all endpoint calculations are based on the nominal concentration of the active test substance. The 96-hour, mean exposure concentrations were 313, 625, 1250, 2500 and 5000 mg I/L. Replicate results were pooled.

Trout used for this test were approximately 20-30 days of age at the start of the test. Water used as diluent water was moderately hard laboratory fresh water (with a hardness of 72 mg/L as CaCO₃). The test temperature was $12 \pm 1^\circ\text{C}$. The pH of the test stock solution was adjusted to the pH of the diluent water (approximately 7.9) using 1N calcium hydroxide.

During the test, 95 and 100% mortality was observed in the 2500 and 5000 mg I/L test concentrations, respectively, at the 24-hour observation period. The lone survivor in the 2500 mg I/L test concentration was observed spasmodic. At 48-hours, 100% mortality was observed in the 2500 mg I/L test concentration. No mortality or abnormality was observed in any other test concentration or diluent water control.

The 96-hour LC₅₀ value for Rainbow trout, *Oncorhynchus mykiss*, was calculated to be 1768 mg I/L (Binomial Method) with 95% confidence limits of 1250 and 2500 mg I/L. The acute No Observed Effect Concentration (NOEC) value was determined to be 1250 mg I/L.

The study results indicate that an isolated or intermittent exposure to a concentration of Betz 865, less than or equal to 1250 mg I/L, is unlikely to have an adverse effect on Rainbow trout.

It should be noted that toxicity values may vary with different species, temperatures and water qualities.

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ACUTE EFFECTS OF
BETZ 865
ON THE CLADOCERAN, *DAPHNIA MAGNA*

(In Accordance with a Modification of Method EPA/600/4-90/027)

FINAL REPORT

AUTHOR

York Terrell

PERFORMING LABORATORY

Aqua Survey, Inc.
499 Point Breeze Road
Flemington, New Jersey 08822

LABORATORY PROJECT ID

BR93-2183A

JOB # 93-100

STUDY SPONSOR

Betz Laboratories, Inc.
200 Witmer Road
Horsham, PA 19044

STUDY COMPLETION DATE

April 21, 1993



The Acute Effects of Betz 865
On the Cladoceran, *Daphnia magna*

ABSTRACT

The acute toxicity of the test substance Betz 865 to the cladoceran, *Daphnia magna*, was determined in a 48-hour, static daily renewal acute effects test. A total of 20 cladocerans were exposed to each of five test substance concentrations. Tests were performed in replicates of two (10 organisms per replicate). Exposure concentrations used throughout this report and in all endpoint calculations are the nominal concentrations of the active test substance. The 48-hour mean exposure concentrations were 250, 500, 1000, 2000 and 4000 mg I/L. Replicate results were pooled.

Cladocerans used for this test were less than 24 hours of age at the start of the test. Water used as diluent water was moderately hard laboratory freshwater (with a hardness of 76 mg/L as CaCO₃). The test temperature was 25 ± 1°C. The pH of the test stock solution was adjusted to the pH of the diluent water (approximately 7.6) using 1N calcium hydroxide.

During the test, some organisms were observed quiescent in the 2000 mg I/L test concentration at 24 hours. Mortality ranged from 15% in the 250 mg I/L test concentration to 100% in the 2000 and 4000 mg I/L test concentrations. Some organisms (both dead and alive) in all test concentrations were observed entrapped in what appeared to be precipitation from calcium hydroxide used to adjust the pH of the test stock solution. This suggests that some of the mortality observed in this test may have been the results of mechanics as well as toxicity. No mortality or abnormality was observed in the diluent water control.

The 48-hour EC₅₀ value for the cladoceran, *Daphnia magna* was calculated to be 1040.9 mg I/L (Trimmed Spearman-Kärber Method) with associated 95 percent confidence limits of 780.7 and 1388.0 mg I/L. No acute No Observed Effect Concentration (NOEC) value was observed.

These study results indicate that an isolated or intermittent exposure to a concentration of Betz 865 equal to 1040.9 mg I/L is likely to be lethal to 50% of the cladoceran, *Daphnia magna*.

It should be noted that toxicity values may vary with different species, temperatures and water qualities.



BETZ LABORATORIES, INC.
 4636 SOMERTON ROAD, TREVOSE, PA. 19053
 BETZ MATERIAL SAFETY DATA SHEET
 EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

(PAGE 1 OF 3)

EFFECTIVE DATE: 10-02-92

PRINTED: 10-02-92

PRODUCT : POWERLINE DEFO3 PROPOSED

FOR PROPOSAL USE ONLY

REVISIONS TO SECTIONS: 1&4

PRODUCT APPLICATION: WATER-BASED DEPOSIT CONTROL AGENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

PHOSPHONIC ACID, (1-HYDROXYETHYLIDINE) BIS-(HEDP) ***CAS# 2809-21-4; EYE IRRITANT; PEL: NONE; TLV: NONE;

Final physical properties have not been determined as yet on this custom product. However, this MSDS is representative of the ingredients and their proportions. When final properties are complete, a MSDS will be prepared.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

TH: AS IS (APPROX.) < 1.0	ODOR: MILD
FL. PT. (DEG. F): > 200 P-M (CC)	SP. GR. (70F): 1.406
VAPOR PRESSURE (mmHG): ~ 18.0	VAPOR DENSITY (AIR=1): < 1.00
VISC cps 70F: 80	% SOLUBILITY (WATER): 100.0
EVAP RATE: < 1.00 (ETHER=1)	APPEARANCE: YELLOW
PHYSICAL STATE: LIQUID	FREEZE POINT (DEG. F): < -30.00

-----SECTION 3-----REACTIVITY DATA-----

STABLE. MAY REACT WITH STRONG OXIDIZERS. DO NOT CONTAMINATE. BETZ TANK CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT : POWERLINE DEFO3 PROPOSED

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MAY CAUSE MODERATE IRRITATION TO THE SKIN

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

MAY CAUSE REDNESS OR ITCHING OF SKIN, IRRITATION AND/OR TEARING OF EYES (DIRECT CONTACT).

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT ***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM. DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS****

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) - INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT : POWERLINE DEPO3 PROPOSED

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
 USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
 RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.
 VENTILATION PROTECTION***

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
 USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE REPLACE AS NECESSARY.

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
 STORAGE INSTRUCTIONS***

KEEP CONTAINERS CLOSED WHEN NOT IN USE.

USE APPROVED CONTAINERS ONLY. STORE IN COOL, WELL-VENTED AREA. CONTACT WITH
 METALS MAY RELEASE FLAMMABLE HYDROGEN GAS.

HANDLING INSTRUCTIONS***

ACIDIC. DO NOT MIX WITH ALKALINE MATERIAL.

 THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
 EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
 ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
 IDENTIFICATION NUMBER IS: D002-CORROSIVE (PH, STEEL)

...DOT HAZARD/UN#/ER GUIDE# IS : CORROSIVE TO STEEL/UN1760/#60

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE (ACUTE)

...MICHIGAN CRITICAL MATERIALS: NONE

NFPA/HMIS : HEALTH - 2; FIRE - 1; REACTIVITY - 0; SPECIAL - CORR; PE - B

BETZ LABORATORIES
4635 SOMERTON ROAD , TREVOSE, PA 19053

PRODUCT: POWERLINE DEF03 PROPOSED

AQUATIC TOXICOLOGY

Daphnia magna (Data generated on similar product)

NOTE: Due to the acidic nature of the test solutions, pH
was adjusted to levels commonly encountered in treatment water

48 Hour Static Screen

No effect level: 500 MG/L

Fathead Minnow (Data generated on similar product)

NOTE: Due to the acidic nature of the test solutions, pH
was adjusted to levels commonly encountered in treatment water

48 Hour Static Screen

No effect level: 500 MG/L

MAMMALIAN TOXICOLOGY

NO DATA AVAILABLE

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047
BETZ MATERIAL SAFETY DATA SHEET
24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT : POWERLINE 3690

(PAGE 1 OF 3)
EFFECTIVE DATE 06-09-89
PRINTED: 3-SEP-1989
REV: SEC.2&3

PRODUCT APPLICATION : WATER-BASED DEPOSIT CONTROL AGENT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----
INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC
PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS
LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE
AND CHRONIC HAZARDS OF THIS FORMULATION.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 12.5	ODOR: SLIGHT
FL. PT. (DEG. F):	>200 SETA (CC)	SP. GR. (70F) OR DENSITY: 1.02
VAPOR PRESSURE (MMHG):	18	VAPOR DENSITY (AIR=1): <1
VISC cps70F:	30	% SOLUBILITY (WATER): 100
EVAP. RATE: <1	ETHER=1	APPEARANCE: COLORLESS
PHYSICAL STATE:	LIQUID	FREEZE POINT (DEG. F): 31

-----SECTION 3-----REACTIVITY DATA-----

STABLE. MAY REACT WITH STRONG OXIDIZERS. DO NOT CONTAMINATE. BETZ TANK
CLEAN-OUT CATEGORY 'A'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: POWERLINE 3690

EFFECTIVE DATE 06-09-89

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS ***

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

MAY CAUSE REDNESS OR ITCHING OF SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE).

DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

PRODUCT: POWERLINE 3690

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.
VENTILATION PROTECTION***

ADEQUATE VENTILATION
RECOMMENDED RESPIRATORY PROTECTION***
IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***
RUBBER GLOVES
WASH OFF AFTER EACH USE. REPLACE AS NECESSARY
RECOMMENDED EYE PROTECTION***
SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***
KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.
REASONABLE AND SAFE CHEMICAL STORAGE

HANDLING INSTRUCTIONS***
GENERAL-IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE
SPECIFIC- ALKALINE. DO NOT MIX WITH ACIDIC MATERIAL.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
HAROLD M. WERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION
THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:
NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D002=CORROSIVE
...DOT HAZARD CLASSIFICATION: NOT APPLICABLE
...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NONHAZARDOUS UNDER SECTION 311/312
...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE - B

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVÖSE, PA. 19047

9/15/89 PRODUCT: POWERLINE 3690
AQUATIC TOXICOLOGY

DAPHNIA MAGNA

0% MORTALITY: 500 MG/L
48 HR. SCR.
RAINBOW TROUT

0% MORTALITY: 1000 MG/L
48 HR. SCR.

9/15/89 MAMMALIAN TOXICOLOGY

ORAL LD50 -NO DATA

DERMAL LD50 -NO DATA

SKIN IRRITATION SCORE-NO DATA

EYE IRRITATION SCORE-NO DATA

INHALATION-NO DATA



Buckman Laboratories
INDUSTRIAL WATER TREATMENT DIVISION

DISPERSANTS

BULAB® 8007

W61W

- Penetrant and dispersant for microbial and organic deposits
- Effective film-forming organic corrosion inhibitor
- Effective component of alkaline and acidic cleaning and descaling formulations

General

Bulab 8007 is a liquid penetrant and dispersant used in the treatment of industrial and commercial cooling water systems. Its unique properties make Bulab 8007 a highly versatile product.

When the product is used as a biodispersant with microbicides, more effective microorganism control is achieved. Bulab 8007 effectively prevents the deposition of organic fouling materials (such as oils and greases) in circulating water systems. It also forms a thin film on metal surfaces that helps prevent corrosion.

Since it is an unusually effective penetrant and dispersant, Bulab 8007 is particularly useful as a component of alkaline and acidic industrial cleaning solutions. Its foam- and corrosion-inhibiting properties are valuable benefits of its use in shutdown cleaning procedures.

Product Data

Appearance:	Clear brown liquid
Odor:	Slight fatty odor
pH (100 ppm in water):	No effect on pH of water
Flash point (Tagliabue closed-cup method):	Above 135 °C (275 °F)
Density at 25 °C (77 °F):	0.90 g/mL (7.5 lb./U.S. gal)
Approximate volume per kg:	1110 mL
Approximate volume per pound:	505 mL

Dosage and Feeding

The specific dosage level of Bulab 8007 will vary depending on the system operating conditions and the particular benefit desired.

Bulab 8007 can be used as received. For best distribution, the product should be added to the system at a point of good agitation.

Your Buckman representative will recommend the most effective treatment program for your specific needs.

Storage and Handling

Bulab 8007 is available in nonreturnable drums or bulk containers. Materials of construction suitable for storing and handling Bulab 8007 include ferrous metals, Penton, polypropylene, molded nylon, and Teflon. In the concentrated form, the product can have an adverse effect on rubber, polyvinyl chloride, acrylics, and certain other plastics. Bulab 8007 is relatively unaffected by extreme temperatures.

Improper handling of this product can be injurious to workers. Observe all safety precautions shown on the label and in the Material Safety Data Sheet.

Seller warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions. Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty. The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort.

Buckman Laboratories in Argentina, Australia, Austria, Belgium, Brazil, Canada, France, Germany, Japan, Mexico, Portugal, South Africa, Spain, United Kingdom, and U.S.A.

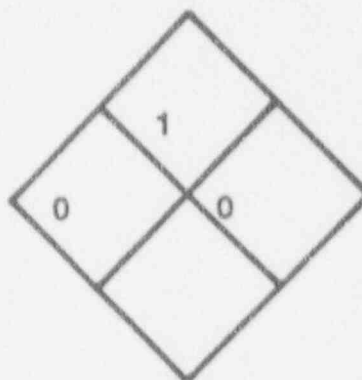
BUCKMAN LABORATORIES, INC.
MATERIAL SAFETY DATA SHEET



BULAB 8007

Revision Date: 6/01/92

Buckman Laboratories, Inc.
1256 North McLean Boulevard
Memphis, TN 38108



Phone 1-800-BUCKMAN

24 Hour Emergency Phone
(901) 767-2722

SECTION 1

OSHA HAZARD CLASSIFICATIONS

Nonhazardous.

SECTION 2

HAZARDOUS COMPONENTS

The components of this product comprise proprietary information.

SECTION 3

PRECAUTIONARY LABEL INFORMATION

This section not applicable to non-biocides.

SECTION 4

FIRST AID INFORMATION

Eye exposure: Flush immediately with copious amounts of tap water or normal saline (minimum of 15 minutes). Take exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation.

Skin exposure: Wash exposed area with plenty of soap and water. Repeat washing. Remove contaminated clothing and wash thoroughly before reuse. If irritation persists consult a health care professional.

Inhalation: If exposure by inhalation is suspected, immediately move exposed individual to fresh air. If individual experiences nausea, headache, dizziness, has difficulty in breathing or is cyanotic, seek a health care professional immediately.

Ingestion: DO NOT INDUCE VOMITING. Rinse mouth with copious amounts of water or milk, first. Irrigate the esophagus and dilute stomach contents by slowly giving one (1) to two (2) glasses of water or milk. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-comatose, comatose or convulsing, DO NOT GIVE FLUIDS BY MOUTH. In case of intentional ingestion of the product seek medical assistance immediately; take individual to the nearest medical facility.

NOTE TO PHYSICIAN: No specific antidote is known. Treat Symptoms. Medical consultation is available 24 hours

a day. Call the Buckman Center for Product Information at (901) 767-2722.

SECTION 5

PRIMARY ROUTES OF EXPOSURE

1. Effects from Acute Exposure:

Eye exposure: May cause mild irritation depending on the length of exposure, solution concentration and first aid measures.

Skin exposure: May cause mild skin irritation depending on length of exposure, solution concentration and first aid measures.

Inhalation: May cause irritation of mucous membranes and the lungs. Exposed individuals should be monitored for respiratory distress, bronchitis or pneumonia.

Ingestion: No data is available on human ingestion. Based on the components and the acute oral toxicity, no adverse effects are expected.

2. Effects from Chronic Exposure:

SECTION 6

TOXICOLOGICAL INFORMATION

Acute effects: Oral LD50 = 5 - 10 g/kg (female rat), 10 - 20 g/kg (male rat)

Acute Dermal LD50: 8,000.0 mg/kg

Irritant effects: None

Sensitization effects: None.

Carcinogenic potential: Not listed in any of OSHA Standard, Section 1910.1200 sources as carcinogenic; not tested by Buckman Laboratories, Inc.

Other health effects: None known.

SECTION 7

ENVIRONMENTAL TOXICOLOGICAL INFORMATION

Acute Aquatic LC50's

96 Hr. Fathead minnow: 4.4 mg/L

96 Hr. Rainbow trout: 0.43 mg/L

SECTION 8

PHYSICAL AND CHEMICAL PROPERTIES

Appearance clear amber liquid
Odor mild
Density @ 25°C 0.9 g/mL
Flash Point > 100°C (TCC)
Freezing Point < 0°C
Boiling Point > 300°F (150°C)

Solubility	slightly soluble in water, soluble in many organic solvents
pH	N/A
pH (100 ppm in water)	6.5 - 7.5
Vapor Pressure	N/T
o/w Partition Coefficient	N/T
Oxidizing/Reducing Properties	Not a strong oxidizing or reducing agent

NOTE: N/A = Not Applicable, N/T = Not Tested

SECTION 9	FIRE AND EXPLOSION INFORMATION
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Flammable limits: Not applicable.
 Extinguishing media: Water fog, carbon dioxide, foam, dry chemical
 Special firefighting procedures: None.

SECTION 10	REACTIVITY INFORMATION
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Stability: stable
 Incompatibility: None known.
 Hazardous Decomposition Products: None known.

SECTION 11	HANDLING PRECAUTIONS
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Rubber gloves and safety glasses or goggles are recommended.
 Eye-wash fountains in the work area are recommended.

SECTION 12	Reserved for SATISFACTORY MATERIALS OF CONSTRUCTION
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SECTION 13	SPILL, LEAK, AND DISPOSAL PROCEDURES
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SPILL AND LEAK RESPONSE GUIDELINES

Important: Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the Handling Precautions sections. Check the Fire and Explosion Data section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of enclosed areas.

Emergency Response Assistance: Emergency technical assistance is available at any time from Buckman Laboratories, Inc., by calling (901) 767-2722.

Initially minimize area effected by the spill or leak. Block any potential routes to water systems (e.g., sewers, streams, lakes, etc.). Based on the product's toxicological and chemical properties, and on the size and location of the spill or leak, assess the impact on contaminated environments (e.g. water systems, ground, air equipment, etc.). There are no methods

available to completely eliminate any toxicity this product may have on aquatic environments. Minimize adverse effects on these environments. Buckman Laboratories, Inc. can be contacted for technical assistance. Determine if federal, state, and/or local release notification is required (see Regulatory Classifications section of this MSDS). Recover as much of the pure product as possible into appropriate containers. Later, determine if this recovered product can be used for its intended purpose. Address clean-up of contaminated environments. Spill or leak residuals may have to be collected and disposed of. Clay, soil, or commercially available absorbents may be used to recover any material that can not readily be recovered as pure product. Flushing residual material to an industrial sewer, if present at the site of a spill or leak incident, may be acceptable if authorized approval is obtained. If product and/or spill/leak residuals are flushed to an industrial sewer, insure that they do not come into contact with incompatible materials. Contact the person(s) responsible for the operation of your facility's industrial sewer system prior to intentionally flushing or pumping spills or leaks of this product to the industrial sewer.

DISPOSAL GUIDELINES

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Neat Product: Contact your Buckman representative or Buckman Laboratories, Inc., at (901) 278-0330.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management. This product is not specifically listed in 40 CFR 261 as a Resource Conservation and Recovery Act (RCRA) hazardous waste. However, spill or leak residuals may meet the criteria of a characteristic hazardous waste under this Act. Check the characteristics of the material to be disposed of and/or the physical and reactivity data given in this MSDS for the neat product.

Container Disposal: Empty containers, as defined by appropriate sections of the RCRA, are not RCRA hazardous wastes. However, insure proper management of any residuals remaining in container.

SECTION 14

TRANSPORTATION AND SHIPPING INFORMATION

DOT Shipping Name: NONHAZARDOUS

SECTION 15

REGULATORY INFORMATION

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act):

SARA 302 Extremely Hazardous Substances List (40 CFR 300): No components of this product are listed.

SARA 312 Hazard Category: Nonhazardous.

SARA 313 Toxic Chemicals List: No Section 313 listed substances are present above de minimus levels.

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act): No components of this product are listed.

RCRA (Resource Conservation and Recovery Act) Listed Hazardous Wastes: No components of this product are listed.

CWA (Clean Water Act, 40 CFR 401.15) Listed Substances: No components of this product are listed.

FDA (Food and Drug Administration): This product is approved under the following FDA (21 CFR) sections:

TSCA (Toxic Substances Control Act) Applicability: All components are listed on TSCA Inventory.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act): This product is not a registered pesticide.

HMIS/NPCA Ratings: Health 0; Flammability 1; Reactivity 0

HFPA Ratings: Health 0; Flammability 1; Reactivity 0

STATE REGULATIONS

California Proposition 65: This product has been reviewed for Prop 65 components, and the following warning applies:

WARNING: This product may contain substance(s) which are known to the State of California to cause cancer or reproductive harm.

(Contains < 150 ppb N-nitrosodimethylamine and trace amounts of residual ethylene oxide may be detectable)

Various State Right to Know Acts: Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary chemicals or inerts please contact Buckman Laboratories' Regulatory Affairs Department.

The information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application which is not described in the Product Data Sheet is the responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazard Communication regulations.

Buckman Laboratories, Inc. warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions.

Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty.

The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort.

Any controversy or claim arising out of or relating to this contract, or breach thereof, shall be settled by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgement upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.



AQUATIC TOXICITY PROFILE

BUCKMAN LABORATORIES INTERNATIONAL, INC.

bb8007.aq

March 30, 1992

Bulab 8007

Ingredients:

The identity of the ingredients of this product are proprietary information of Buckman Laboratories. None of the ingredients of this product are considered to be hazardous by definition of OSHA.

Aquatic Toxicity Information:

Freshwater

48 hour LC50 - <i>Ceriodaphnia dubia</i>	7.5 mg/L
96 hour LC50 - Fathead minnow	4.4 mg/L
96 hour LC50 - Rainbow trout	5.1 mg/L

Estuarine/Marine

96 hour LC50 - <i>Mytilus edulis</i>	9.19 mg/L
--------------------------------------	-----------

The information on this Data Sheet reflects the latest toxicological information and data that we have on this product. However, no representation or warranty of any kind, express or implied, is made as to this Data Sheet or the contents hereof, and no such warranty shall be implied by law. The exclusive remedy against Buckman Laboratories International, Inc. for any cause of action relating to this Data Sheet is a claim for damages not to exceed any price paid for the Data Sheet, without regard to whether any such claim is based upon breach of warranty or tort.



product facts

BETZ FOAM-TROL® 229

- General purpose silicone emulsion
- FDA approved
- Effective over broad pH range

DESCRIPTION AND USE

BETZ Foam-Trol 229 is a general purpose silicone emulsion antifoam/defoamer designed to control foam in waste treatment systems, gas purifying units and other chemical processes. BETZ Foam-Trol 229 may also be used to control detergent foams and soluble oil foams.

FEEDING REQUIREMENTS

Proper treatment levels for BETZ Foam-Trol 229 depend on many factors, such as severity of the problem and conditions particular to a given installation. This product is to be used in accordance with control procedures BETZ establishes for a specific application.

BETZ Foam-Trol 229 may be fed neat (undiluted) directly from the shipping container, or diluted to a 10 percent solution. Mild agitation should be maintained for any dilution that is to be fed over a period of four hours or longer.

SAFETY PRECAUTIONS

A Material Safety Data Sheet containing detailed information relative to this product is available upon request.

GENERAL PROPERTIES

Appearance	White emulsion
Flash Point (Closed Cup)	>200F
Separation Temperature	20F
Specific Gravity (100F)	0.978
Viscosity (100F)	790 cps

PACKAGING INFORMATION

BETZ Foam-Trol 229 is blended as a liquid, and is supplied in 55 gallon (208 liters), bung-type, non-returnable steel drums. Approximate net weight—440 pounds (200 kg) per drum.

STORAGE

To insure maximum activity, recommended in-plant storage is one year.

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047
BETZ MATERIAL SAFETY DATA SHEET
24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

PRODUCT : FOAM-TROL 229

(PAGE 1 OF 3)
EFFECTIVE DATE 02-18-88
REV.: SEC.2

PRODUCT APPLICATION : ANTIFOAM.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

THIS PRODUCT CONTAINS NO HAZARDOUS INGREDIENTS BY OSHA REGULATIONS OR ANY STATE RIGHT-TO-KNOW REGULATIONS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 7.4	ODOR: MILD
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.0
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F: ND		%SOLUBILITY(WATER): 0
EVAP.RATE: <1	ETHER=1	APPEARANCE: WHITE
PHYSICAL STATE: EMULSION		FREEZE POINT(DEG.F): 17

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: FOAM-TROL 229

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS ***

SLIGHTLY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

VAPORS, GASES, MISTS AND/OR AEROSOLS MAY CAUSE IRRITATION TO UPPER
RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

MAY CAUSE REDNESS OR ITCHING OF SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF
SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A
PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE
FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD
METHODS. IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB
ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE
CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL,
SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.

FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. IF SO, SPREAD
SAND OR GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
APPARATUS (FULL FACE-PIECE TYPE).

DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER. FOAM OR WATER CREATE A SLIPPERY
CONDITION. SPREAD SAND OR GRIT

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: FOAM-TROL 229

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

VENTILATION PROTECTION***

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***

GENERAL-IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE
SPECIFIC- NORMAL CHEMICAL HANDLING

-----SECTION 9-----FEDERAL REGULATIONS-----

OSHA(29CFR)-USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTIONS
1910.132-1910.134.

REPORTABLE QUANTITY: AS IS PRODUCT (HAZARDOUS SUBSTANCE)

TREAT AS OIL SPILL

RCRA(40CFR): IF DISCARDED, THIS MATERIAL BEARS HWI# NOT APPLICABLE

DOT(49CFR)CLASSIFICATION: NOT APPLICABLE

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

THIS DOCUMENT IS PROVIDED TO SUPPLY ALL THE INFORMATION NECESSARY TO COMPLY
WITH OSHA HAZARD COMMUNICATIONS REGULATIONS, AND RIGHT-TO-KNOW REQUIREMENTS.
WHILE THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE BELIEVED TO
BE ACCURATE AS OF THE DATE HEREOF, BETZ LABORATORIES MAKES NO WARRANTY WITH
RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

HAROLD M. HERSH
ENVIRONMENTAL INFORMATION COORDINATOR

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 1 DISCHARGE LOCATION * SCHEDULE * FLOW RATE WASTEWATER TYPE CODE 1 CONTACT COOLING 2 NONCONTACT COOLING 3 PROCESS 4 SANITARY 5 STORMWATER UNIT CODE 1 MGY 2 MGD 3 GPD	OUTFALL NUMBER	009					
	A. LOCATION OF DISCHARGE	N.W. & N.W. SECTION 211, TOWNSHIP 16 S, RANGE 10 E					
	B. NAME OF RECEIVING WATER (I.E. GROUNDWATER OR NAME OF SURFACE WATER)	SWAIN CREEK					
	C. DO YOU DISCHARGE SEASONALLY? (IF NO, CONTINUE TO E)	<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO			
	D. IF YES, LIST DISCHARGE PERIODS	MO. / DAY	THROUGH		MO. / DAY		
			THROUGH				
			THROUGH				
	E. LAND APPLICATION RATE	IN./HR.	HR./DAY	IN./WK.	<input checked="" type="checkbox"/>		
	F. TYPE OF WASTEWATER DISCHARGE	3 5 WASTEWATER TYPE CODE					
	G. DISCHARGE SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	6		DAY/YEAR	40	
H. DISCHARGE FLOW RATE	TOTAL YEARLY	2,880		UNIT CODE	1		
	DAILY MINIMUM	0		UNIT CODE	3		
	DAILY MAXIMUM	7,200,000		UNIT CODE	3		
I. THE MAXIMUM DISCHARGE FLOW RATE TO BE AUTHORIZED IN PERMIT.	AUTHORIZED	7,200,000		UNIT CODE	3		
J. MAXIMUM DESIGN DISCHARGE FLOW RATE.	DESIGN	7,200,000		UNIT CODE	3		
A. DO YOU USE WATER TREATMENT ADDITIVES TO TREAT YOUR DISCHARGE? (IF NO, CONTINUE TO ITEM 3)	<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO				
ITEM 2 WATER TREATMENT ADDITIVES UNITS CODE 1 Mg/l 2 Ug/l	B. NAME, FUNCTION, AND CHEMICAL COMPOSITION OF THESE ADDITIVES.	NAME		FUNCTION			
	C. NAME AND ADDRESS OF MANUFACTURERS OF THESE ADDITIVES.						
	D. EXPECTED DISCHARGE CONCENTRATION OF ADDITIVES.	MINIMUM	UNITS CODE	AVERAGE	UNITS CODE	MAXIMUM	UNITS CODE
	ADDITIVE NAME						
	ADDITIVE NAME						
ADDITIVE NAME							
E. DO YOU TREAT THE DISCHARGE TO REMOVE ADDITIVES?	<input type="checkbox"/> YES		<input type="checkbox"/> NO				
F. WHAT IS THE REMOVAL EFFICIENCY AND DISCHARGE FREQUENCY?	REMOVAL		DISCHARGE FREQUENCY				
ADDITIVE NAME			HRS./DAY	DAYS/WK.			
ADDITIVE NAME							
ADDITIVE NAME							
G. AS AN ATTACHMENT TO THIS APPLICATION PROVIDE SPECIFIC MAMMALIAN OR AQUATIC TOXICOLOGICAL DATA OR REFERENCE WHICH ARE AVAILABLE AND INFORMATION ON THE RATE OF DEGRADATION OF THE PRODUCTS FOR EACH ADDITIVE.							

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 3

PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

UNITS CODE
POUNDS
GALLONS
CUBIC
YARDS
TONS
MGY
MGD
GPD

TIME
HOUR
DAY
WEEK
MONTH
YEAR

OUTFALL NUMBER		(0,0,9)	
PROCESS 1	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	1.	(LOW VOLUME WASTE) 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	(4) DAYS/YEAR (20)
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	(1) (5) UNITS CODE
		DAILY MINIMUM	(0) (7)
	DAILY MAXIMUM	(300000) (7)	
D. PROCESS PRODUCTION RATE			UNITS / TIME
PROCESS 2	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	2.	(CHEM METAL CLN) 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	(24) DAYS/YEAR (10)
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	(5) (5) UNITS CODE
		DAILY MINIMUM	(0) (7)
	DAILY MAXIMUM	(500000) (7)	
D. PROCESS PRODUCTION RATE			UNITS / TIME
PROCESS 3	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	3.	(NON CHEM MET C) 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	(24) DAYS/YEAR (10)
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	(5) (5) UNITS CODE
		DAILY MINIMUM	(0) (7)
	DAILY MAXIMUM	(500000) (7)	
D. PROCESS PRODUCTION RATE			UNITS / TIME
PROCESS 4	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	
		DAILY MINIMUM	
	DAILY MAXIMUM		
D. PROCESS PRODUCTION RATE			UNITS / TIME
PROCESS 5	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	
		DAILY MINIMUM	
	DAILY MAXIMUM		
D. PROCESS PRODUCTION RATE			UNITS / TIME

1. Low Volume Waste
2. Chemical Metal Cleaning Waste
3. Non-chemical Metal Cleaning Waste

SECTION II

PERMIT
NUMBER

MI0037028

SEE INSTRUCTIONS
ON REVERSE SIDEITEM
6PRIORITY
POLLUTANTS
AND
ADDITIONAL
INFORMATION
FOR
SURFACE
WATER
DISCHARGE
ONLY

OUTFALL NUMBER

0019

THE FOLLOWING REQUESTED INFORMATION SHALL BE ADDRESSED BY ALL SURFACE WATER DISCHARGERS.
NOTE: NEW USE DISCHARGERS SHALL PROVIDE EXPECTED VALUES FOR THE QUANTITATIVE AND
QUALITATIVE INFORMATION REQUESTED BELOW.

A. IS THIS FACILITY A PRIMARY INDUSTRY? (REFER TO TABLE IA PAGE 41) (IF NO, GO TO E) (IF YES, GO TO B)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B. INDICATE TYPE OF PRIMARY INDUSTRY AS LISTED IN TABLE IA PAGE 41. (CONTINUE WITH C.)	STEAM ELECTRIC
C. DOES THIS OUTFALL DISCHARGE CONTAIN ANY PROCESS WASTEWATER? (IF NO, GO TO E) (IF YES, GO TO D)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. INDICATE WHICH GC/MS FRACTIONS MUST BE TESTED FOR. (REFER TO TABLE IA PAGE 41) NOTE: FOR EACH GC/MS FRACTION CHECKED, EACH SPECIFIC ORGANIC TOXIC POLLUTANT WITHIN EACH FRACTION <u>MUST</u> BE ANALYZED FOR (SEE TABLE IIA PAGE 42). IN ADDITION, ALL PRIMARY INDUSTRY APPLICANTS WITH A PROCESS WASTEWATER DISCHARGE <u>MUST</u> PROVIDE QUANTITATIVE DATA FOR EACH TOXIC POLLUTANT IN TABLE IIA PAGE 43). RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET. (CONTINUE WITH E-K BELOW)	<input checked="" type="checkbox"/> VOLATILE <input type="checkbox"/> BASE/NEUTRAL <input checked="" type="checkbox"/> ACID <input type="checkbox"/> PESTICIDE
E. IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF THE TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE THAT ANY POLLUTANT LISTED IN TABLE IIA AND IVA PAGES 42-43 IS DISCHARGED FROM ANY OUTFALL, THE QUANTITATIVE DATA <u>MUST</u> BE PROVIDED. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
F. IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE ANY POLLUTANTS LISTED IN TABLE IVA PAGE 45 ARE DISCHARGED FROM ANY OUTFALL THE APPLICANT <u>MUST</u> DESCRIBE REASONS FOR THE POLLUTANT BEING PRESENT AND PROVIDE ANY AVAILABLE QUANTITATIVE DATA. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
G. ALL SURFACE WATER DISCHARGE APPLICANTS (PRIMARY AND SECONDARY INDUSTRIES) MUST: USES OR MANUFACTURES 2, 4, 5-TRICHLOROPHENYL ACETIC ACID (2, 4, 5-T); 2, 4, 5-TRICHLOROPHENYL PROPANOIC ACID (SILVEX, 2, 4, 5, TP); 2, 4, 5-TRICHLOROPHENYL ETHYL 2, 2-DICHLOROPROPIONATE (ERBON); D, D-DIMETHYL D-(2, 4, 5-TRICHLOROPHENYL) PHOSPHOROTHIOATE (RONNEL); 2, 4, 5-TRICHLOROPHENYL (TCP); OR HEXACHLOROPHENE (HEP). (ALL DATA FOR THE ABOVE MUST BE GENERATED USING STANDARD ANALYTICAL CALIBRATION PROCEDURES) OR KNOWS OR HAS REASON TO BELIEVE THAT TCDD IS OR MAY BE PRESENT IN THEIR DISCHARGE. <u>MUST</u> REPORT QUALITATIVE DATA, GENERATED WHO USED A SCREENING PROCEDURE NOT CALIBRATED WITH ANALYTICAL STANDARDS, FOR 2, 3, 7, 8, -TETRACHLORODIBENZO-P-DIOXIN (TCDD). RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
H. IF THE SURFACE WATER DISCHARGE APPLICANT KNOWS OR HAS REASON TO BELIEVE THAT BIOLOGICAL TOXICITY TESTS WERE MADE IN THE LAST THREE (3) YEARS ON ANY OF THE APPLICANT'S DISCHARGES OR ON A RECEIVING WATER IN RELATION TO A DISCHARGE, PROVIDE THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED
I. IF A CONTRACT LABORATORY OR CONSULTING FIRM PERFORMED ANY OF THE ANALYSES REQUIRED BY THIS APPLICATION, PROVIDE THE NAME AND ADDRESS OF EACH LABORATORY OR FIRM AND THE ANALYSES PERFORMED AS AN ATTACHMENT OF THIS APPLICATION.	<input type="checkbox"/> NOT APPLICABLE <input checked="" type="checkbox"/> APPLICABLE/SEE ATTACHED
J. DO YOU DISCHARGE ANY OTHER TOXIC OR INJURIOUS CHEMICAL SUBSTANCES NOT LISTED IN TABLES IV PAGE 5 AND IIA THROUGH IVA PAGES 42-43. IF YES, THEN IDENTIFY THE CHEMICAL SUBSTANCES AND ESTIMATE THE FINAL EFFLUENT CONCENTRATIONS. SUBMIT THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED

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SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

OUTFALL NUMBER

0009

ITEM 7

CRITICAL MATERIALS
• TOXIC POLLUTANTS
• HAZARDOUS SUBSTANCES IN DISCHARGE

A. USE THIS DATA SHEET TO RECORD INFORMATION AS REQUIRED IN: (CHECK APPROPRIATE BOX FOR WHICH INFORMATION THIS DATA SHEET REPRESENTS.)

- 1. SECTION II, ITEM 4-E. GROUNDWATER DISCHARGE INFORMATION (PAGE 35)
- 2. SECTION II, ITEM 6. PRIORITY POLLUTANTS IN SURFACE WATER DISCHARGE (PAGE 37)
- 3. B. BELOW: CRITICAL MATERIALS (TABLE IV) IN SURFACE WATER DISCHARGE (PAGE 39)

B. LIST ANY CRITICAL MATERIAL (TABLE IV PAGE 6) NOT ADDRESSED IN SECTION II ITEM F PRIORITY POLLUTANTS WHICH YOU KNOW OR HAVE REASON TO BELIEVE TO BE PRESENT IN THE DISCHARGE. SEE REVERSE SIDE OF THIS PAGE FOR FURTHER DIRECTIONS.

- NOT APPLICABLE
- APPLICABLE (SEE BELOW)

- UNITS CODE**
- 1 Mg/l
 - 2 Ug/l
 - 3 LBS DAY
 - 4 KG DAY

- SAMPLE TYPE**
- 1 GRAB
 - 2 24 HR COMP

MATERIAL	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
MATERIAL 1	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			
MATERIAL 2	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			
MATERIAL 3	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			
MATERIAL 4	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			
MATERIAL 5	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			
MATERIAL 6	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			
MATERIAL 7	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			
MATERIAL 8	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	UNIT CODE		UNIT CODE
	C. MAXIMUM CONCENTRATION AND MASS			

ADDITIONAL PAGES OF THIS ITEM 7 ARE ATTACHED FOR THE REST OF THE CRITICAL MATERIALS AND/OR PRIORITY POLLUTANTS REQUIRED TO BE REPORTED.

- YES
- NO

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 1 DISCHARGE LOCATION SCHEDULE FLOW RATE WASTEWATER TYPE CODE 1 CONTACT COOLING 2 NONCONTACT COOLING 3 PROCESS 4 SANITARY 5 STORMWATER UNIT CODE 1 MGY 2 MGD 3 GPD	CUTFALL NUMBER	011					
	A. LOCATION OF DISCHARGE	N.W. & N.W. SECTION 21, TOWNSHIP 16S, RANGE 10E					
	B. NAME OF RECEIVING WATER (I.E. GROUNDWATER OR NAME OF SURFACE WATER)	SWAN CREEK					
	C. DO YOU DISCHARGE SEASONALLY? (IF NO, CONTINUE TO E)	<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO			
	D. IF YES, LIST DISCHARGE PERIODS	MO. / DAY		THROUGH		MO. / DAY	
		____		____		____	
		____		____		____	
		____		____		____	
	E. LAND APPLICATION RATE	IN./HR.		HR./DAY		IN./WK. <input checked="" type="checkbox"/>	
		____		____		____	
F. TYPE OF WASTEWATER DISCHARGE	2 3		5		WASTEWATER TYPE CODE		
G. DISCHARGE SCHEDULE (YEARLY AVERAGE)	HOURS/DAY		DAY/YEAR				
	24		365				
H. DISCHARGE FLOW RATE	TOTAL YEARLY		DAILY MINIMUM		DAILY MAXIMUM		
	4254.8		0		1.427		
					UNIT CODE		
					1		
I. THE MAXIMUM DISCHARGE FLOW RATE TO BE AUTHORIZED IN PERMIT. (IF NO, CONTINUE TO ITEM 3)	AUTHORIZED		DESIGN		UNIT CODE		
	195.0		195.0		2		
					UNIT CODE		
					2		
ITEM 2 WATER TREATMENT ADDITIVES UNITS CODE 1 Mg/l 2 Ug/l	A. DO YOU USE WATER TREATMENT ADDITIVES TO TREAT YOUR DISCHARGE? (IF NO, CONTINUE TO ITEM 3)	<input checked="" type="checkbox"/> YES		<input type="checkbox"/> NO			
	B. NAME, FUNCTION, AND CHEMICAL COMPOSITION OF THESE ADDITIVES.	NAME		FUNCTION			
		Betz Polymer 1120		Settling Agent			
		Betz Polymer 1192		Settling Agent			
	C. NAME AND ADDRESS OF MANUFACTURERS OF THESE ADDITIVES.	Betz Industrial Inc. 4636 Somerton Road Trevose, PA 19047					
	D. EXPECTED DISCHARGE CONCENTRATION OF ADDITIVES.	MINIMUM	UNITS CODE	AVERAGE	UNITS CODE	MAXIMUM	UNITS CODE
	ADDITIVE NAME	Betz Polymer 1120	0 1	1.0	1	2.0	1
ADDITIVE NAME	Betz Polymer 1192	0 2	5.0	2	10.0	2	
ADDITIVE NAME							
E. DO YOU TREAT THE DISCHARGE TO REMOVE ADDITIVES?	<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO				
F. WHAT IS THE REMOVAL EFFICIENCY AND DISCHARGE FREQUENCY?	% REMOVAL		DISCHARGE FREQUENCY		HRS./DAY DAYS/WK.		
ADDITIVE NAME	____		____		____		
ADDITIVE NAME	____		____		____		
ADDITIVE NAME	____		____		____		
G. AS AN ATTACHMENT TO THIS APPLICATION PROVIDE SPECIFIC MAMMALIAN OR AQUATIC TOXICOLOGICAL DATA OR REFERENCE WHICH ARE AVAILABLE AND INFORMATION ON THE RATE OF DEGRADATION OF THE PRODUCTS FOR EACH ADDITIVE.							

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM: 3

PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

UNITS CODE
POUNDS
GALLONS
CUBIC
YARDS
TONS
MGY
MGD
GPD

TIME
HOUR
DAY
WEEK
MONTH
YEAR

OUTFALL NUMBER	011	
PROCESS 1	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	1. OILY WASTE O.O.C. 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 18 DAYS/YEAR 365
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY 26.5 5 DAILY MINIMUM 0 7 DAILY MAXIMUM 73000 7
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 2	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	2. PIMP PIT CLNG 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24 DAYS/YEAR 160
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY 86.4 5 DAILY MINIMUM 10 6 DAILY MAXIMUM 144 6
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 3	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	3. STORM WATER 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24 DAYS/YEAR 365
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY 729 5 DAILY MINIMUM 0 7 DAILY MAXIMUM 729000 7
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 4	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	4. FIRE PROTECT FLSH 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 2 DAYS/YEAR 7
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY 10.1 5 DAILY MINIMUM 0 6 DAILY MAXIMUM 144 6
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 5	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	5. GSW FLOW CONTRL 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24 DAYS/YEAR 365
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY 1576.8 5 DAILY MINIMUM 0 6 DAILY MAXIMUM 432 6
	D. PROCESS PRODUCTION RATE	UNITS/TIME

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 4

GROUNDWATER DISCHARGE INFORMATION

OUTFALL NUMBER

0, 1, 1

- A. IS THE DISCHARGE FROM THIS OUTFALL DIRECTED TO THE GROUND OR GROUNDWATERS? (IF NO, CONTINUE TO ITEM 5) YES NO
- B. HAS A HYDROGEOLOGICAL STUDY OR ITS EQUIVALENT BEEN PERFORMED OR IS THERE SUFFICIENT CURRENT HYDROGEOLOGICAL INFORMATION AVAILABLE AS REQUIRED BY THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES OF AUGUST 14, 1980 R. 323.2207 (PAGE 45) FOR THIS EXISTING OR PROPOSED DISCHARGE? IF YES ATTACH A COPY OF THE REPORT. YES NO
- C. ARE YOU REQUESTING AN EXEMPTION FROM SUBMITTING A HYDROGEOLOGICAL REPORT UNDER RULE R. 323.2207 (10) (PAGE 46) OR FROM GROUNDWATER MONITORING REQUIREMENTS UNDER RULE R. 323.2206 (5) (PAGE 47) OF THE PART 22 RULES. IF "YES" ATTACH DOCUMENTS AND EXPLANATION TO DEMONSTRATE THAT YOUR DISCHARGE WOULD QUALIFY FOR AN EXEMPTION. YES NO
- D. ARE YOU REQUESTING A VARIANCE FROM RULE 323.2205 (PAGE 45) (NONDEGRADATION) OF THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES? IF YES, ATTACH SUCH DOCUMENTS AS NECESSARY TO DEMONSTRATE THE NEED FOR A VARIANCE IN TERMS OF THE CRITERIA SPECIFIED IN RULE 323.2210 (PAGE 42) OF THE PART 22 RULES. YES NO
- E. LIST ALL CHEMICAL SUBSTANCES WHICH ARE IN MICHIGAN'S CRITICAL MATERIALS REGISTER TABLE IV (PAGE 6) AND/OR U.S. EPA'S PRIORITY POLLUTANT LIST TABLE V (PAGE 7) OR ANY OTHER SUBSTANCES WHICH ARE OR MAY BECOME INJURIOUS TO THE DESIGNATED USES OF THE GROUNDWATER OR TO THE PUBLIC HEALTH THAT ARE DISCHARGED OR EXPECTED TO BE DISCHARGED TO THE GROUNDWATER BY THIS FACILITY. ESTIMATE THE FINAL EFFLUENT CONCENTRATION AND RECORD ALL DATA IN ITEM 7 OF SECTION II IN THIS BOOKLET. NOT APPLICABLE/BELIEVED ABSENT
 PRESENT, DATA PROVIDED IN ITEM 7

THE APPLICANT MAY BE REQUIRED TO DO ADDITIONAL WASTE ANALYSES.

ITEM 5

EXPECTED WASTEWATER CHARACTERISTICS

UNITS CODE

- Mg/l
- Ug/l
- COUNTS / 100 ml
- S.U.
- °F
- LBS DAY

A. DISCHARGE CHARACTERISTICS	CONCENTRATION		UNITS CODE	# ANALYSES	SAMPLE TYPE CODE
	Ave	Max			
*BOD ₅ (FIVE DAY BIOCHEMICAL OXYGEN DEMAND)	_____	_____	1	___	___
*COD (CHEMICAL OXYGEN DEMAND)	_____	_____	1	___	___
*TOC (TOTAL ORGANIC CARBON)	_____	_____	1	___	___
*AMMONIA NITROGEN (AS N)	_____	_____	1	___	___
*TOTAL SUSPENDED SOLIDS	_____	_____	1	___	___
TOTAL PHOSPHORUS (AS P)	_____	_____	1	___	___
TOTAL RESIDUAL CHLORINE	_____	_____	1	___	___
DISSOLVED OXYGEN	_____	_____	1	___	___
*PH	_____	_____	3	___	___
FECAL COLIFORM BACTERIA	_____	_____	3	___	___
*TEMPERATURE (SUMMER)	* N/A	_____	5	___	___
*TEMPERATURE (WINTER)	* N/A	_____	5	___	___
B. OTHER WASTEWATER CHARACTERISTICS					
OIL & GREASE	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___

* N/A Not Applicable

*REQUIRED INFORMATION FOR SURFACE WATER DISCHARGES.
NOTE: SEE ATTACHMENT

SECTION II

PERMIT
NUMBER

MI0037028

SEE INSTRUCTIONS
ON REVERSE SIDEITEM
6PRIORITY
POLLUTANTS
AND
ADDITIONAL
INFORMATION
FOR
SURFACE
WATER
DISCHARGE
ONLY

OUTFALL NUMBER

0111

THE FOLLOWING REQUESTED INFORMATION MUST BE ADDRESSED BY ALL SURFACE WATER DISCHARGERS.
NOTE! NEW USE DISCHARGERS MUST PROVIDE EXPECTED VALUES FOR THE QUANTITATIVE AND
QUALITATIVE INFORMATION REQUESTED BELOW.

A. IS THIS FACILITY A PRIMARY INDUSTRY? (REFER TO TABLE IA PAGE 41) (IF NO, GO TO E) (IF YES, GO TO B)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B. INDICATE TYPE OF PRIMARY INDUSTRY AS LISTED IN TABLE IA PAGE 41. (CONTINUE WITH C.)	STEAM ELECTRIC (P)
C. DOES THIS OUTFALL DISCHARGE CONTAIN ANY PROCESS WASTEWATER? (IF NO, GO TO E) (IF YES, GO TO D)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. INDICATE WHICH GC/MS FRACTIONS MUST BE TESTED FOR. (REFER TO TABLE IA PAGE 41) NOTE! FOR EACH GC/MS FRACTION CHECKED, EACH SPECIFIC ORGANIC TOXIC POLLUTANT WITHIN EACH FRACTION <u>MUST</u> BE ANALYZED FOR (SEE TABLE IIA PAGE 42). IN ADDITION, ALL PRIMARY INDUSTRY APPLICANTS WITH A PROCESS WASTEWATER DISCHARGE <u>MUST</u> PROVIDE QUANTITATIVE DATA FOR EACH TOXIC POLLUTANT IN TABLE IIA PAGE 43. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET. (CONTINUE WITH E-K BELOW)	<input checked="" type="checkbox"/> VOLATILE <input type="checkbox"/> BASE/NEUTRAL <input checked="" type="checkbox"/> ACID <input type="checkbox"/> PESTICIDE
E. IF <u>ANY</u> SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF THE TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE THAT ANY POLLUTANT LISTED IN TABLE IIA AND IVA PAGES 42-43 IS DISCHARGED FROM ANY OUTFALL, THE QUANTITATIVE DATA <u>MUST</u> BE PROVIDED. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
F. IF <u>ANY</u> SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE ANY POLLUTANTS LISTED IN TABLE VA PAGE 43 ARE DISCHARGED FROM ANY OUTFALL, THE APPLICANT <u>MUST</u> DESCRIBE REASONS FOR THE POLLUTANT BEING PRESENT AND PROVIDE ANY AVAILABLE QUANTITATIVE DATA. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
G. ALL SURFACE WATER DISCHARGE APPLICANTS (PRIMARY AND SECONDARY INDUSTRIES) WHO: USES OR MANUFACTURES 2, 4, 5 - TRICHLOROPHENOXY ACETIC ACID (2, 4, 5-T); 2, 4, 5-TRICHLOROPHENOXY PROPANOIC ACID (SILVEX, 2, 4, 5, TP); 2, 4, 5-TRICHLOROPHENOXY ETHYL 2, 2-DICHLOROPROPIONATE (ERBON); 2, 4-DIMETHYL 0-(2, 4, 5-TRICHLOROPHENYL) PHOSPHOROTHIOATE (IRONEL); 2, 4, 5-TRICHLOROPHENOL (TCP); OR HEXACHLOROPHENE (HEP); (ALL DATA FOR THE ABOVE MUST BE GENERATED USING STANDARD ANALYTICAL CALIBRATION PROCEDURES) OR KNOWS OR HAS REASON TO BELIEVE THAT TOXIC IS OR MAY BE PRESENT IN THEIR DISCHARGE. <u>MUST</u> REPORT QUALITATIVE DATA, GENERATED WHICH USED A SCREENING PROCEDURE NOT CALIBRATED WITH ANALYTICAL STANDARDS, FOR 2, 3, 7, 8 - TETRACHLORODIBENZO-P-DIOXIN (TCDD). RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
H. IF THE SURFACE WATER DISCHARGE APPLICANT KNOWS OR HAS REASON TO BELIEVE THAT BIOLOGICAL TOXICITY TESTS WERE MADE IN THE LAST THREE (3) YEARS ON ANY OF THE APPLICANT'S DISCHARGES OR ON A RECEIVING WATER IN RELATION TO A DISCHARGE, PROVIDE THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED
I. IF A CONTRACT LABORATORY OR CONSULTING FIRM PERFORMED ANY OF THE ANALYSES REQUIRED BY THIS APPLICATION, PROVIDE THE NAME AND ADDRESS OF EACH LABORATORY OR FIRM AND THE ANALYSES PERFORMED AS AN ATTACHMENT OF THIS APPLICATION.	<input type="checkbox"/> NOT APPLICABLE <input checked="" type="checkbox"/> APPLICABLE/SEE ATTACHED
J. DO YOU DISCHARGE ANY OTHER TOXIC OR INJURIOUS CHEMICAL SUBSTANCES NOT LISTED IN TABLES IV PAGE 5 AND IIA THROUGH IVA PAGES 42-43. IF YES, THEN IDENTIFY THE CHEMICAL SUBSTANCES AND ESTIMATE THE FINAL EFFLUENT CONCENTRATIONS. SUBMIT THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED

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SECTION II

PERMIT NUMBER →

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

CUTFALL NUMBER

0111

ITEM 7

CRITICAL MATERIALS
•
TOXIC POLLUTANTS
•
HAZARDOUS SUBSTANCES
IN DISCHARGE

A. USE THIS DATA SHEET TO RECORD INFORMATION AS REQUIRED IN: (CHECK APPROPRIATE BOX FOR WHICH INFORMATION THIS DATA SHEET REPRESENTS.)

- 1. SECTION II, ITEM 4-E. GROUNDWATER DISCHARGE INFORMATION (PAGE 35)
- 2. SECTION II, ITEM 6. PRIORITY POLLUTANTS IN SURFACE WATER DISCHARGE (PAGE 37)
- 3. P. BELOW: CRITICAL MATERIALS (TABLE IV) IN SURFACE WATER DISCHARGE (PAGE 39)

B. LIST ANY CRITICAL MATERIAL (TABLE IV PAGE 6) NOT ADDRESSED IN SECTION II ITEM 6 PRIORITY POLLUTANTS WHICH YOU KNOW OR HAVE REASON TO BELIEVE TO BE PRESENT IN THE DISCHARGE. SEE REVERSE SIDE OF THIS PAGE FOR FURTHER DIRECTIONS.

- NOT APPLICABLE
- APPLICABLE (SEE BELOW)

UNITS CODE
1 Mg/l
2 UG/l
3 LBS DAY
4 KG DAY

SAMPLE TYPE
1 GRAB
2 24 HR COMP

MATERIAL	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
MATERIAL 1	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	_____	_____	_____
	C. MAXIMUM CONCENTRATION AND MASS	_____	_____	_____
	MATERIAL 2	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	_____	_____
B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES		_____	_____	_____
C. MAXIMUM CONCENTRATION AND MASS		_____	_____	_____
MATERIAL 3	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	_____	_____	_____
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	_____	_____	_____
	C. MAXIMUM CONCENTRATION AND MASS	_____	_____	_____
MATERIAL 4	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	_____	_____	_____
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	_____	_____	_____
	C. MAXIMUM CONCENTRATION AND MASS	_____	_____	_____
MATERIAL 5	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	_____	_____	_____
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	_____	_____	_____
	C. MAXIMUM CONCENTRATION AND MASS	_____	_____	_____
MATERIAL 6	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	_____	_____	_____
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	_____	_____	_____
	C. MAXIMUM CONCENTRATION AND MASS	_____	_____	_____
MATERIAL 7	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	_____	_____	_____
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	_____	_____	_____
	C. MAXIMUM CONCENTRATION AND MASS	_____	_____	_____
MATERIAL 8	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	_____	_____	_____
	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES	_____	_____	_____
	C. MAXIMUM CONCENTRATION AND MASS	_____	_____	_____

ADDITIONAL PAGES OF THIS ITEM 7 ARE ATTACHED FOR THE REST OF THE CRITICAL MATERIALS AND/OR PRIORITY POLLUTANTS REQUIRED TO BE REPORTED.

- YES
- NO



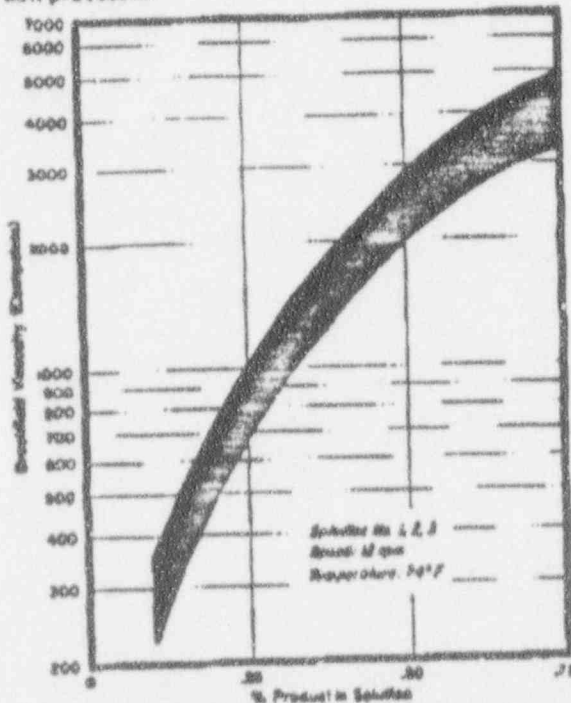
product facts

BETZ® POLYMER 1120

- Economical Treatment Levels
- Improves Water Quality
- Does Not Require pH Adjustment
- Increases Operating Efficiency

DESCRIPTION AND USE

BETZ Polymer 1120 is a high charge density anionic, high molecular weight polymer which works as a flocculant or sludge conditioning aid to enhance liquid-solids separation processes.



Viscosity vs % Product Concentration of BETZ 1120

GENERAL APPLICATIONS

BETZ Polymer 1120 settles iron oxide suspensions from steel industry wastewaters, precipitated hydrous metals in finishing water waste and reduces fines in blast furnace, steel mill scale and BOP scrubber thickener effluents.

This polymer produces a fast settling floc which reduces carryover when used as a flocculant with inorganic or cationic polymeric coagulants.

Oil removal is improved when BETZ Polymer 1120 is applied to refinery and other industrial waste waters by increasing air flotation unit and API separator efficiencies.

BETZ Polymer 1120 has excellent performance when used as an aid in protein removal on air flotation systems and starch clarification with centrifuges.

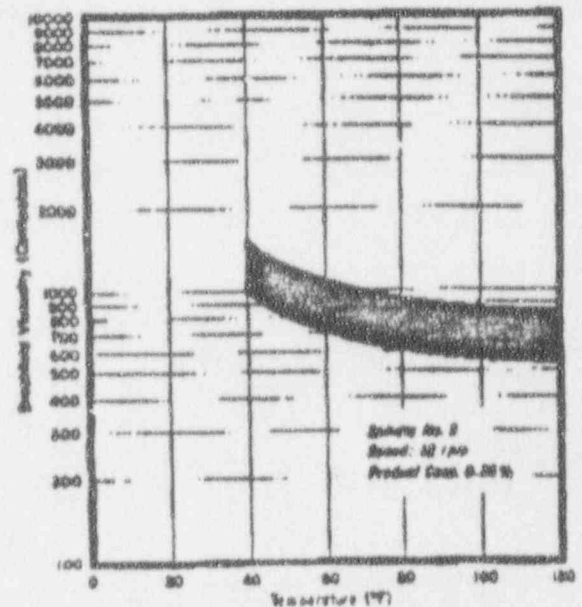
In the paper industry, and many other market areas, BETZ Polymer 1120 is an effective sludge conditioning agent for dewatering operations. By producing a well flocculated sludge, filtrates are cleaner and solids capture is improved.

GENERAL PROPERTIES

Appearance Free flowing white powder
Bulk density 42-50 pounds per cubic foot

FEEDING REQUIREMENTS

BETZ Polymer 1120 may be prepared in batch fashion by slowly adding the powder to the vortex of an agitated tank, using a dry feeder or an eductor. Do not add water to the dry polymer. Maximum practical solution concentration is 0.8 percent by weight. Air or low speed (400



BETZ Polymer 1120
Viscosity vs Temperature (°F)

rpm) mechanical agitation should continue until complete dissolution is accomplished in one to two hours. Dissolution is accelerated with warm water, not exceeding 150°F (65°C). Avoid high shear agitation once the BETZ Polymer 1120 has been made down. It is recommended that dilute solutions be used within 24 hours for maximum activity.

Further dilution of the stock solution to approximately 0.05 percent by weight, or 10 to 1, enhances polymer performance in most applications. For dewatering applications, dilution to approximately 0.25 percent may be more practical. Your BETZ Specialist can assist you with this and other polymer/feeding requirements.

Positive displacement pumps such as gear or piston pumps should be used to transfer the solution to the point of application. To minimize corrosion and contamination by corrosion products, liquid-side components of tanks, pumps and piping should be constructed of stainless steel, polyethylene, or PVC. Mild steel is acceptable only in systems where contamination by corrosion products is not a critical problem.

SAFETY PRECAUTIONS

A Material Safety Data Sheet containing detailed information relative to this product is available upon request.

HANDLING

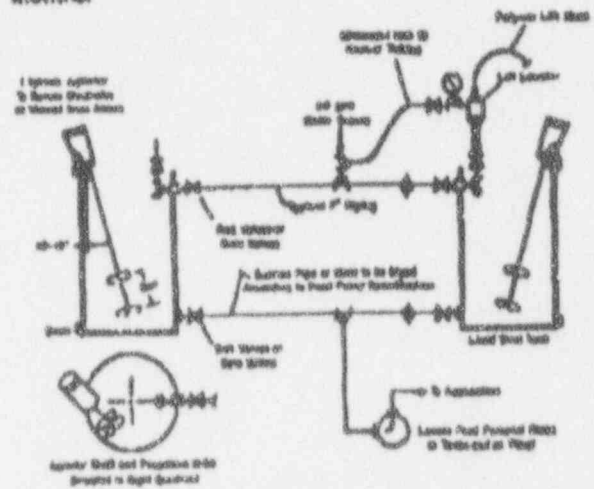
Spilled polymer is very slippery. Spills should be scooped and/or wiped up before flushing with water.

PACKAGING INFORMATION

BETZ Polymer 1120 is manufactured as a powder and is supplied in 50 lb (22.7 kg) multi-wall bags or in 800 lb (363 kg) non-returnable fiber drums.

STORAGE

Recommended shelf life for BETZ Polymer 1120 is six months.



BETZ LABORATORIES, INC.
 4836 SOMERTON ROAD, TREVOSE, PA. 19063
 BETZ MATERIAL SAFETY DATA SHEET
 EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

(PAGE 1 OF 3)

PRODUCT: POLYMER 1120

EFFECTIVE DATE 06-24-91

PRINTED: 26-May-1991

REVISIONS TO SECTIONS: 7;EDIT:6,8

PRODUCT APPLICATION: FLOCCULANT.

SECTION 1 HAZARDOUS INGREDIENTS

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

Post-it [®] brand fax transmittal memo 7571		# of pages = 4
To: Pete Lovullo	From: Marissa	
Co: Fesmi	Co: Bob	
Dept:	Phone: 219-277-1130	
Fax: 313 6-5295	Post: 219-277-8834	

Let me know if you need anything else!

SECTION 2 TYPICAL PHYSICAL DATA

PH: 1% SOL (APPROX.) 7.8 ODOR: NONE
 FL.PT.(DEG.F): >200 F/W(C) BP.GR.(70F)OR DENSITY: 40LBS/CU.FT.
 VAPOR PRESSURE(mm.HG): <1 VAPOR DENSITY(AIR=1): <1
 VISC cps70F: NA %SOLUBILITY(WATER): 5
 EVAP.RATE: NA WATER=1 APPEARANCE: OFF-WHITE
 PHYSICAL STATE: GRANULES FREEZE POINT(DEG.F): NA

SECTION 3 REACTIVITY DATA

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE BETZ TANK
 CLEAN-OUT CATEGORY 'A'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

~~CONFIDENTIAL - PROPRIETARY INFORMATION~~
 BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: POLYMER 1120

SECTION 4 HEALTH HAZARD EFFECTS

ACUTE SKIN EFFECTS ***

NON-HAZARDOUS TO SKIN

ACUTE EYE EFFECTS ***

POTENTIAL EYE IRRITANT DUE TO MECHANICAL ACTION ONLY

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

DUSTS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

NUISANCE DUST

SECTION 5 FIRST AID INSTRUCTIONS

SKIN CONTACT***

NO TREATMENT REQUIRED

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM. DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

SECTION 6 SPILL DISPOSAL AND FIRE INSTRUCTIONS

SPILL INSTRUCTIONS***

VENTILATE AREA. USE SPECIFIED PROTECTIVE EQUIPMENT. SWEEP UP AND PLACE IN WASTE DISPOSAL CONTAINER.

FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS).

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: POLYMER 1120

SECTION 7 SPECIAL PROTECTIVE EQUIPMENT
 USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR FLBE. USE SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION

ADEQUATE VENTILATION TO MAINTAIN DUST CONCENTRATIONS BELOW THE EXPOSURE LIMIT OF 10MG/M³ (T_{EL}/TLV) FOR NUISANCE DUSTS.

RECOMMENDED RESPIRATORY PROTECTION
 IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/NEB FILTERS.

RECOMMENDED SKIN PROTECTION
 RUBBER GLOVES
 WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION
 SAFETY GLASSES

SECTION 8 STORAGE AND HANDLING PRECAUTIONS
 STORAGE INSTRUCTIONS

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.
 KEEP DRY. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS
 NORMAL CHEMICAL HANDLING

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION
 THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY
 ...REPORTABLE QUANTITY (RQ) FOR UNDILUTED PRODUCT:
 NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UNW/ER GUIDER IS: NOT APPLICABLE
 ...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE
 ...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE
 ...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NOT HAZARDOUS UNDER SECTION 311/312
 ...MICHIGAN CRITICAL MATERIALS: NONE
 NFPA/HMS: HEALTH - 0; FIRE - 1; REACTIVITY - 0; SPEC. H. - NONE; PE - A

BETZ LABORATORIES
4636 SOMERTON ROAD, TREVOSE, PA 19053

PRODUCT: POLYMER 1120

AQUATIC TOXICOLOGY

Rainbow Trout

72 Hour Static Screen

No effect level: 100 MG/L

Bluegill Sunfish

96 Hour Static Screen

No effect level: 300 MG/L

Daphnia magna

48 Hour Static Renewal Bioassay*

LC50: 470 MG/L

No effect level: 170 MG/L

*This toxicity testing was calculated from a product of similar formulation.

BETZ LABORATORIES, INC.
 4636 SOMERTON ROAD, TREVOSE, PA. 19053
 BETZ MATERIAL SAFETY DATA SHEET
 EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

PRODUCT : POLYMER 1192

(PAGE 1 OF 3)
 EFFECTIVE DATE 02-16-91
 PRINTED: 1-Mar-1991

REVISIONS TO SECTIONS: -;EDIT:APPENDIX

PRODUCT APPLICATION : COAGULANT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----
 INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC
 PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS
 LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE
 AND CHRONIC HAZARDS OF THIS FORMULATION.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 6.3	ODOR: SLIGHT AMMONIA
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.032
VAPOR PRESSURE(mmHG): ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F: 168		%SOLUBILITY(WATER): 100
EVAP.RATE: <1	ETHER=1	APPEARANCE: YELLOW
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): 30

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
 CLEAN-OUT CATEGORY 'A'

HEAT L DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: POLYMER 1192

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS ***

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

MAY CAUSE REDNESS OR ITCHING OF SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL/CO2/FOAM OR WATER. SLIPPERY CONDITION. USE SAND/GRIT

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: POLYMER 1192

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.
VENTILATION PROTECTION***

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,

USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***

NORMAL CHEMICAL HANDLING

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...CLEARANCE FOR POTABLE WATER USE:

EPA UP TO 50PPM-ALSO FLORIDA

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NONHAZARDOUS UNDER SECTION 311/312

...MICHIGAN CRITICAL MATERIALS: NONE

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B



Betz Industrial
1 Quality Way
Trevose, PA 19053-6783
215-355-3300
Fax: 215-953-2473

UNDERSTANDING AQUATIC TOXICITY TESTING RESULTS
FOR
CATIONIC POLYELECTROLYTES

Many cationic polymers in their free state cause toxicity to fish at relatively low levels. This is because the positively charged polymer attaches to the negatively charged gill epithelium (a cellular membrane), blocking passage of oxygen into the fish and causing asphyxiation. Standard EPA and ASTM aquatic testing procedures are designed to measure the toxicity level of free cationic polymer in clean water which does not contain suspended solids. However, studies indicate that in normal treatment processes, the polymer does not exist in its free form but instead is bound to the suspended solids which are present in the system. Any toxicity of the resultant water that might be attributed to free polymer is sharply reduced or eliminated since these bound polymers have been "neutralized" and cannot attach to the gill epithelium.

If the polymers were severely overdosed, free residual cationic polyelectrolytes might be released to the aquatic environment due to the presence of significantly more polymer than can be bound to the available suspended solids. Such an occurrence is unlikely since problems in the water clarification process (namely dispersion) would become apparent before the polymer reached a toxic level. In addition, if such a release would occur, there should be sufficient silt and other suspended solids present in the receiving stream to buffer or neutralize the effects on the aquatic environment. Therefore, when reviewing aquatic toxicology data for cationic polyelectrolytes, it should be remembered that these results refer to the presence of free (not bound) cationic polymers in the clean water and that the amount of free polymer entering the environment is negligible when used in accordance with safe and practical operating parameters.

BETZ LABORATORIES
4636 SOMERTON ROAD , TREVOSE, PA 19053

PRODUCT: POLYMER 1192

AQUATIC TOXICOLOGY

Rainbow Trout

96 Hour Static Acute Bioassay
LC50: .49 MG/L
No effect level: 0.37 MG/L

Fathead Minnow

96 Hour Static Acute Bioassay
LC50: 1.15 MG/L
No effect level: 0.56 MG/L

Daphnia magna

48 Hour Static Acute Bioassay
LC50: 1.3 MG/L
No effect level: 0.28 MG/L

MAMMALIAN TOXICOLOGY

ORAL LD50 RAT: >8,000 MG/KG

DERMAL LD50 RABBIT: >2000 MG/KG

INHALATION LC50 RAT: NO DATA

NOTE: NO DEATHS AT ONE HOUR OF 10 L/MIN

SKIN IRRITATION SCORE RABBIT: NEGATIVE

EYE IRRITATION SCORE RABBIT: SLIGHT

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 3

PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

UNITS CODE
POUNDS
GALLONS
CUBIC
YARDS
TONS
MGY
MGD
GPD

TIME
HOUR
DAY
WEEK
MONTH
YEAR

OUTFALL NUMBER		(0112)
PROCESS 1	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	1. HVAC COOLING 4911
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY 24 DAYS/YEAR 90
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY 2595 DAILY MINIMUM 07 DAILY MAXIMUM 2880007
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 2	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY DAILY MINIMUM DAILY MAXIMUM
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 3	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY DAILY MINIMUM DAILY MAXIMUM
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 4	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY DAILY MINIMUM DAILY MAXIMUM
	D. PROCESS PRODUCTION RATE	UNITS/TIME
PROCESS 5	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY DAILY MINIMUM DAILY MAXIMUM
	D. PROCESS PRODUCTION RATE	UNITS/TIME

1. HVAC Cooling Water

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 4

GROUNDWATER DISCHARGE INFORMATION

OUTFALL NUMBER

0, 1, 2

- A. IS THE DISCHARGE FROM THIS OUTFALL DIRECTED TO THE GROUND OR GROUNDWATERS? (IF NO, CONTINUE TO ITEM 5) YES NO
- B. HAS A HYDROGEOLOGICAL STUDY OR ITS EQUIVALENT BEEN PERFORMED OR IS THERE SUFFICIENT CURRENT HYDROGEOLOGICAL INFORMATION AVAILABLE AS REQUIRED BY THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES OF AUGUST 14, 1980 R. 323.2207 (PAGE 45) FOR THIS EXISTING OR PROPOSED DISCHARGE? IF YES ATTACH A COPY OF THE REPORT. YES NO
- C. ARE YOU REQUESTING AN EXEMPTION FROM SUBMITTING A HYDROGEOLOGICAL REPORT UNDER RULE R. 323.2207 (10) (PAGE 45) OR FROM GROUNDWATER MONITORING REQUIREMENTS UNDER RULE R. 323.2208 (5) (PAGE 47) OF THE PART 22 RULES. IF YES ATTACH DOCUMENTS AND EXPLANATION TO DEMONSTRATE THAT YOUR DISCHARGE WOULD QUALIFY FOR AN EXEMPTION. YES NO
- D. ARE YOU REQUESTING A VARIANCE FROM RULE 323.2205 (PAGE 45) (NONDEGRADATION) OF THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES? IF YES, ATTACH SUCH DOCUMENTS AS NECESSARY TO DEMONSTRATE THE NEED FOR A VARIANCE IN TERMS OF THE CRITERIA SPECIFIED IN RULE 323.2210 (PAGE 47) OF THE PART 22 RULES. YES NO
- E. LIST ALL CHEMICAL SUBSTANCES WHICH ARE IN MICHIGAN'S CRITICAL MATERIALS REGISTER TABLE IV (PAGE 6) AND/OR U.S. EPA'S PRIORITY POLLUTANT LIST TABLE V (PAGE 7) OR ANY OTHER SUBSTANCES WHICH ARE OR MAY BECOME INJURIOUS TO THE DESIGNATED USES OF THE GROUNDWATER OR TO THE PUBLIC HEALTH THAT ARE DISCHARGED OR EXPECTED TO BE DISCHARGED TO THE GROUNDWATER BY THIS FACILITY. ESTIMATE THE FINAL EFFLUENT CONCENTRATION AND RECORD ALL DATA IN ITEM 7 OF SECTION II IN THIS BOOKLET.
 NOT APPLICABLE/BELIEVED ABSENT
 PRESENT, DATA PROVIDED IN ITEM 7

THE APPLICANT MAY BE REQUIRED TO DO ADDITIONAL WASTE ANALYSES.

ITEM 5

EXPECTED WASTEWATER CHARACTERISTICS

UNITS CODE

- Mg l
- Ug l
- 3 COUNTS 100 ml
- 1 S.U.
- 5 °F
- 6 LBS DAY

A. DISCHARGE CHARACTERISTICS	CONCENTRATION		UNITS	CODE	#	ANALYSES	SAMPLE TYPE
	AVE	MAX					
*BOD ₅ (FIVE DAY BIOCHEMICAL OXYGEN DEMAND)	_____	_____	_____	_____	1	_____	_____
*COD (CHEMICAL OXYGEN DEMAND)	_____	_____	_____	_____	1	_____	_____
*TOD (TOTAL ORGANIC CARBON)	_____	_____	_____	_____	1	_____	_____
*AMMONIA NITROGEN (AS NH ₃)	_____	_____	_____	_____	1	_____	_____
*TOTAL SUSPENDED SOLIDS	_____	_____	_____	_____	1	_____	_____
TOTAL PHOSPHORUS (AS P)	_____	_____	_____	_____	1	_____	_____
TOTAL RESIDUAL CHLORINE	_____	_____	_____	_____	1	_____	_____
DISSOLVED OXYGEN MIN	_____	_____	_____	_____	4	_____	_____
*PH	_____	_____	_____	_____	3	_____	_____
FECAL COLIFORM BACTERIA	_____	_____	_____	_____	5	_____	_____
*TEMPERATURE (SUMMER)	_____	_____	_____	_____	5	_____	_____
*TEMPERATURE (WINTER)	_____	_____	_____	_____	5	_____	_____
B. OTHER WASTEWATER CHARACTERISTICS							
DILUTE RELEASE	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

NOTE: NO SAMPLE FLOW AVAILABLE UNTIL SUMMER.

*REQUIRED INFORMATION FOR SURFACE WATER DISCHARGES.

SECTION II

PERMIT
NUMBER

MI0037028

SEE INSTRUCTIONS
ON REVERSE SIDEITEM
6PRIORITY
POLLUTANTS
AND
ADDITIONAL
INFORMATION
FOR
SURFACE
WATER
DISCHARGE
ONLY

OUTFALL NUMBER

0112

THE FOLLOWING REQUESTED INFORMATION SHALL BE ADDRESSED BY ALL SURFACE WATER DISCHARGERS.
NOTE! NEW USE DISCHARGERS SHALL PROVIDE EXPECTED VALUES FOR THE QUANTITATIVE AND QUALITATIVE INFORMATION REQUESTED BELOW.

A.	IS THIS FACILITY A PRIMARY INDUSTRY? (REFER TO TABLE IA PAGE 41) (IF NO, GO TO E) (IF YES, GO TO B.)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B.	INDICATE TYPE OF PRIMARY INDUSTRY AS LISTED IN TABLE IA PAGE 41. (CONTINUE WITH C.)	STEAM, ELECTRIC
C.	DOES THIS OUTFALL DISCHARGE CONTAIN ANY PROCESS WASTEWATER? (IF NO, GO TO E) (IF YES, GO TO D.)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D.	INDICATE WHICH GC/MS FRACTIONS MUST BE TESTED FOR. (REFER TO TABLE IA PAGE 41) NOTE! FOR EACH GC/MS FRACTION CHECKED, EACH SPECIFIC ORGANIC TOXIC POLLUTANT WITHIN EACH FRACTION MUST BE ANALYZED FOR (SEE TABLE IIA PAGE 42). IN ADDITION, ALL PRIMARY INDUSTRY APPLICANTS WITH A PROCESS WASTEWATER DISCHARGE MUST PROVIDE QUANTITATIVE DATA FOR EACH TOXIC POLLUTANT IN TABLE IIA PAGE 43. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET. (CONTINUE WITH E-K BELOW)	<input checked="" type="checkbox"/> VOLATILE <input type="checkbox"/> BASE/NEUTRAL <input checked="" type="checkbox"/> ACID <input type="checkbox"/> PESTICIDE
E.	IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE THAT ANY POLLUTANT LISTED IN TABLE IIA AND IVA PAGES 42-43 IS DISCHARGED FROM ANY OUTFALL, THE QUANTITATIVE DATA MUST BE PROVIDED. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
F.	IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE ANY POLLUTANTS LISTED IN TABLE VA PAGE 45 ARE DISCHARGED FROM ANY OUTFALL THE APPLICANT MUST DESCRIBE REASONS FOR THE POLLUTANT BEING PRESENT AND PROVIDE ANY AVAILABLE QUANTITATIVE DATA. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
G.	ALL SURFACE WATER DISCHARGE APPLICANTS (PRIMARY AND SECONDARY INDUSTRIES) WHO: USES OR MANUFACTURES 2, 4, 5 - TRICHLOROPHENYL ACETIC ACID (2, 4, 5-T); 2, 4, 5 - TRICHLOROPHENYL PROPANOIC ACID (SILVEX, 2, 4, 5, TP); 2, 4, 5 - TRICHLOROPHENYL ETHYL 2, 2-DICHLOROPROPIONATE (ERBON); 2-DIMETHYL (2, 4, 5-TRICHLOROPHENYL) PHOSPHOROTHIOATE (IRONEL); 2, 4, 5-TRICHLOROPHENOL (TCP); OR HEXACHLOROPHENE (HEP); (ALL DATA FOR THE ABOVE MUST BE GENERATED USING STANDARD ANALYTICAL CALIBRATION PROCEDURES) OR KNOWS OR HAS REASON TO BELIEVE THAT TCDD IS OR MAY BE PRESENT IN THEIR DISCHARGE, MUST REPORT QUALITATIVE DATA GENERATED WHICH USED A SCREENING PROCEDURE NOT CALIBRATED WITH ANALYTICAL STANDARDS, FOR 2, 3, 7, 8 - TETRACHLORO(DIBENZO-P-DIOXIN) (TCDD). RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
H.	IF THE SURFACE WATER DISCHARGE APPLICANT KNOWS OR HAS REASON TO BELIEVE THAT BIOLOGICAL TOXICITY TESTS WERE MADE IN THE LAST THREE (3) YEARS ON ANY OF THE APPLICANT'S DISCHARGES OR ON A RECEIVING WATER IN RELATION TO A DISCHARGE, PROVIDE THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED
I.	IF A CONTRACT LABORATORY OR CONSULTING FIRM PERFORMED ANY OF THE ANALYSES REQUIRED BY THIS APPLICATION, PROVIDE THE NAME AND ADDRESS OF EACH LABORATORY OR FIRM AND THE ANALYSES PERFORMED AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED
J.	DO YOU DISCHARGE ANY OTHER TOXIC OR INJURIOUS CHEMICAL SUBSTANCES NOT LISTED IN TABLES IV PAGE 5 AND IIA THROUGH IVA PAGES 42-43. IF YES, THEN IDENTIFY THE CHEMICAL SUBSTANCES AND ESTIMATE THE FINAL EFFLUENT CONCENTRATIONS. SUBMIT THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

CUTFALL NUMBER

0112

ITEM 7

CRITICAL MATERIALS * TOXIC POLLUTANTS * HAZARDOUS SUBSTANCES IN DISCHARGE

A. USE THIS DATA SHEET TO RECORD INFORMATION AS REQUIRED IN: (CHECK APPROPRIATE BOX FOR WHICH INFORMATION THIS DATA SHEET REPRESENTS.)

- 1. SECTION II, ITEM 4-E. GROUNDWATER DISCHARGE INFORMATION (PAGE 55)
- 2. SECTION II, ITEM 6. PRIORITY POLLUTANTS IN SURFACE WATER DISCHARGE (PAGE 57)
- 3. B. BELOW: CRITICAL MATERIALS (TABLE IV) IN SURFACE WATER DISCHARGE (PAGE 59)

B. LIST ANY CRITICAL MATERIAL (TABLE IV PAGE 6) NOT ADDRESSED IN SECTION II ITEM 6 PRIORITY POLLUTANTS WHICH YOU KNOW OR HAVE REASON TO BELIEVE TO BE PRESENT IN THE DISCHARGE. SEE REVERSE SIDE OF THIS PAGE FOR FURTHER DIRECTIONS.

- NOT APPLICABLE
- APPLICABLE (SEE BELOW)

- UNITS CODE
- 1 Mg/l
 - 2 Ug/l
 - 3 LBS DAY
 - 4 KG DAY

- SAMPLE TYPE
- 1 GRAB
 - 2 24 HR COMP

MATERIAL	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
MATERIAL 1	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 2	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 3	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 4	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 5	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 6	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 7	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 8	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			

ADDITIONAL PAGES OF THIS ITEM 7 ARE ATTACHED FOR THE REST OF THE CRITICAL MATERIALS AND/OR PRIORITY POLLUTANTS REQUIRED TO BE REPORTED.

- YES
- NO

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 1 DISCHARGE LOCATION SCHEDULE FLOW RATE WASTEWATER TYPE CODE 1 CONTACT COOLING 2 NONCONTACT COOLING 3 PROCESS 4 SANITARY 5 STORMWATER UNIT CODE 1 MGY 2 MGD 3 GPD	OUTFALL NUMBER	013					
	A. LOCATION OF DISCHARGE	S W & N W & SECTION 21, TOWN 6 S, RANGE 10 E					
	B. NAME OF RECEIVING WATER (IE. GROUNDWATER OR NAME OF SURFACE WATER)	LAKE ERIE					
	C. DO YOU DISCHARGE SEASONALLY? (IF NO, CONTINUE TO E)	<input type="checkbox"/> YES			<input checked="" type="checkbox"/> NO		
	D. IF YES, LIST DISCHARGE PERIODS	MO. / DAY		THROUGH		MO. / DAY	
		[] []		[] []		[] []	
		[] []		[] []		[] []	
		[] []		[] []		[] []	
	E. LAND APPLICATION RATE	IN./HR.		HR./DAY		IN./Wk.	
		[] []		[] []		[] []	
F. TYPE OF WASTEWATER DISCHARGE	[3] [5]		[] []		[] []		
G. DISCHARGE SCHEDULE (YEARLY AVERAGE)	HOURS/DAY		DAY/YEAR				
	[2] [4]		[6] [0]				
H. DISCHARGE FLOW RATE	TOTAL YEARLY		[] [] [] [] [] [] [] [] [] []		UNITS CODE		
			[] [] [] [] [] [] [] [] [] []		[] []		
	DAILY MINIMUM		[] [] [] [] [] [] [] [] [] []		[] []		
	DAILY MAXIMUM		[] [] [] [] [] [] [] [] [] []		[] []		
I. THE MAXIMUM DISCHARGE FLOW RATE TO BE AUTHORIZED IN PERMIT.	AUTHORIZED		[] [] [] [] [] [] [] [] [] []		UNITS CODE		
J. MAXIMUM DESIGN DISCHARGE FLOW RATE.	DESIGN		[] [] [] [] [] [] [] [] [] []		UNITS CODE		
			[] [] [] [] [] [] [] [] [] []		[] []		
ITEM 2 WATER TREATMENT ADDITIVES UNITS CODE 1 Mg/l 2 Ug/l	A. DO YOU USE WATER TREATMENT ADDITIVES TO TREAT YOUR DISCHARGE? (IF NO, CONTINUE TO ITEM 3)	<input checked="" type="checkbox"/> YES			<input type="checkbox"/> NO		
	B. NAME, FUNCTION, AND CHEMICAL COMPOSITION OF THESE ADDITIVES.	NAME		FUNCTION			
		Betz Polymer 1192		Amionic Settling			
		Betz Polymer 1120		Cationic Settling			
		[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []			
		[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []			
		[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []			
		[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []			
	C. NAME AND ADDRESS OF MANUFACTURERS OF THESE ADDITIVES.	Betz Industrial 4636 Somerton Road Trevose, PA 19053					
	D. EXPECTED DISCHARGE CONCENTRATION OF ADDITIVES.	MINIMUM	UNITS CODE	AVERAGE	UNITS CODE	MAXIMUM	UNITS CODE
ADDITIVE NAME	Polymer 1192	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	
ADDITIVE NAME	Polymer 1120	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	
ADDITIVE NAME	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	[] [] [] [] [] [] [] [] [] []	
E. DO YOU TREAT THE DISCHARGE TO REMOVE ADDITIVES?	<input type="checkbox"/> YES			<input checked="" type="checkbox"/> NO			
F. WHAT IS THE REMOVAL EFFICIENCY AND DISCHARGE FREQUENCY?	REMOVAL		DISCHARGE FREQUENCY				
ADDITIVE NAME	[] [] [] [] [] [] [] [] [] []		HRS./DAY		DAYS/WK.		
ADDITIVE NAME	[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []		
ADDITIVE NAME	[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []		[] [] [] [] [] [] [] [] [] []		
G. AS AN ATTACHMENT TO THIS APPLICATION PROVIDE SPECIFIC MAMMALIAN OR AQUATIC TOXICOLOGICAL DATA OR REFERENCE WHICH ARE AVAILABLE AND INFORMATION ON THE RATE OF DEGRADATION OF THE PRODUCTS FOR EACH ADDITIVE.							

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 3

PROCESS STREAMS CONTRIBUTING TO OUTFALL DISCHARGE

UNITS CODE
POUNDS
GALLONS
CUBIC
YARDS
TONS
MGY
MGD
GPD

TIME
HOUR
DAY
WEEK
MONTH
YEAR

OUTFALL NUMBER

0113

PROCESS 1	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE	NONE	
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	UNIT CODE
		DAILY MINIMUM	
DAILY MAXIMUM			
D. PROCESS PRODUCTION RATE		UNITS/TIME	
PROCESS 2	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	UNIT CODE
		DAILY MINIMUM	
DAILY MAXIMUM			
D. PROCESS PRODUCTION RATE		UNITS/TIME	
PROCESS 3	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	UNIT CODE
		DAILY MINIMUM	
DAILY MAXIMUM			
D. PROCESS PRODUCTION RATE		UNITS/TIME	
PROCESS 4	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	UNIT CODE
		DAILY MINIMUM	
DAILY MAXIMUM			
D. PROCESS PRODUCTION RATE		UNITS/TIME	
PROCESS 5	A. NAME OF PROCESS CONTRIBUTING TO THE DISCHARGE THROUGH THIS OUTFALL AND SIC CODE		
	B. PROCESS SCHEDULE (YEARLY AVERAGE)	HOURS/DAY	DAYS/YEAR
	C. PROCESS WASTEWATER FLOW RATE	TOTAL YEARLY	UNIT CODE
		DAILY MINIMUM	
DAILY MAXIMUM			
D. PROCESS PRODUCTION RATE		UNITS/TIME	

SECTION II

PERMIT NUMBER

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 4

GROUNDWATER DISCHARGE INFORMATION

OUTFALL NUMBER

0, 1, 3

- A. IS THE DISCHARGE FROM THIS OUTFALL DIRECTED TO THE GROUND OR GROUNDWATERS? (IF NO, CONTINUE TO ITEM 5) YES NO
- B. HAS A HYDROGEOLOGICAL STUDY OR ITS EQUIVALENT BEEN PERFORMED OR IS THERE SUFFICIENT CURRENT HYDROGEOLOGICAL INFORMATION AVAILABLE AS REQUIRED BY THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES OF AUGUST 14, 1980 R. 323.2207 (PAGE 45) FOR THIS EXISTING OR PROPOSED DISCHARGE? IF YES ATTACH A COPY OF THE REPORT. YES NO
- C. ARE YOU REQUESTING AN EXEMPTION FROM SUBMITTING A HYDROGEOLOGICAL REPORT UNDER RULE R. 323.2207 (10) (PAGE 45) OF FROM GROUNDWATER MONITORING REQUIREMENTS UNDER RULE R. 323.2206 (5) (PAGE 42) OF THE PART 22 RULES. IF "YES" ATTACH DOCUMENTS AND EXPLANATION TO DEMONSTRATE THAT YOUR DISCHARGE WOULD QUALIFY FOR AN EXEMPTION. YES NO
- D. ARE YOU REQUESTING A VARIANCE FROM RULE 323.2205 (PAGE 45) (NONDEGRADATION) OF THE WATER RESOURCES COMMISSION PART 22 GROUNDWATER RULES? IF YES, ATTACH SUCH DOCUMENTS AS NECESSARY TO DEMONSTRATE THE NEED FOR A VARIANCE IN TERMS OF THE CRITERIA SPECIFIED IN RULE 323.2210 (PAGE 42) OF THE PART 22 RULES. YES NO
- E. LIST ALL CHEMICAL SUBSTANCES WHICH ARE IN MICHIGAN'S CRITICAL MATERIALS REGISTER TABLE IV (PAGE 5) AND/OR U.S. EPA'S PRIORITY POLLUTANT LIST TABLE V (PAGE 7) OR ANY OTHER SUBSTANCES WHICH ARE OR MAY BECOME INJURIOUS TO THE DESIGNATED USES OF THE GROUNDWATER OR TO THE PUBLIC HEALTH THAT ARE DISCHARGED OR EXPECTED TO BE DISCHARGED TO THE GROUNDWATER BY THIS FACILITY. ESTIMATE THE FINAL EFFLUENT CONCENTRATION AND RECORD ALL DATA IN ITEM 7 OF SECTION II IN THIS BOOKLET. NOT APPLICABLE/BELIEVED ABSENT
 PRESENT, DATA PROVIDED IN ITEM 7

THE APPLICANT MAY BE REQUIRED TO DO ADDITIONAL WASTE ANALYSES.

ITEM 5

EXPECTED WASTEWATER CHARACTERISTICS

UNITS CODE

- Mg/l
- Ug/l
- 3 COUNTS / 100 ml
- 1 S.U.
- 5 °F
- 6 LBS DAY

A. DISCHARGE CHARACTERISTICS	CONCENTRATION		UNITS CODE	# ANALYSES	SAMPLE TYPE CODE
	AVE	MAX			
*BOD ₅ (FIVE DAY BIOCHEMICAL OXYGEN DEMAND)	_____	_____	1	___	___
*COD (CHEMICAL OXYGEN DEMAND)	_____	_____	1	___	___
*TOC (TOTAL ORGANIC CARBON)	_____	_____	1	___	___
*AMMONIA NITROGEN (AS N)	_____	_____	1	___	___
*TOTAL SUSPENDED SOLIDS	_____	_____	1	___	___
TOTAL PHOSPHORUS (AS P)	_____	_____	1	___	___
TOTAL RESIDUAL CHLORINE	_____	_____	1	___	___
DISSOLVED OXYGEN	_____	_____	1	___	___
*pH	MIN _____ MAX _____		3	___	___
FECAL COLIFORM BACTERIA	_____	_____	3	___	___
*TEMPERATURE (SUMMER)	* NA _____		3	___	___
*TEMPERATURE (WINTER)	* NA _____		3	___	___

B. OTHER WASTEWATER CHARACTERISTICS

OIL & GREASE	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___
_____	_____	_____	___	___	___

* Not Applicable

*REQUIRED INFORMATION FOR SURFACE WATER DISCHARGES.

NOTE: SEE ATTACHMENT

SECTION II

PERMIT
NUMBER

MI0037028

SEE INSTRUCTIONS
ON REVERSE SIDE

013

ITEM
6PRIORITY
POLLUTANTS
AND
ADDITIONAL
INFORMATION
FOR
SURFACE
WATER
DISCHARGE
ONLY

OUTFALL NUMBER

THE FOLLOWING REQUESTED INFORMATION SHALL BE ADDRESSED BY ALL SURFACE WATER DISCHARGERS.
NOTE! NEW USE DISCHARGERS SHALL PROVIDE EXPECTED VALUES FOR THE QUANTITATIVE AND QUALITATIVE INFORMATION REQUESTED BELOW.

A. IS THIS FACILITY A PRIMARY INDUSTRY? (REFER TO TABLE IA PAGE 4)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
B. INDICATE TYPE OF PRIMARY INDUSTRY AS LISTED IN TABLE IA PAGE 4. (CONTINUE WITH C.)	STEAM, ELECT, P
C. DOES THIS OUTFALL DISCHARGE CONTAIN ANY PROCESS WASTEWATER? (IF NO, GO TO E) (IF YES, GO TO D)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
D. INDICATE WHICH GC/MS FRACTIONS MUST BE TESTED FOR. (REFER TO TABLE IA PAGE 4) NOTE! FOR EACH GC/MS FRACTION CHECKED, EACH SPECIFIC ORGANIC TOXIC POLLUTANT WITHIN EACH FRACTION MUST BE ANALYZED FOR (SEE TABLE IIA PAGE 4). IN ADDITION, ALL PRIMARY INDUSTRY APPLICANTS WITH A PROCESS WASTEWATER DISCHARGE MUST PROVIDE QUANTITATIVE DATA FOR EACH TOXIC POLLUTANT IN TABLE IIA PAGE 4. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET. (CONTINUE WITH E-K BELOW)	<input checked="" type="checkbox"/> VOLATILE <input type="checkbox"/> BASE/NEUTRAL <input checked="" type="checkbox"/> ACID <input type="checkbox"/> PESTICIDE
E. IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF THE TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE THAT ANY POLLUTANT LISTED IN TABLE IIA AND IVA PAGES 4-6 IS DISCHARGED FROM ANY OUTFALL, THE QUANTITATIVE DATA MUST BE PROVIDED. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
F. IF ANY SURFACE WATER DISCHARGE APPLICANT (PRIMARY OR SECONDARY INDUSTRY), REGARDLESS OF TYPE OF DISCHARGE, KNOWS OR HAS REASON TO BELIEVE ANY POLLUTANTS LISTED IN TABLE VA PAGE 4 IS DISCHARGED FROM ANY OUTFALL, THE APPLICANT MUST DESCRIBE REASONS FOR THE POLLUTANT BEING PRESENT AND PROVIDE ANY AVAILABLE QUANTITATIVE DATA. RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
G. ALL SURFACE WATER DISCHARGE APPLICANTS (PRIMARY AND SECONDARY INDUSTRIES) MUST USES OR MANUFACTURES 2, 4, 5 - TRICHLOROPHENYXY ACETIC ACID (2, 4, 5-T); 2, 4, 5-TRICHLOROPHENYXY PROPANOIC ACID (SILVEX); 2, 4, 5, TP); 2, 4, 5-TRICHLOROPHENYXY ETHYL 2, 2-DICHLOROPROPIONATE (ERBON); O, X-DIMETHYL D-(2, 4, 5-TRICHLOROPHENYXY) PHOSPHOROTHIOATE (RONNEL); 2, 4, 5-TRICHLOROPHENOL (TCP); OR HEXACHLOROPHENE (HCP); (ALL DATA FOR THE ABOVE MUST BE GENERATED USING STANDARD ANALYTICAL CALIBRATION PROCEDURES) OR KNOWS OR HAS REASON TO BELIEVE THAT TCDD IS OR MAY BE PRESENT IN THEIR DISCHARGE. MUST REPORT QUALITATIVE DATA, GENERATED WHICH USED A SCREENING PROCEDURE NOT CALIBRATED WITH ANALYTICAL STANDARDS, FOR 2, 3, 7, 8, - TETRACHLORODIBENZO-P-DIOXIN (TCDD). RECORD ALL DATA ON FORMS PROVIDED (ITEM 7) IN THIS BOOKLET.	<input checked="" type="checkbox"/> NOT APPLICABLE/BELIEVED ABSENT <input type="checkbox"/> PRESENT/DATA IS ATTACHED
H. IF THE SURFACE WATER DISCHARGE APPLICANT KNOWS OR HAS REASON TO BELIEVE THAT BIOLOGICAL TOXICITY TESTS WERE MADE IN THE LAST THREE (3) YEARS ON ANY OF THE APPLICANT'S DISCHARGES OR ON A RECEIVING WATER IN RELATION TO A DISCHARGE, PROVIDE THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED
I. IF A CONTRACT LABORATORY OR CONSULTING FIRM PERFORMED ANY OF THE ANALYSES REQUIRED BY THIS APPLICATION, PROVIDE THE NAME AND ADDRESS OF EACH LABORATORY OR FIRM AND THE ANALYSES PERFORMED AS AN ATTACHMENT OF THIS APPLICATION.	<input type="checkbox"/> NOT APPLICABLE <input checked="" type="checkbox"/> APPLICABLE/SEE ATTACHED
J. DO YOU DISCHARGE ANY OTHER TOXIC OR INJURIOUS CHEMICAL SUBSTANCES NOT LISTED IN TABLES IV PAGE 6 AND IIA THROUGH IVA PAGES 4-6. IF YES, THEN IDENTIFY THE CHEMICAL SUBSTANCES AND ESTIMATE THE FINAL EFFLUENT CONCENTRATIONS. SUBMIT THIS INFORMATION AS AN ATTACHMENT TO THIS APPLICATION.	<input checked="" type="checkbox"/> NOT APPLICABLE <input type="checkbox"/> APPLICABLE/SEE ATTACHED

National Environmental Testing, Inc.
Auburn Hills Division
1700 Harmon Road
Auburn Hills, MI 48326Tel: (810) 391-2050
Fax: (810) 391-9698
(800) 526-4951

SECTION II

PERMIT NUMBER →

MI0037028

SEE INSTRUCTIONS ON REVERSE SIDE

ITEM 7

CRITICAL MATERIALS
•
TOXIC POLLUTANTS
•
HAZARDOUS SUBSTANCES
IN DISCHARGE

CUTFALL NUMBER

0113

A. USE THIS DATA SHEET TO RECORD INFORMATION AS REQUIRED IN: (CHECK APPROPRIATE BOX FOR WHICH INFORMATION THIS DATA SHEET REPRESENTS.)

- 1. SECTION II, ITEM 4-E. GROUNDWATER DISCHARGE INFORMATION (PAGE 55)
- 2. SECTION II, ITEM 6. PRIORITY POLLUTANTS IN SURFACE WATER DISCHARGE (PAGE 57)
- 3. B. BELOW: CRITICAL MATERIALS (TABLE IV) IN SURFACE WATER DISCHARGE (PAGE 39)

B. LIST ANY CRITICAL MATERIAL (TABLE IV PAGE 6) NOT ADDRESSED IN SECTION II ITEM 6 PRIORITY POLLUTANTS WHICH YOU KNOW OR HAVE REASON TO BELIEVE TO BE PRESENT IN THE DISCHARGE. SEE REVERSE SIDE OF THIS PAGE FOR FURTHER DIRECTIONS.

- NOT APPLICABLE
- APPLICABLE (SEE BELOW)

UNITS CODE

- 1 Mg/l
- 2 Ug/l
- 3 LBS DAY
- 4 KG DAY

SAMPLE TYPE

- 1 GRAB
- 2 24 HR COMP

MATERIAL	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT	UNIT CODE	SAMPLE TYPE	# OF ANALYSES
MATERIAL 1	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 2	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 3	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 4	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 5	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 6	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 7	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			
MATERIAL 8	B. AVERAGE CONCENTRATION; SAMPLE TYPE; # OF ANALYSES			
	C. MAXIMUM CONCENTRATION AND MASS			
	A. NAME OF CRITICAL MATERIAL OR PRIORITY POLLUTANT			

ADDITIONAL PAGES OF THIS ITEM 7 ARE ATTACHED FOR THE REST OF THE CRITICAL MATERIALS AND/OR PRIORITY POLLUTANTS REQUIRED TO BE REPORTED.

- YES
- NO



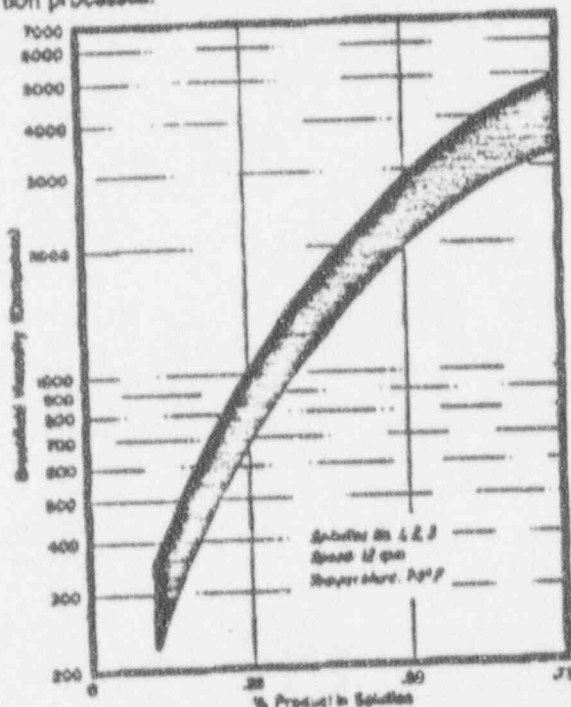
product facts

BETZ® POLYMER 1120

- Economical Treatment Levels
- Improves Water Quality
- Does Not Require pH Adjustment
- Increases Operating Efficiency

DESCRIPTION AND USE

BETZ Polymer 1120 is a high charge density anionic, high molecular weight polymer which works as a flocculant or sludge conditioning aid to enhance liquid-solids separation processes.



Viscosity vs % Product Concentration of BETZ 1120

GENERAL APPLICATIONS

BETZ Polymer 1120 settles iron oxide suspensions from steel industry wastewaters, precipitated hydrous metals in finishing water wastes and reduces fines in blast furnace, steel mill scale and BOP scrubber thickener effluents.

This polymer produces a fast settling floc which reduces carryover when used as a flocculant with inorganic or cationic polymeric coagulants.

Oil removal is improved when BETZ Polymer 1120 is applied to refinery and other industrial waste waters by increasing air flotation unit and API separator efficiencies.

BETZ Polymer 1120 has excellent performance when used as an aid in protein removal on air flotation systems and starch clarification with centrifuges.

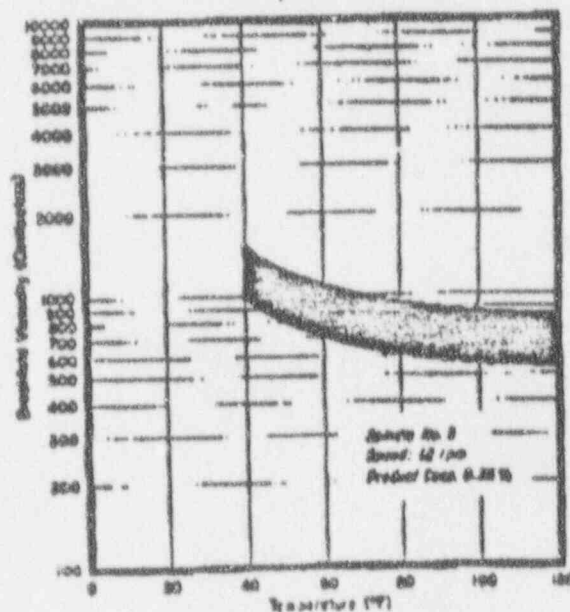
In the paper industry, and many other market areas, BETZ Polymer 1120 is an effective sludge conditioning agent for dewatering operations. By producing a well flocculated sludge, filtrates are cleaner and solids capture is improved.

GENERAL PROPERTIES

Appearance Free flowing white powder
Bulk density 42-50 pounds per cubic foot

FEEDING REQUIREMENTS

BETZ Polymer 1120 may be prepared in batch fashion by slowly adding the powder to the vortex of an agitated tank, using a dry feeder or an eductor. Do not add water to the dry polymer. Maximum practical solution concentration is 0.5 percent by weight. Air or low speed (400



BETZ Polymer 1120
Viscosity vs Temperature (°F)

rpm) mechanical agitation should continue until complete dissolution is accomplished in one to two hours. Dissolution is accelerated with warm water, not exceeding 150°F (65°C). Avoid high shear agitation once the BETZ Polymer 1120 has been made down. It is recommended that dilute solutions be used within 24 hours for maximum activity.

Further dilution of the stock solution to approximately 0.05 percent by weight, or 10 to 1, enhances polymer performance in most applications. For dewatering applications, dilution to approximately 0.25 percent may be more practical. Your BETZ Specialist can assist you with this and other polymer/feeding requirements.

Positive displacement pumps such as gear or piston pumps should be used to transfer the solution to the point of application. To minimize corrosion and contamination by corrosion products, liquid-side components of tanks, pumps and piping should be constructed of stainless steel, polyethylene, or PVC. Mild steel is acceptable only in systems where contamination by corrosion products is not a critical problem.

SAFETY PRECAUTIONS

A Material Safety Data Sheet containing detailed information relative to this product is available upon request.

HANDLING

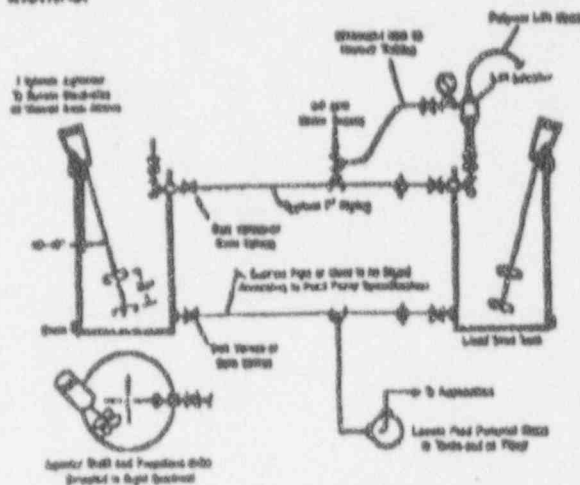
Spilled polymer is very slippery. Spills should be scooped and/or wiped up before flushing with water.

PACKAGING INFORMATION

BETZ Polymer 1120 is manufactured as a powder and is supplied in 50 lb (22.7 kg) multiwall bags or in 200 lb (90.8 kg) non-returnable fiber drums.

STORAGE

Recommended shelf life for BETZ Polymer 1120 is 18 months.



BETZ LABORATORIES, INC.
 4836 SOMERTON ROAD, TREVOSE, PA. 19063
 BETZ MATERIAL SAFETY DATA SHEET
 EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

(PAGE 1 OF 3)

PRODUCT: POLYMER 1120

EFFECTIVE DATE 05-24-91

PRINTED: 28-May-1991

REVISIONS TO SECTIONS: 7; EDIT: 6,8

PRODUCT APPLICATION: FLOCCULANT.

~~SECTION 1~~ ~~HAZARDOUS INGREDIENTS~~

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

Post-it [®] brand fax transmittal memo 7571		# of pages = 4
To: Pete Lovullo	From: Marissa	
Co: Festui	Co: Betz	
Dept:	Phone: 219-277-8830	
Fax: 313-586-5295	Fax: 219-277-8834	

Let me know if you need anything else!

~~SECTION 2~~ ~~TYPICAL PHYSICAL DATA~~

PH: 1% SOL (APPROX.) 7.6 ODOR: NONE
 FL.PT. (DEG.F): >200 (M.M.CC) BP.GR. (70F) OR DENSITY: 40 LBS/CU.FT.
 VAPOR PRESSURE (mm.HG): <1 VAPOR DENSITY (AIR=1): <1
 VISC @ 70F: NA % SOLUBILITY (WATER): 5
 EVAP. RATE: NA WATER=1 APPEARANCE: OFF-WHITE
 PHYSICAL STATE: GRANULES FREEZE POINT (DEG.F): NA

~~SECTION 3~~ ~~REACTIVITY DATA~~

STABLE. MAY REACT WITH STRONG OXIDIZERS. DO NOT CONTAMINATE BETZ TANK
 CLEAN-OUT CATEGORY 'A'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

~~CONFIDENTIAL - INFORMATION FOR THE USE OF THE COMPANY ONLY~~
 BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: POLYMER 1120

SECTION 4 HEALTH HAZARD EFFECTS

ACUTE SKIN EFFECTS ***

NON-HAZARDOUS TO SKIN

ACUTE EYE EFFECTS ***

POTENTIAL EYE IRRITANT DUE TO MECHANICAL ACTION ONLY

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

DUSTS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

NUISANCE DUST

SECTION 5 FIRST AID INSTRUCTIONS

SKIN CONTACT***

NO TREATMENT REQUIRED

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM. DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

SECTION 6 SPILL, DISPOSAL AND FIRE INSTRUCTIONS

SPILL INSTRUCTIONS***

VENTILATE AREA. USE SPECIFIED PROTECTIVE EQUIPMENT. SWEEP UP AND PLACE IN WASTE DISPOSAL CONTAINER.

FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS)

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: POLYMER 1120

SECTION 7 SPECIAL PROTECTIVE EQUIPMENT

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR FLBE USE SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION

ADEQUATE VENTILATION TO MAINTAIN DUST CONCENTRATIONS BELOW THE EXPOSURE LIMIT OF 10MG/M3(MEL/TLV) FOR NUISANCE DUSTS.

RECOMMENDED RESPIRATORY PROTECTION

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION

SAFETY GLASSES

SECTION 8 STORAGE AND HANDLING PRECAUTIONS

STORAGE INSTRUCTIONS

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

KEEP DRY. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS

NORMAL CHEMICAL HANDLING

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY
...REPORTABLE QUANTITY (RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD NUMBER GUIDELINE IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NONHAZARDOUS UNDER SECTION 311/312

...MICHIGAN CRITICAL MATERIALS: NONE

...NFPA/HMIS: HEALTH - 0; FIRE - 1; REACTIVITY - 0; SPECIAL - NONE; PE - A

BETZ LABORATORIES
4638 SOMERTON ROAD, TREVOSE, PA 19053

PRODUCT: POLYMER 1120

AQUATIC TOXICOLOGY

Rainbow Trout

72 Hour Static Screen

No effect level: 100 MG/L

Bluegill Sunfish

96 Hour Static Screen

No effect level: 300 MG/L

Daphnia magna

48 Hour Static Renewal Bioassay*

LC50: 470 MG/L

No effect level: 170 MG/L

*This toxicity testing was calculated from a product of similar formulation.

BETZ LABORATORIES, INC.
 4636 SOMERTON ROAD, TREVOSSE, PA. 19053
 BETZ MATERIAL SAFETY DATA SHEET
 EMERGENCY TELEPHONE (HEALTH/ACCIDENT) 800-877-1940

PRODUCT : POLYMER 1192

(PAGE 1 OF 3)
 EFFECTIVE DATE 02-16-91
 PRINTED: 1-Mar-1991

REVISIONS TO SECTIONS: -;EDIT:APPENDIX

PRODUCT APPLICATION : COAGULANT.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY OSHA REGULATIONS.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.)	6.3	ODOR: SLIGHT AMMONIA
FL.PT.(DEG.F):	>200	SETA(CC)	SP.GR.(70F)OR DENSITY: 1.032
VAPOR PRESSURE(mmHG):	ND		VAPOR DENSITY(AIR=1): ND
VISC cps70F:	168		%SOLUBILITY(WATER): 100
EVAP.RATE: <1	ETHER=1		APPEARANCE: YELLOW
PHYSICAL STATE:	LIQUID		FREEZE POINT(DEG.F): 30

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
 CLEAN-OUT CATEGORY 'A'

HEAT DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS BLEND ALL SIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: POLYMER 1192

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN

ACUTE EYE EFFECTS ***

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

MISTS/AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

NO EVIDENCE OF POTENTIAL CHRONIC EFFECTS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

MAY CAUSE REDNESS OR ITCHING OF SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DILUTE CONTENTS OF STOMACH. INDUCE VOMITING BY ONE OF THE STANDARD METHODS. IMMEDIATELY CONTACT A PHYSICIAN

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL/CO2/FOAM OR WATER. SLIPPERY CONDITION. USE SAND/GRIT

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: POLYMER 1192

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS. VENTILATION PROTECTION***

ADEQUATE VENTILATION

RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY, USE A RESPIRATOR WITH DUST/MIST FILTERS.

RECOMMENDED SKIN PROTECTION***

RUBBER GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***

NORMAL CHEMICAL HANDLING

THIS MSDS WAS WRITTEN TO COMPLY WITH THE OSHA HAZARD COMMUNICATION STANDARD

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY

...CLEARANCE FOR POTABLE WATER USE:

EPA UP TO 50PPM-ALSO FLORIDA

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...CALIFORNIA SAFE DRINKING WATER ACT (PROPOSITION 65) MATERIALS: NONE

...SARA SECTION 302 CHEMICALS: NONE

...SARA SECTION 313 CHEMICALS: NONE

...SARA SECTION 312 HAZARD CLASS: PRODUCT IS NONHAZARDOUS UNDER SECTION 311/312

...MICHIGAN CRITICAL MATERIALS: NONE

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B



Betz Industrial
1 Quality Way
Trevose, PA 19053-6783
215-355-3300
Fax: 215-933-2473

UNDERSTANDING AQUATIC TOXICITY TESTING RESULTS
FOR
CATIONIC POLYELECTROLYTES

Many cationic polymers in their free state cause toxicity to fish at relatively low levels. This is because the positively charged polymer attaches to the negatively charged gill epithelium (a cellular membrane), blocking passage of oxygen into the fish and causing asphyxiation. Standard EPA and ASTM aquatic testing procedures are designed to measure the toxicity level of free cationic polymer in clean water which does not contain suspended solids. However, studies indicate that in normal treatment processes, the polymer does not exist in its free form but instead is bound to the suspended solids which are present in the system. Any toxicity of the resultant water that might be attributed to free polymer is sharply reduced or eliminated since these bound polymers have been "neutralized" and cannot attach to the gill epithelium.

If the polymers were severely overdosed, free residual cationic polyelectrolytes might be released to the aquatic environment due to the presence of significantly more polymer than can be bound to the available suspended solids. Such an occurrence is unlikely since problems in the water clarification process (namely dispersion) would become apparent before the polymer reached a toxic level. In addition, if such a release would occur, there should be sufficient silt and other suspended solids present in the receiving stream to buffer or neutralize the effects on the aquatic environment. Therefore, when reviewing aquatic toxicology data for cationic polyelectrolytes, it should be remembered that these results refer to the presence of free (not bound) cationic polymers in the clean water and that the amount of free polymer entering the environment is negligible when used in accordance with safe and practical operating parameters.

FERMI 2 POWER PLANT - NPDES

	METHOD	LOD PPM	DATE	INTAKE PPM	OUTFALL 009	OUTFALL 011	OUTFALL 013	OUTFALL 001	ANALYST
Ag	272.2	0.0005	03/02/94	nd	nd	nd	nd	nd	MLA/DRS
Al	200.7	0.05	02/28/94	1.02	0.13	0.37	0.16	0.80	DMB
As	206.2	0.001	02/28/94	nd	nd	nd	nd	nd	MLA/DRS
B	200.7	0.10	02/28/94	nd	0.33	0.11	nd	nd	PMB
Ba	200.7	0.01	02/28/94	nd	nd	nd	nd	nd	PMB
Be	200.7	0.005	02/28/94	nd	nd	nd	nd	nd	PMB
Cd	213.2	0.0002	03/02/94	0.0006	0.0008	nd	nd	0.002	MLA/DRS
Co	200.0	0.10	02/28/94	nd	nd	nd	nd	nd	PMB
Cr	218.2	0.01	03/01/94	nd	nd	nd	nd	nd	MLA/DRS
Cu	220.2	0.005	03/01/94	nd	nd	nd	nd	0.005	MLA/DRS
Fe	200.7	0.02	02/28/94	1.4	0.24	0.36	0.22	1.0	PMB
Hg	245.1	0.0002	02/15/93	nd	nd	nd	nd	nd	MLA/DRS
Mg	200.7	1.0	02/28/94	7.9	11	25	12	8.2	PMB
Mn	200.7	0.02	02/28/94	nd	0.09	0.03	0.16	nd	PMB
Mo	200.7	0.10	02/28/94	nd	nd	nd	nd	nd	PMB
Ni	200.7	0.01	02/28/94	nd	nd	nd	nd	nd	PMB
Pb	239.2	0.001	03/03/94	0.001	0.002	nd	nd	nd	MLA/DRS
Sb	204.2	0.005	03/09/94	nd	nd	nd	nd	nd	MLA/DRS
Se	270.2	0.003	02/28/94	nd	nd	nd	nd	nd	MLA/DRS
Sn	282.2	0.10	03/08/94	nd	nd	nd	nd	nd	MLA/DRS
Ti	200.7	0.03	02/28/94	nd	nd	nd	nd	nd	MLA/DRS
Tl	279.2	0.002	03/01/94	nd	nd	nd	nd	nd	PMB
Zn	200.7	0.05	02/28/94	nd	0.10	nd	nd	nd	MLA/DRS
									PMB

ALL CONCENTRATIONS IN mg/l



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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00533
Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
pH (Field)	6.68	units		02/01/1994	mab	150.1 (3)	
BOD - Five Day	<3	mg/L	02/02/1994	02/07/1994	cab	405.1 (3)	
Bromide	0.36	mg/L		02/07/1994	dds	340.2 (3)	
COD	12	mg/L		02/07/1994	glc	410.1-2 (3)	
Cyanide, Amenable	<0.02	mg/L		02/04/1994	dds	335.1 (3)	
Cyanide, Total	<0.02	mg/L		02/04/1994	dds	335.2 (3)	
Fluoride	0.12	mg/L		02/03/1994	dds	340.2 (3)	
Nitrogen, Ammonia	0.6	mg/L		02/07/1994	cab	350.2 (3)	
Nitrogen, Kjeldahl	0.6	mg/L		02/11/1994	akm	351.3 (3)	
Nitrogen, Nitrate	0.95	mg/L		02/02/1994	glc	352.1 (3)	
Nitrogen, Nitrite	0.02	mg/L		02/02/1994	glc	354.1 (3)	
Nitrogen, Organic	<0.5	mg/L		02/11/1994	akm	351.3 (3)	
Oil & Grease	<5	mg/L		02/07/1994	akm	413.1 (3)	
Oxygen, Dissolved	12	mg/L		02/02/1994	cab	360.2 (3)	
Phenol (4-AAP)	<0.010	mg/L		02/09/1994	glc	420.1 (3)	
Phosphorus, Total	0.14	mg/L		02/08/1994	dds	365.2 (3)	
Solids, Suspended	6	mg/L		02/03/1994	cab	160.2 (3)	
Sulfate	26	mg/L		02/10/1994	dds	375.4 (3)	
Sulfide, Total	0.07	mg/L		02/01/1994	dds	376.2 (3)	
Total Organic Carbon	5	mg/L		02/16/1994	aus	9060 (1)	

Bruce E. Brown
Project Manager





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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00533
Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
VOLATILE COMPOUNDS							
Acrolein	<100	ug/L		02/09/1994	pmc	624 (5)	
Acrylonitrile	<100	ug/L		02/09/1994	pmc	624 (5)	
Benzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromodichloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromoform	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromomethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Carbon tetrachloride	<10	ug/L		02/09/1994	pmc	624 (5)	
Chlorobenzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
2-Chloroethyl vinyl ether	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloroform	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Dibromochloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1-Dichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,2-Dichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
cis-1,2-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
trans-1,2-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
1,2-Dichloropropane	<10	ug/L		02/09/1994	pmc	624 (5)	
cis-1,3-Dichloropropene	<10	ug/L		02/09/1994	pmc	624 (5)	
trans-1,3-Dichloropropene	<10	ug/L		02/09/1994	pmc	624 (5)	
Ethyl benzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Methylene chloride	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1,2,2-Tetrachloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Tetrachloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
Toluene	<10	ug/L		02/09/1994	pmc	624 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00533
Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
1,1,1-Trichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1,2-Trichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Trichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
Trichlorofluoromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Vinyl chloride	<10	ug/L		02/09/1994	pmc	624 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
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02/22/1994

Job No.: 94.00533
Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
BASE NEUTRAL COMPOUNDS			02/02/1994				
Acenaphthene	<10	ug/L		02/10/1994	wad	625 (5)	
Acenaphthylene	<10	ug/L		02/10/1994	wad	625 (5)	
Anthracene	<10	ug/L		02/10/1994	wad	625 (5)	
Benzydine	<10	ug/L		02/10/1994	wad	625 (5)	
Benzo(a)anthracene	<10	ug/L		02/10/1994	wad	625 (5)	
Benzo(b)fluoranthene	<10	ug/L		02/10/1994	wad	625 (5)	
Benzo(k)fluoranthene	<10	ug/L		02/10/1994	wad	625 (5)	
Benzo(a)pyrene	<10	ug/L		02/10/1994	wad	625 (5)	
Benzo(ghi)perylene	<10	ug/L		02/10/1994	wad	625 (5)	
Bis(2-chloroethyl)ether	<10	ug/L		02/10/1994	wad	625 (5)	
Bis(2-chloroethoxy)methane	<10	ug/L		02/10/1994	wad	625 (5)	
Bis(2-ethylhexyl)phthalate	<10	ug/L		02/10/1994	wad	625 (5)	
Bis(2-chloroisopropyl) ether	<10	ug/L		02/10/1994	wad	625 (5)	
Butyl benzyl phthalate	<10	ug/L		02/10/1994	wad	625 (5)	
4-Bromophenyl phenyl ether	<10	ug/L		02/10/1994	wad	625 (5)	
2-Chloronaphthalene	<10	ug/L		02/10/1994	wad	625 (5)	
4-Chlorophenylphenyl ether	<10	ug/L		02/10/1994	wad	625 (5)	
Chrysene	<10	ug/L		02/10/1994	wad	625 (5)	
Dibenzo(a,h)anthracene	<10	ug/L		02/10/1994	wad	625 (5)	
Di-n-butylphthalate	<10	ug/L		02/10/1994	wad	625 (5)	
1,2-Dichlorobenzene	<10	ug/L		02/10/1994	wad	625 (5)	
1,3-Dichlorobenzene	<10	ug/L		02/10/1994	wad	625 (5)	
1,4-Dichlorobenzene	<10	ug/L		02/10/1994	wad	625 (5)	
3,3'-Dichlorobenzidine	<10	ug/L		02/10/1994	wad	625 (5)	
Diethyl phthalate	<10	ug/L		02/10/1994	wad	625 (5)	
Dimethyl phthalate	<10	ug/L		02/10/1994	wad	625 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00533
Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
2,4-Dinitrotoluene	<10	ug/L		02/10/1994	wad	625 (5)	
2,6-Dinitrotoluene	<10	ug/L		02/10/1994	wad	625 (5)	
Di-n-octylphthalate	<10	ug/L		02/10/1994	wad	625 (5)	
1,2-Diphenylhydrazine	<10	ug/L		02/10/1994	wad	625 (5)	
Fluoranthene	<10	ug/L		02/10/1994	wad	625 (5)	
Fluorene	<10	ug/L		02/10/1994	wad	625 (5)	
Hexachlorobenzene	<10	ug/L		02/10/1994	wad	625 (5)	
Hexachlorobutadiene	<10	ug/L		02/10/1994	wad	625 (5)	
Hexachlorocyclopentadiene	<10	ug/L		02/10/1994	wad	625 (5)	
Hexachloroethane	<10	ug/L		02/10/1994	wad	625 (5)	
Indeno(1,2,3-cd)pyrene	<10	ug/L		02/10/1994	wad	625 (5)	
Isophorone	<10	ug/L		02/10/1994	wad	625 (5)	
Naphthalene	<10	ug/L		02/10/1994	wad	625 (5)	
Nitrobenzene	<10	ug/L		02/10/1994	wad	625 (5)	
N-Nitrosodimethylamine	<10	ug/L		02/10/1994	wad	625 (5)	
N-Nitrosodiphenylamine	<10	ug/L		02/10/1994	wad	625 (5)	
N-Nitrosodi-n-propylamine	<10	ug/L		02/10/1994	wad	625 (5)	
Phenanthrene	<10	ug/L		02/10/1994	wad	625 (5)	
Pyrene	<10	ug/L		02/10/1994	wad	625 (5)	
1,2,4-Trichlorobenzene	<10	ug/L		02/10/1994	wad	625 (5)	
2,3,7,8 TCDD Screen	ND	ug/L		02/10/1994	wad	625 (5)	

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ANALYTICAL REPORT

Walt Meier
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02/22/1994

Job No.: 94.00533
Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Leo Tech.	Methodology	Note
ACID COMPOUNDS			02/02/1994				
4-Chloro-3-methylphenol	<10	ug/L		02/10/1994	wad	625 (5)	
2-Chlorophenol	<10	ug/L		02/10/1994	wad	625 (5)	
2,4-Dichlorophenol	<10	ug/L		02/10/1994	wad	625 (5)	
2,4-Dimethylphenol	<10	ug/L		02/10/1994	wad	625 (5)	
2,4-Dinitrophenol	<50	ug/L		02/10/1994	wad	625 (5)	
4,6-Dinitro-2-methylphenol	<50	ug/L		02/10/1994	wad	625 (5)	
2-Nitrophenol	<10	ug/L		02/10/1994	wad	625 (5)	
4-Nitrophenol	<10	ug/L		02/10/1994	wad	625 (5)	
Pentachlorophenol	<10	ug/L		02/10/1994	wad	625 (5)	
Phenol	<10	ug/L		02/10/1994	wad	625 (5)	
2,4,6-Trichlorophenol	<10	ug/L		02/10/1994	wad	625 (5)	

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02/22/1994

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Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PESTICIDES			02/02/1994				
Aldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
alpha-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
beta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
gamma-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
delta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
Chlordane	<1.0	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDD	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDE	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDT	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Dieldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan I	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan II	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan Sulfate	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endrin Aldehyde	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor Epoxide	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Methoxychlor	<1.0	ug/L		02/07/1994	mmk	608 (5)	
Toxaphene	<0.80	ug/L		02/07/1994	mmk	608 (5)	

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02/22/1994

Job No.: 94.00533
Sample No.: 145130

Fermi 2 Power Plant

Sample Description: Intake 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PCBs			02/02/1994				
Aroclor-1016	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1221	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1232	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1242	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1248	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1254	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1260	<0.050	ug/L		02/07/1994	mmk	608 (5)	


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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/18/1994

Job No.: 94.00626
Sample No.: 145351

Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
pH (Field)	7.19	units		02/03/1994	mab	150.1 (3)	
BOD - Five Day	<3	mg/L	02/03/1994	02/08/1994	cab	405.1 (3)	
Bromide	<0.10	mg/L		02/14/1994	dds	340.2 (3)	
COD	56	mg/L		02/10/1994	gls	410.1-2 (3)	
Cyanide, Amenable	<0.02	mg/L		02/11/1994	dds	335.1 (3)	
Cyanide, Total	<0.02	mg/L		02/11/1994	dds	335.2 (3)	
Fluoride	0.12	mg/L		02/14/1994	dds	340.2 (3)	
Nitrogen, Ammonia	0.19	mg/L		02/14/1994	cab	350.2 (3)	
Nitrogen, Kjeldahl	0.7	mg/L		02/11/1994	akm	351.3 (3)	
Nitrogen, Nitrate	0.02	mg/L		02/10/1994	gls	352.1 (3)	
Nitrogen, Nitrite	0.02	mg/L		02/04/1994	akm	354.1 (3)	
Nitrogen, Organic	0.5	mg/L		02/11/1994	akm	351.3 (3)	
Oil & Grease	<5	mg/L		02/09/1994	gls	413.1 (3)	
Oxygen, Dissolved	14	mg/L		02/03/1994	cab	360.2 (3)	
Phenol (4-AAP)	<0.010	mg/L		02/10/1994	gls	420.1 (3)	
Phosphorus, Total	0.11	mg/L		02/09/1994	dds	365.2 (3)	
Solids, Suspended	370 17	mg/L		02/09/1994	cab	160.2 (3)	
Sulfate	27	mg/L		02/10/1994	dds	375.4 (3)	
Sulfide, Total	<0.05	mg/L		02/09/1994	dds	376.2 (3)	
Total Organic Carbon	4	mg/L		02/10/1994	aus	9060 (1)	

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02/18/1994

Job No.: 94.00626
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Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
VOLATILE COMPOUNDS							
Acrolein	<100	ug/L		02/10/1994	pmc	624 (5)	
Acrylonitrile	<100	ug/L		02/10/1994	pmc	624 (5)	
Benzene	<10	ug/L		02/10/1994	pmc	624 (5)	
Bromodichloromethane	<10	ug/L		02/10/1994	pmc	624 (5)	
Bromoform	<10	ug/L		02/10/1994	pmc	624 (5)	
Bromomethane	<10	ug/L		02/10/1994	pmc	624 (5)	
Carbon tetrachloride	<10	ug/L		02/10/1994	pmc	624 (5)	
Chlorobenzene	<10	ug/L		02/10/1994	pmc	624 (5)	
Chloroethane	<10	ug/L		02/10/1994	pmc	624 (5)	
2-Chloroethyl vinyl ether	<10	ug/L		02/10/1994	pmc	624 (5)	
Chloroform	<10	ug/L		02/10/1994	pmc	624 (5)	
Chloromethane	<10	ug/L		02/10/1994	pmc	624 (5)	
Dibromochloromethane	<10	ug/L		02/10/1994	pmc	624 (5)	
1,1-Dichloroethane	<10	ug/L		02/10/1994	pmc	624 (5)	
1,2-Dichloroethane	<10	ug/L		02/10/1994	pmc	624 (5)	
1,1-Dichloroethene	<10	ug/L		02/10/1994	pmc	624 (5)	
cis-1,2-Dichloroethene	<10	ug/L		02/10/1994	pmc	624 (5)	
trans-1,2-Dichloroethene	<10	ug/L		02/10/1994	pmc	624 (5)	
1,2-Dichloropropene	<10	ug/L		02/10/1994	pmc	624 (5)	
cis-1,3-Dichloropropene	<10	ug/L		02/10/1994	pmc	624 (5)	
trans-1,3-Dichloropropene	<10	ug/L		02/10/1994	pmc	624 (5)	
Ethyl benzene	<10	ug/L		02/10/1994	pmc	624 (5)	
Methylene chloride	<10	ug/L		02/10/1994	pmc	624 (5)	
1,1,2,2-Tetrachloroethane	<10	ug/L		02/10/1994	pmc	624 (5)	
Tetrachloroethene	<10	ug/L		02/10/1994	pmc	624 (5)	
Toluene	<10	ug/L		02/10/1994	pmc	624 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/18/1994

Job No.: 94.00626
Sample No.: 145351

Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
1,1,1-Trichloroethane	<10	ug/L		02/10/1994	pmc	624 (5)	
1,1,2-Trichloroethane	<10	ug/L		02/10/1994	pmc	624 (5)	
Trichloroethene	<10	ug/L		02/10/1994	pmc	624 (5)	
Trichlorofluoromethane	<10	ug/L		02/10/1994	pmc	624 (5)	
Vinyl chloride	<10	ug/L		02/10/1994	pmc	624 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/18/1994

Job No.: 94.00626
Sample No.: 145351

Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
BASE NEUTRAL COMPOUNDS			02/08/1994				
Acenaphthene	<10	ug/L		02/14/1994	wad	625 (5)	
Acenaphthylene	<10	ug/L		02/14/1994	wad	625 (5)	
Anthracene	<10	ug/L		02/14/1994	wad	625 (5)	
Benzidine	<10	ug/L		02/14/1994	wad	625 (5)	
Benzo(a)anthracene	<10	ug/L		02/14/1994	wad	625 (5)	
Benzo(b)fluoranthene	<10	ug/L		02/14/1994	wad	625 (5)	
Benzo(k)fluoranthene	<10	ug/L		02/14/1994	wad	625 (5)	
Benzo(a)pyrene	<10	ug/L		02/14/1994	wad	625 (5)	
Benzo(ghi)perylene	<10	ug/L		02/14/1994	wad	625 (5)	
Bis(2-chloroethyl)ether	<10	ug/L		02/14/1994	wad	625 (5)	
Bis(2-chloroethoxy)methane	<10	ug/L		02/14/1994	wad	625 (5)	
Bis(2-ethylhexyl)phthalate	<10	ug/L		02/14/1994	wad	625 (5)	
Bis(2-chloroisopropyl) ether	<10	ug/L		02/14/1994	wad	625 (5)	
Butyl benzyl phthalate	<10	ug/L		02/14/1994	wad	625 (5)	
4-Bromophenyl phenyl ether	<10	ug/L		02/14/1994	wad	625 (5)	
2-Chloronaphthalene	<10	ug/L		02/14/1994	wad	625 (5)	
4-Chlorophenylphenyl ether	<10	ug/L		02/14/1994	wad	625 (5)	
Chrysene	<10	ug/L		02/14/1994	wad	625 (5)	
Dibenzo(a,h)anthracene	<10	ug/L		02/14/1994	wad	625 (5)	
Di-n-butylphthalate	<10	ug/L		02/14/1994	wad	625 (5)	
1,2-Dichlorobenzene	<10	ug/L		02/14/1994	wad	625 (5)	
1,3-Dichlorobenzene	<10	ug/L		02/14/1994	wad	625 (5)	
1,4-Dichlorobenzene	<10	ug/L		02/14/1994	wad	625 (5)	
3,3'-Dichlorobenzidine	<10	ug/L		02/14/1994	wad	625 (5)	
Diethyl phthalate	<10	ug/L		02/14/1994	wad	625 (5)	
Dimethyl phthalate	<10	ug/L		02/14/1994	wad	625 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/18/1994

Job No.: 94.00626
Sample No.: 145351

Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
2,4-Dinitrotoluene	<10	ug/L		02/14/1994	wad	625 (5)	
2,6-Dinitrotoluene	<10	ug/L		02/14/1994	wad	625 (5)	
Di-n-octylphthalate	<10	ug/L		02/14/1994	wad	625 (5)	
1,2-Diphenylhydrazine	<10	ug/L		02/14/1994	wad	625 (5)	
Fluoranthene	<10	ug/L		02/14/1994	wad	625 (5)	
Fluorene	<10	ug/L		02/14/1994	wad	625 (5)	
Hexachlorobenzene	<10	ug/L		02/14/1994	wad	625 (5)	
Hexachlorobutadiene	<10	ug/L		02/14/1994	wad	625 (5)	
Hexachlorocyclopentadiene	<10	ug/L		02/14/1994	wad	625 (5)	
Hexachloroethane	<10	ug/L		02/14/1994	wad	625 (5)	
Indeno(1,2,3-cd)pyrene	<10	ug/L		02/14/1994	wad	625 (5)	
Isophorone	<10	ug/L		02/14/1994	wad	625 (5)	
Naphthalene	<10	ug/L		02/14/1994	wad	625 (5)	
Nitrobenzene	<10	ug/L		02/14/1994	wad	625 (5)	
N-Nitrosodimethylamine	<10	ug/L		02/14/1994	wad	625 (5)	
N-Nitrosodiphenylamine	<10	ug/L		02/14/1994	wad	625 (5)	
N-Nitrosodi-n-propylamine	<10	ug/L		02/14/1994	wad	625 (5)	
Phenanthrene	<10	ug/L		02/14/1994	wad	625 (5)	
Pyrene	<10	ug/L		02/14/1994	wad	625 (5)	
1,2,4-Trichlorobenzene	<10	ug/L		02/14/1994	wad	625 (5)	
2,3,7,8 TCDD Screen	ND	ug/L		02/14/1994	wad	625 (5)	

ND - Not detected via forward library search.

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02/18/1994

Job No.: 94.00626
Sample No.: 145351

Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
ACID COMPOUNDS			02/08/1994				
4-Chloro-3-methylphenol	<10	ug/L		02/14/1994	wad	625 (5)	
2-Chlorophenol	<10	ug/L		02/14/1994	wad	625 (5)	
2,4-Dichlorophenol	<10	ug/L		02/14/1994	wad	625 (5)	
2,4-Dimethylphenol	<10	ug/L		02/14/1994	wad	625 (5)	
2,4-Dinitrophenol	<50	ug/L		02/14/1994	wad	625 (5)	
4,6-Dinitro-2-methylphenol	<50	ug/L		02/14/1994	wad	625 (5)	
2-Nitrophenol	<10	ug/L		02/14/1994	wad	625 (5)	
4-Nitrophenol	<10	ug/L		02/14/1994	wad	625 (5)	
Pentachlorophenol	<10	ug/L		02/14/1994	wad	625 (5)	
Phenol	<10	ug/L		02/14/1994	wad	625 (5)	
2,4,6-Trichlorophenol	<10	ug/L		02/14/1994	wad	625 (5)	

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02/18/1994

Job No.: 94.00626
Sample No.: 145351

Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
			02/08/1994				
PESTICIDES							
Aldrin	<0.50	ug/L		02/11/1994	mmk	608 (5)	
alpha-BHC	<0.40	ug/L		02/11/1994	mmk	608 (5)	
beta-BHC	<0.40	ug/L		02/11/1994	mmk	608 (5)	
gamma-BHC	<0.40	ug/L		02/11/1994	mmk	608 (5)	
delta-BHC	<0.40	ug/L		02/11/1994	mmk	608 (5)	
Chlordane	<1.0	ug/L		02/11/1994	mmk	608 (5)	
4,4'-DDD	<0.50	ug/L		02/11/1994	mmk	608 (5)	
4,4'-DDE	<0.50	ug/L		02/11/1994	mmk	608 (5)	
4,4'-DDT	<0.50	ug/L		02/11/1994	mmk	608 (5)	
Dieldrin	<0.50	ug/L		02/11/1994	mmk	608 (5)	
Endosulfan I	<0.50	ug/L		02/11/1994	mmk	608 (5)	
Endosulfan II	<0.50	ug/L		02/11/1994	mmk	608 (5)	
Endosulfan Sulfate	<0.80	ug/L		02/11/1994	mmk	608 (5)	
Endrin	<0.50	ug/L		02/11/1994	mmk	608 (5)	
Endrin Aldehyde	<0.80	ug/L		02/11/1994	mmk	608 (5)	
Heptachlor	<0.80	ug/L		02/11/1994	mmk	608 (5)	
Heptachlor Epoxide	<0.50	ug/L		02/11/1994	mmk	608 (5)	
Methoxychlor	<1.0	ug/L		02/11/1994	mmk	608 (5)	
Toxaphene	<0.80	ug/L		02/11/1994	mmk	608 (5)	

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02/18/1994

Job No.: 94.00626
Sample No.: 145351

Fermi 2 Power Plant

Sample Description: #001 02/03

Date Taken: 02/03/1994

Date Received: 02/03/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PCBs			02/08/1994				
Aroclor-1016	<0.050	ug/L		02/11/1994	mmk	608 (5)	
Aroclor-1221	<0.050	ug/L		02/11/1994	mmk	608 (5)	
Aroclor-1232	<0.050	ug/L		02/11/1994	mmk	608 (5)	
Aroclor-1242	<0.050	ug/L		02/11/1994	mmk	608 (5)	
Aroclor-1248	<0.050	ug/L		02/11/1994	mmk	608 (5)	
Aroclor-1254	<0.050	ug/L		02/11/1994	mmk	608 (5)	
Aroclor-1260	<0.050	ug/L		02/11/1994	mmk	608 (5)	


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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145057

Fermi 2 Power Plant

Sample Description: 009 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
pH (Field)	7.07	units		01/31/1994	mab	150.1 (3)	
BOD - Five Day	<3	mg/L	02/01/1994	02/07/1994	cab	405.1 (3)	
Bromide	0.26	mg/L		02/07/1994	dds	340.2 (3)	
COD	46	mg/L		02/07/1994	gls	410.1-2 (3)	
Cyanide, Amenable	<0.02	mg/L		02/04/1994	dds	335.1 (3)	
Cyanide, Total	<0.02	mg/L		02/04/1994	dds	335.2 (3)	
Fluoride	0.20	mg/L		02/03/1994	dds	340.2 (3)	
Nitrogen, Ammonia	17	mg/L		02/02/1994	akm	350.2 (3)	
Nitrogen, Kjeldahl	23	mg/L		02/11/1994	akm	351.3 (3)	
Nitrogen, Nitrate	0.69	mg/L		02/02/1994	gls	352.1 (3)	
Nitrogen, Nitrite	<0.02	mg/L		02/02/1994	gls	354.1 (3)	
Nitrogen, Organic	6.0	mg/L		02/11/1994	akm	351.3 (3)	
Oil & Grease	<5	mg/L		02/07/1994	akm	413.1 (3)	
Oxygen, Dissolved	10	mg/L		01/31/1994	cab	360.2 (3)	
Phenol (4-AAP)	<0.010	mg/L		02/09/1994	gls	420.1 (3)	
Phosphorus, Total	0.27	mg/L		02/08/1994	dds	365.2 (3)	
Solids, Suspended	<4	mg/L		02/03/1994	cab	160.2 (3)	
Sulfate	29	mg/L		02/10/1994	dds	375.4 (3)	
Sulfide, Total	<0.05	mg/L		02/01/1994	dds	376.2 (3)	
Total Organic Carbon	21	mg/L		02/10/1994	aus	9060 (1)	

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Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145057

Fermi 2 Power Plant

Sample Description: 009 01,31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
VOLATILE COMPOUNDS							
Acrolein	<100	ug/L		02/08/1994	pmc	624 (5)	
Acrylonitrile	<100	ug/L		02/08/1994	pmc	624 (5)	
Benzene	<10	ug/L		02/08/1994	pmc	624 (5)	
Bromodichloromethane	<10	ug/L		02/08/1994	pmc	624 (5)	
Bromoform	<10	ug/L		02/08/1994	pmc	624 (5)	
Bromomethane	<10	ug/L		02/08/1994	pmc	624 (5)	
Carbon tetrachloride	<10	ug/L		02/08/1994	pmc	624 (5)	
Chlorobenzene	<10	ug/L		02/08/1994	pmc	624 (5)	
Chloroethane	<10	ug/L		02/08/1994	pmc	624 (5)	
2-Chloroethyl vinyl ether	<10	ug/L		02/08/1994	pmc	624 (5)	
Chloroform	<10	ug/L		02/08/1994	pmc	624 (5)	
Chloromethane	<10	ug/L		02/08/1994	pmc	624 (5)	
Dibromochloromethane	<10	ug/L		02/08/1994	pmc	624 (5)	
1,1-Dichloroethane	<10	ug/L		02/08/1994	pmc	624 (5)	
1,2-Dichloroethane	<10	ug/L		02/08/1994	pmc	624 (5)	
1,1-Dichloroethene	<10	ug/L		02/08/1994	pmc	624 (5)	
cis-1,2-Dichloroethene	<10	ug/L		02/08/1994	pmc	624 (5)	
trans-1,2-Dichloroethene	<10	ug/L		02/08/1994	pmc	624 (5)	
1,2-Dichloropropane	<10	ug/L		02/08/1994	pmc	624 (5)	
cis-1,3-Dichloropropene	<10	ug/L		02/08/1994	pmc	624 (5)	
trans-1,3-Dichloropropene	<10	ug/L		02/08/1994	pmc	624 (5)	
Ethyl benzene	<10	ug/L		02/08/1994	pmc	624 (5)	
Methylene chloride	<10	ug/L		02/08/1994	pmc	624 (5)	
1,1,2,2-Tetrachloroethane	<10	ug/L		02/08/1994	pmc	624 (5)	
Tetrachloroethene	<10	ug/L		02/08/1994	pmc	624 (5)	
Toluene	<10	ug/L		02/08/1994	pmc	624 (5)	

Bruce E. Brown
Project Manager





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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145057

Fermi 2 Power Plant

Sample Description: 009 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
1,1,1-Trichloroethane	<10	ug/L		02/08/1994	pnc	624 (5)	
1,1,2-Trichloroethane	<10	ug/L		02/08/1994	pnc	624 (5)	
Trichloroethene	<10	ug/L		02/08/1994	pnc	624 (5)	
Trichlorofluoromethane	<10	ug/L		02/08/1994	pnc	624 (5)	
Vinyl chloride	<10	ug/L		02/08/1994	pnc	624 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
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02/17/1994

Job No.: 94.00504
Sample No.: 145057

Fermi 2 Power Plant

Sample Description: 009 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
BASE NEUTRAL COMPOUNDS			02/02/1994				
Acenaphthene	<10	ug/L		02/09/1994	njd	625 (5)	
Acenaphthylene	<10	ug/L		02/09/1994	njd	625 (5)	
Anthracene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzidine	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(a)anthracene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(b)fluoranthene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(k)fluoranthene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(a)pyrene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(ghi)perylene	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-chloroethyl)ether	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-chloroethoxy)methane	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-ethylhexyl)phthalate	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-chloroisopropyl) ether	<10	ug/L		02/09/1994	njd	625 (5)	
Butyl benzyl phthalate	<10	ug/L		02/09/1994	njd	625 (5)	
4-Bromophenyl phenyl ether	<10	ug/L		02/09/1994	njd	625 (5)	
2-Chloronaphthalene	<10	ug/L		02/09/1994	njd	625 (5)	
4-Chlorophenylphenyl ether	<10	ug/L		02/09/1994	njd	625 (5)	
Chrysene	<10	ug/L		02/09/1994	njd	625 (5)	
Dibenzo(a,h)anthracene	<10	ug/L		02/09/1994	njd	625 (5)	
Di-n-butylphthalate	<10	ug/L		02/09/1994	njd	625 (5)	
1,2-Dichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
1,3-Dichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
1,4-Dichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
3,3'-Dichlorobenzidine	<10	ug/L		02/09/1994	njd	625 (5)	
Diethyl phthalate	<10	ug/L		02/09/1994	njd	625 (5)	
Dimethyl phthalate	<10	ug/L		02/09/1994	njd	625 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145057

Ferri 2 Power Plant

Sample Description: 009 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
2,4-Dinitrotoluene	<10	ug/L		02/09/1994	njd	625 (5)	
2,6-Dinitrotoluene	<10	ug/L		02/09/1994	njd	625 (5)	
Di-n-octylphthalate	<10	ug/L		02/09/1994	njd	625 (5)	
1,2-Diphenylhydrazine	<10	ug/L		02/09/1994	njd	625 (5)	
Fluoranthene	<10	ug/L		02/09/1994	njd	625 (5)	
Fluorene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachlorobutadiene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachlorocyclopentadiene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachloroethane	<10	ug/L		02/09/1994	njd	625 (5)	
Indeno(1,2,3-cd)pyrene	<10	ug/L		02/09/1994	njd	625 (5)	
Isophorone	<10	ug/L		02/09/1994	njd	625 (5)	
Naphthalene	<10	ug/L		02/09/1994	njd	625 (5)	
Nitrobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
N-Nitrosodimethylamine	<10	ug/L		02/09/1994	njd	625 (5)	
N-Nitrosodiphenylamine	<10	ug/L		02/09/1994	njd	625 (5)	
N-Nitrosodi-n-propylamine	<10	ug/L		02/09/1994	njd	625 (5)	
Phenanthrene	<10	ug/L		02/09/1994	njd	625 (5)	
Pyrene	<10	ug/L		02/09/1994	njd	625 (5)	
1,2,4-Trichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
2,3,7,8 TCDD Screen	ND	ug/L		02/09/1994	njd	625 (5)	

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Bruce E. Brown
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ANALYTICAL REPORT

Walt Meler
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145057

Fermi 2 Power Plant

Sample Description: 009 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
ACID COMPOUNDS			02/02/1994				
4-Chloro-3-methylphenol	<10	ug/L		02/09/1994	njd	625 (5)	
2-Chlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4-Dichlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4-Dimethylphenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4-Dinitrophenol	<50	ug/L		02/09/1994	njd	625 (5)	
4,6-Dinitro-2-methylphenol	<50	ug/L		02/09/1994	njd	625 (5)	
2-Nitrophenol	<10	ug/L		02/09/1994	njd	625 (5)	
4-Nitrophenol	<10	ug/L		02/09/1994	njd	625 (5)	
Pentachlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	
Phenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4,6-Trichlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	

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7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145057

Fermi 2 Power Plant

Sample Description: 009 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PESTICIDES			02/02/1994				
Aldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
alpha-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
beta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
gamma-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
delta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
Chlordane	<1.0	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDD	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDE	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDT	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Dieldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan I	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan II	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan Sulfate	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Endrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endrin Aldehyde	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor Epoxide	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Methoxychlor	<1.0	ug/L		02/07/1994	mmk	608 (5)	
Toxaphene	<0.80	ug/L		02/07/1994	mmk	608 (5)	

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Walt Meier
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Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145057

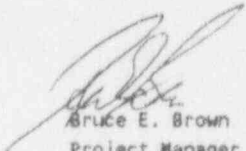
Fermi 2 Power Plant

Sample Description: 009 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PCBs			02/02/1994				
Aroclor-1016	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1221	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1232	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1242	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-124P	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1254	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1260	<0.050	ug/L		02/07/1994	mmk	608 (5)	


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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00532
Sample No.: 145129

Fermi 2 Power Plant

Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
pH (Field)	6.73	units		02/01/1994	mab	150.1 (3)	
BOD - Five Day	<3	mg/L	02/02/1994	02/07/1994	cab	405.1 (3)	
Bromide	0.51	mg/L		02/07/1994	dds	340.2 (3)	
COD	<10	mg/L		02/07/1994	gls	410.1-2 (3)	
Cyanide, Amenable	<0.02	mg/L		02/04/1994	dds	335.1 (3)	
Cyanide, Total	<0.02	mg/L		02/04/1994	dds	335.2 (3)	
Fluoride	0.54	mg/L		02/03/1994	dds	340.2 (3)	
Nitrogen, Ammonia	0.5	mg/L		02/07/1994	cab	350.2 (3)	
Nitrogen, Kjeldahl	0.6	mg/L		02/11/1994	akm	351.3 (3)	
Nitrogen, Nitrate	0.83	mg/L		02/02/1994	gls	352.1 (3)	
Nitrogen, Nitrite	<0.02	mg/L		02/02/1994	gls	354.1 (3)	
Nitrogen, Organic	0.1	mg/L		02/11/1994	akm	351.3 (3)	
Oil & Grease	<5	mg/L		02/07/1994	akm	413.1 (3)	
Oxygen, Dissolved	12	mg/L		02/02/1994	cab	360.2 (3)	
Phenol (4-AAP)	<0.010	mg/L		02/09/1994	gls	420.1 (3)	
Phosphorus, Total	0.12	mg/L		02/08/1994	dds	365.2 (3)	
Solids, Suspended	4	mg/L		02/03/1994	cab	160.2 (3)	
Sulfate	130	mg/L		02/10/1994	dds	375.4 (3)	
Sulfide, Total	<0.05	mg/L		02/01/1994	dds	376.2 (3)	
Total Organic Carbon	5	mg/L		02/16/1994	aus	9060 (1)	

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02/22/1994

Job No.: 94.00532
Sample No.: 145129

Fermi 2 Power Plant

Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
VOLATILE COMPOUNDS							
Acrolein	<100	ug/L		02/09/1994	pmc	624 (5)	
Acrylonitrile	<100	ug/L		02/09/1994	pmc	624 (5)	
Benzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromodichloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromoform	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromomethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Carbon tetrachloride	<10	ug/L		02/09/1994	pmc	624 (5)	
Chlorobenzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
2-Chloroethyl vinyl ether	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloroform	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Dibromochloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1-Dichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,2-Dichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
cis-1,2-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
trans-1,2-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
1,2-Dichloropropane	<10	ug/L		02/09/1994	pmc	624 (5)	
cis-1,3-Dichloropropene	<10	ug/L		02/09/1994	pmc	624 (5)	
trans-1,3-Dichloropropene	<10	ug/L		02/09/1994	pmc	624 (5)	
Ethyl benzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Methylene chloride	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1,2,2-Tetrachloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Tetrachloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
Toluene	<10	ug/L		02/09/1994	pmc	624 (5)	

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ANALYTICAL REPORT

Walt Meler
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00532
Sample No.: 145129

Fermi 2 Power Plant

Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
1,1,1-Trichloroethane	<10	ug/L		02/09/1994	pnc	624 (5)	
1,1,2-Trichloroethane	<10	ug/L		02/09/1994	pnc	624 (5)	
Trichloroethene	<10	ug/L		02/09/1994	pnc	624 (5)	
Trichlorofluoromethane	<10	ug/L		02/09/1994	pnc	624 (5)	
Vinyl chloride	<10	ug/L		02/09/1994	pnc	624 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00532
Sample No.: 145129

Fermi 2 Power Plant

Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
BASE NEUTRAL COMPOUNDS			02/02/1994				
Acenaphthene	<10	ug/L		02/10/1994	njd	625 (5)	
Acenaphthylene	<10	ug/L		02/10/1994	njd	625 (5)	
Anthracene	<10	ug/L		02/10/1994	njd	625 (5)	
Benzidine	<10	ug/L		02/10/1994	njd	625 (5)	
Benzo(a)anthracene	<10	ug/L		02/10/1994	njd	625 (5)	
Benzo(b)fluoranthene	<10	ug/L		02/10/1994	njd	625 (5)	
Benzo(k)fluoranthene	<10	ug/L		02/10/1994	njd	625 (5)	
Benzo(a)pyrene	<10	ug/L		02/10/1994	njd	625 (5)	
Benzo(ghi)perylene	<10	ug/L		02/10/1994	njd	625 (5)	
Bis(2-chloroethyl)ether	<10	ug/L		02/10/1994	njd	625 (5)	
Bis(2-chloroethoxy)methane	<10	ug/L		02/10/1994	njd	625 (5)	
Bis(2-ethylhexyl)phthalate	<10	ug/L		02/10/1994	njd	625 (5)	
Bis(2-chloroisopropyl) ether	<10	ug/L		02/10/1994	njd	625 (5)	
Butyl benzyl phthalate	<10	ug/L		02/10/1994	njd	625 (5)	
4-Bromophenyl phenyl ether	<10	ug/L		02/10/1994	njd	625 (5)	
2-Chloronaphthalene	<10	ug/L		02/10/1994	njd	625 (5)	
4-Chlorophenylphenyl ether	<10	ug/L		02/10/1994	njd	625 (5)	
Chrysene	<10	ug/L		02/10/1994	njd	625 (5)	
Dibenzo(a,h)anthracene	<10	ug/L		02/10/1994	njd	625 (5)	
Di-n-butylphthalate	<10	ug/L		02/10/1994	njd	625 (5)	
1,2-Dichlorobenzene	<10	ug/L		02/10/1994	njd	625 (5)	
1,3-Dichlorobenzene	<10	ug/L		02/10/1994	njd	625 (5)	
1,4-Dichlorobenzene	<10	ug/L		02/10/1994	njd	625 (5)	
3,3'-Dichlorobenzidine	<10	ug/L		02/10/1994	njd	625 (5)	
Diethyl phthalate	<10	ug/L		02/10/1994	njd	625 (5)	
Dimethyl phthalate	<10	ug/L		02/10/1994	njd	625 (5)	

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02/22/1994

Job No.: 94.00532
Sample No.: 145129

Fermi 2 Power Plant

Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
2,4-Dinitrotoluene	<10	ug/L		02/10/1994	njd	625 (5)	
2,6-Dinitrotoluene	<10	ug/L		02/10/1994	njd	625 (5)	
Di-n-octylphthalate	<10	ug/L		02/10/1994	njd	625 (5)	
1,2-Diphenylhydrazine	<10	ug/L		02/10/1994	njd	625 (5)	
Fluoranthene	<10	ug/L		02/10/1994	njd	625 (5)	
Fluorene	<10	ug/L		02/10/1994	njd	625 (5)	
Hexachlorobenzene	<10	ug/L		02/10/1994	njd	625 (5)	
Hexachlorobutadiene	<10	ug/L		02/10/1994	njd	625 (5)	
Hexachlorocyclopentadiene	<10	ug/L		02/10/1994	njd	625 (5)	
Hexachloroethane	<10	ug/L		02/10/1994	njd	625 (5)	
Indeno(1,2,3-cd)pyrene	<10	ug/L		02/10/1994	njd	625 (5)	
Isophorone	<10	ug/L		02/10/1994	njd	625 (5)	
Naphthalene	<10	ug/L		02/10/1994	njd	625 (5)	
Nitrobenzene	<10	ug/L		02/10/1994	njd	625 (5)	
N-Nitrosodimethylamine	<10	ug/L		02/10/1994	njd	625 (5)	
N-Nitrosodiphenylamine	<10	ug/L		02/10/1994	njd	625 (5)	
N-Nitrosodi-n-propylamine	<10	ug/L		02/10/1994	njd	625 (5)	
Phenanthrene	<10	ug/L		02/10/1994	njd	625 (5)	
Pyrene	<10	ug/L		02/10/1994	njd	625 (5)	
1,2,4-Trichlorobenzene	<10	ug/L		02/10/1994	njd	625 (5)	
2,3,7,8 TCDD Screen	ND	ug/L		02/10/1994	njd	625 (5)	

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Sample No.: 145129

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Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
ACID COMPOUNDS			02/02/1994				
4-Chloro-3-methylphenol	<10	ug/L		02/10/1994	njd	625 (5)	
2-Chlorophenol	<10	ug/L		02/10/1994	njd	625 (5)	
2,4-Dichlorophenol	<10	ug/L		02/10/1994	njd	625 (5)	
2,4-Dimethylphenol	<10	ug/L		02/10/1994	njd	625 (5)	
2,4-Dinitrophenol	<50	ug/L		02/10/1994	njd	625 (5)	
4,6-Dinitro-2-methylphenol	<50	ug/L		02/10/1994	njd	625 (5)	
2-Nitrophenol	<10	ug/L		02/10/1994	njd	625 (5)	
4-Nitrophenol	<10	ug/L		02/10/1994	njd	625 (5)	
Pentachlorophenol	<10	ug/L		02/10/1994	njd	625 (5)	
Phenol	<10	ug/L		02/10/1994	njd	625 (5)	
2,4,6-Trichlorophenol	<10	ug/L		02/10/1994	njd	625 (5)	

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02/22/1994

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Sample No.: 145129

Fermi 2 Power Plant

Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PESTICIDES			02/02/1994				
Aldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
alpha-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
beta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
gamma-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
delta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
Chlordane	<1.0	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDD	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDE	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDT	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Dieldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan I	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan II	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan Sulfate	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Endrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endrin Aldehyde	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor Epoxide	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Methoxychlor	<1.0	ug/L		02/07/1994	mmk	608 (5)	
Toxaphene	<0.80	ug/L		02/07/1994	mmk	608 (5)	

Bruce E. Brown
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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/22/1994

Job No.: 94.00532
Sample No.: 145129


Fermi 2 Power Plant

Sample Description: #011 02/01

Date Taken: 02/01/1994

Date Received: 02/01/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PCBs			02/02/1994				
Aroclor-1016	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1221	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1232	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1242	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1248	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1254	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1260	<0.050	ug/L		02/07/1994	mmk	608 (5)	


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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145058

Fermi 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
pH (Field)	6.95	units		01/31/1994	mab	150.1 (3)	
BOD - Five Day	4	mg/L	02/01/1994	02/07/1994	cab	405.1 (3)	
Bromide	0.20	mg/L		02/07/1994	dds	340.2 (3)	
COD	<10	mg/L		02/07/1994	gls	410.1-2 (3)	
Cyanide, Amenable	<0.02	mg/L		02/04/1994	dds	335.1 (3)	
Cyanide, Total	<0.02	mg/L		02/04/1994	dds	335.2 (3)	
Fluoride	0.10	mg/L		02/03/1994	dds	340.2 (3)	
Nitrogen, Ammonia	3.4	mg/L		02/02/1994	akm	350.2 (3)	
Nitrogen, Kjeldahl	4.0	mg/L		02/11/1994	akm	351.3 (3)	
Nitrogen, Nitrate	0.64	mg/L		02/02/1994	gls	352.1 (3)	
Nitrogen, Nitrite	<0.02	mg/L		02/02/1994	gls	354.1 (3)	
Nitrogen, Organic	0.6	mg/L		02/11/1994	akm	351.3 (3)	
Oil & Grease	<5	mg/L		02/07/1994	akm	413.1 (3)	
Oxygen, Dissolved	11	mg/L		01/31/1994	cab	360.2 (3)	
Phenol (4-AAP)	<0.010	mg/L		02/09/1994	gls	420.1 (3)	
Phosphorus, Total	0.05	mg/L		02/08/1994	dds	365.2 (3)	
Solids, Suspended	5	mg/L		02/03/1994	cab	160.2 (3)	
Sulfate	53	mg/L		02/10/1994	dds	375.4 (3)	
Sulfide, Total	<0.05	mg/L		02/01/1994	dds	376.2 (3)	
Total Organic Carbon	5	mg/L		02/10/1994	aus	9060 (1)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145058

Fermi 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
VOLATILE COMPOUNDS							
Acrolein	<100	ug/L		02/09/1994	pmc	624 (5)	
Acrylonitrile	<100	ug/L		02/09/1994	pmc	624 (5)	
Benzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromodichloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromoform	<10	ug/L		02/09/1994	pmc	624 (5)	
Bromomethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Carbon tetrachloride	<10	ug/L		02/09/1994	pmc	624 (5)	
Chlorobenzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
2-Chloroethyl vinyl ether	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloroform	<10	ug/L		02/09/1994	pmc	624 (5)	
Chloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Dibromochloromethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1-Dichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,2-Dichloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
cis-1,2-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
trans-1,2-Dichloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
1,2-Dichloropropene	<10	ug/L		02/09/1994	pmc	624 (5)	
cis-1,3-Dichloropropene	<10	ug/L		02/09/1994	pmc	624 (5)	
trans-1,3-Dichloropropene	<10	ug/L		02/09/1994	pmc	624 (5)	
Ethyl benzene	<10	ug/L		02/09/1994	pmc	624 (5)	
Methylene chloride	<10	ug/L		02/09/1994	pmc	624 (5)	
1,1,2,2-Tetrachloroethane	<10	ug/L		02/09/1994	pmc	624 (5)	
Tetrachloroethene	<10	ug/L		02/09/1994	pmc	624 (5)	
Toluene	<10	ug/L		02/09/1994	pmc	624 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145058

Fermi 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
1,1,1-Trichloroethane	<10	ug/L		02/09/1994	pnc	624 (5)	
1,1,2-Trichloroethane	<10	ug/L		02/09/1994	pnc	624 (5)	
Trichloroethene	<10	ug/L		02/09/1994	pnc	624 (5)	
Trichlorofluoromethane	<10	ug/L		02/09/1994	pnc	624 (5)	
Vinyl chloride	<10	ug/L		02/09/1994	pnc	624 (5)	

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02/17/1994

Job No.: 94.00504
Sample No.: 145058

Fermi 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
BASE NEUTRAL COMPOUNDS			02/02/1994				
Acenaphthene	<10	ug/L		02/09/1994	njd	625 (5)	
Acenaphthylene	<10	ug/L		02/09/1994	njd	625 (5)	
Anthracene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzidine	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(a)anthracene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(b)fluoranthene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(k)fluoranthene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(a)pyrene	<10	ug/L		02/09/1994	njd	625 (5)	
Benzo(ghi)perylene	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-chloroethyl)ether	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-chloroethoxy)methane	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-ethylhexyl)phthalate	<10	ug/L		02/09/1994	njd	625 (5)	
Bis(2-chloroisopropyl) ether	<10	ug/L		02/09/1994	njd	625 (5)	
Butyl benzyl phthalate	<10	ug/L		02/09/1994	njd	625 (5)	
4-Bromophenyl phenyl ether	<10	ug/L		02/09/1994	njd	625 (5)	
2-Chloronaphthalene	<10	ug/L		02/09/1994	njd	625 (5)	
4-Chlorophenylphenyl ether	<10	ug/L		02/09/1994	njd	625 (5)	
Chrysene	<10	ug/L		02/09/1994	njd	625 (5)	
Dibenzo(a,h)anthracene	<10	ug/L		02/09/1994	njd	625 (5)	
Di-n-butylphthalate	<10	ug/L		02/09/1994	njd	625 (5)	
1,2-Dichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
1,3-Dichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
1,4-Dichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
3,3'-Dichlorobenzidine	<10	ug/L		02/09/1994	njd	625 (5)	
Diethyl phthalate	<10	ug/L		02/09/1994	njd	625 (5)	
Dimethyl phthalate	<10	ug/L		02/09/1994	njd	625 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145058

Fermi 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
2,4-Dinitrotoluene	<10	ug/L		02/09/1994	njd	625 (5)	
2,6-Dinitrotoluene	<10	ug/L		02/09/1994	njd	625 (5)	
Di-n-octylphthalate	<10	ug/L		02/09/1994	njd	625 (5)	
1,2-Diphenylhydrazine	<10	ug/L		02/09/1994	njd	625 (5)	
Fluoranthene	<10	ug/L		02/09/1994	njd	625 (5)	
Fluorene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachlorobutadiene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachlorocyclopentadiene	<10	ug/L		02/09/1994	njd	625 (5)	
Hexachloroethane	<10	ug/L		02/09/1994	njd	625 (5)	
Indeno(1,2,3-cd)pyrene	<10	ug/L		02/09/1994	njd	625 (5)	
Isophorone	<10	ug/L		02/09/1994	njd	625 (5)	
Naphthalene	<10	ug/L		02/09/1994	njd	625 (5)	
Nitrobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
N-Nitrosodimethylamine	<10	ug/L		02/09/1994	njd	625 (5)	
N-Nitrosodiphenylamine	<10	ug/L		02/09/1994	njd	625 (5)	
N-Nitrosodi-n-propylamine	<10	ug/L		02/09/1994	njd	625 (5)	
Phenanthrene	<10	ug/L		02/09/1994	njd	625 (5)	
Pyrene	<10	ug/L		02/09/1994	njd	625 (5)	
1,2,4-Trichlorobenzene	<10	ug/L		02/09/1994	njd	625 (5)	
2,3,7,8 TCDD Screen	ND	ug/L		02/09/1994	njd	625 (5)	

ND - Not detected via forward library search.

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Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145058

Fermi 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PESTICIDES			02/02/1994				
Aldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
alpha-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
beta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
gamma-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
delta-BHC	<0.40	ug/L		02/07/1994	mmk	608 (5)	
Chlordane	<1.0	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDD	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDE	<0.50	ug/L		02/07/1994	mmk	608 (5)	
4,4'-DDT	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Dieldrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan I	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan II	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endosulfan Sulfate	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Endrin	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Endrin Aldehyde	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor	<0.80	ug/L		02/07/1994	mmk	608 (5)	
Heptachlor Epoxide	<0.50	ug/L		02/07/1994	mmk	608 (5)	
Methoxychlor	<1.0	ug/L		02/07/1994	mmk	608 (5)	
Toxaphene	<0.80	ug/L		02/07/1994	mmk	608 (5)	

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ANALYTICAL REPORT

Walt Meier
DETROIT EDISON COMPANY
7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145058

Fermi 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
ACID COMPOUNDS			02/02/1994				
4-Chloro-3-methylphenol	<10	ug/L		02/09/1994	njd	625 (5)	
2-Chlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4-Dichlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4-Dimethylphenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4-Dinitrophenol	<50	ug/L		02/09/1994	njd	625 (5)	
4,6-Dinitro-2-methylphenol	<50	ug/L		02/09/1994	njd	625 (5)	
2-Nitrophenol	<10	ug/L		02/09/1994	njd	625 (5)	
4-Nitrophenol	<10	ug/L		02/09/1994	njd	625 (5)	
Pentachlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	
Phenol	<10	ug/L		02/09/1994	njd	625 (5)	
2,4,6-Trichlorophenol	<10	ug/L		02/09/1994	njd	625 (5)	

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7940 Livernois
Detroit, MI 48210

02/17/1994

Job No.: 94.00504
Sample No.: 145058


Ferri 2 Power Plant

Sample Description: 013 01/31

Date Taken: 01/31/1994

Date Received: 01/31/1994

Parameter	Result	Unit	Date Prepared	Date Analyzed	Lab Tech.	Methodology	Note
PCBs			02/02/1994				
Aroclor-1016	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1221	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1232	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1242	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1248	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1254	<0.050	ug/L		02/07/1994	mmk	608 (5)	
Aroclor-1260	<0.050	ug/L		02/07/1994	mmk	608 (5)	


Bruce E. Brown
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