IN-0186-04
R05-8307-04E

ECOLOGY AND ENVIRONMENT, INC.
FIELD INVESTIGATION TEAM
SITE SAFETY PLAN

US EPA RECORDS CENTER REGION 5
473739

A. GENERAL INFORMATION

SITE: Johnson Controls, Inc TDD NO: R05-8307-04E
WSTS NO: IN 0186
LOCATION: 1302 E Monroe St. Goshen IN
PLAN PREPARED BY: Arlene Pratt DATE: 8/29/84
APPROVED BY: Paul D. Moss DATE: 9-4-84
OBJECTIVE(include description of work to be performed):
Site inspection including visual inspection of area

PROPOSED DATE OF INVESTIGATION: Sept. 18 or 19 or 20th
BACKGROUND REVIEW: Complete: ____ Preliminary: ✓
DOCUMENTATION/SUMMARY: OVERALL HAZARD: Serious: ____ Moderate: ____
Low: ✓ Unknown: ____

B. SITE/WASTE CHARACTERISTICS

WASTE TYPES(S): Liquid ____ Solid ____ Sludge ✓ Gas ____
CHARACTERISTIC(S): Corrosive ✓ Ignitable ____ Radioactive ____ X SUSPECT CARCINOGEN
Volatile ____ Toxic ✓ Reactive ✓ Unknown ____ Other (Name) ✓ persistent
FACILITY DESCRIPTION: A manufacturer + Distributor of Automotive control devices. Principle processes are machining, stamping, molding, plating, painting + light assembly
Principal Disposal Method (type and location): SINCE 1978 All liquid waste is recycled + sludge manifested is hauled to approved landfill
Unusual Features (dike integrity, power lines, terrain, etc.) ____
NONE.
Status: (active, inactive, unknown) 1937 → Present

History: (Worker or non-worker injury; complaints from public; previous agency action): Cd + Sn plating + chromating waste was discharged into Rock Run Creek until 1965; between 1965-74 waste water was discharged in Hoskins sewer system. After 1974 all wastewater was treated onsite. All liquid waste is recycled + sludge hauled to an approved L.F. Waste is stored in a separate building until enough is accumulated for a load.

C. HAZARD EVALUATION

(Use Hazard Evaluation of Chemicals sheets for specific or representative chemicals present.):

Sludge: CADMIUM
ZINC
TIN
CHROMIUM
possible HCN

D. SITE SAFETY WORK PLAN

PERIMETER ESTABLISHMENT: Map/Sketch Attached Yes Site Secured? NO

Perimeter Identified? Yes Zone(s) of Contamination Identified? NO

assume entire area is contaminated (12.8 acres)

PERSONAL PROTECTION

Level of Protection: A ___ B ___ C ___ D X

Modifications: * level D should be sufficient HNU monitoring advised, but won't pick up metals, the contaminant of concern here.

Surveillance Equipment and Materials: ACTION LEVELS:

RAD MINI + Detection TUBE for HCN - any reading above background - abandon site + contact RSC

explosimeter - > 30% LEL " " " "

O_2 meter < 19.5% O_2 " " " "

HNU 0 ppm level D (ABOVE BACKGROUND)

1-5 " " C

5-500 " " B " " " "

> 501- " " A " " " "

2/83

* IF VERY WINDY, LEVEL "C" IS ADVISED. (GMC-H CARTRIDGES ON ULTRATWIN)

DECONTAMINATION PROCEDURES: all washable materials used will be washed with detergent & rinsed with distilled water.

Special Equipment, Facilities, or Procedures: none

SITE ENTRY PROCEDURES: permission to gain entry onto the site will be obtained from the owner prior to site entry.

Team Member	Responsibility
Peggy Pearce	Team leader / safety officer
Steve Nelson	Team Member

WORK LIMITATIONS (Time of day, etc.): work will be restricted to daylight hours only

INVESTIGATION-DERIVED MATERIAL DISPOSAL: all investigation-derived material including disposable clothing will be double bagged, labeled as potentially hazardous & left on site

E. EMERGENCY INFORMATION*

LOCAL RESOURCES

Ambulance 219-533-2141
Hospital Emergency Room 219-533-2141 Goshen
Poison Control Center GOSHEN GENERAL 533-2141
Police 219-533-8661
Fire Department 219-533-1133
Airport Goshen Municipal Airport 17229 County Rd
Explosives Unit N/A
EPA Contact DON JOSEF 312 886-0393

SITE RESOURCES

Water Supply to be determined prior to site entry
Telephone IN OFFICE BUILDING ON SITE
Radio not necessary
Other N/A —

EMERGENCY CONTACTS

1. Mr. Raymond Harbison (University of Arkansas) ..... (501) 661-5766 or 661-5767
   MED-TOX ..... (501) 370-8263 (24 hours)
2. Regional Safety Coordinator - Paul Moss ..... (312) 358-9342 (24 hours)
3. FIT Leader - Joseph Petrilli ..... (312) 561-7639
4. FIT Office ..... (312) 663-9415
5. E & E 24 Hour Call Line ..... (716) 631-9531 (24 Hours; Call Forwarding)
6. Regional Health Maintenance Program Contact ..... PMI - (312) 832-8820
   8:00 a.m. - 5:00 p.m.
7. Dave Dahlstrom ..... (716) 741-2384 (home)
   Corporate Safety Director (716) 632-4491 (office)
8. Ecology and Environment, Inc. NPMO ..... (703) 522-6065

F. EMERGENCY ROUTES

(Give road or other directions; attach map)

Hospital: TO BE SUPPLIED PRIOR TO SITE ENTRY.

PENN IRO[illegible]CTS

GOSHE[illegible]D.

(Propety [illegible]yout)

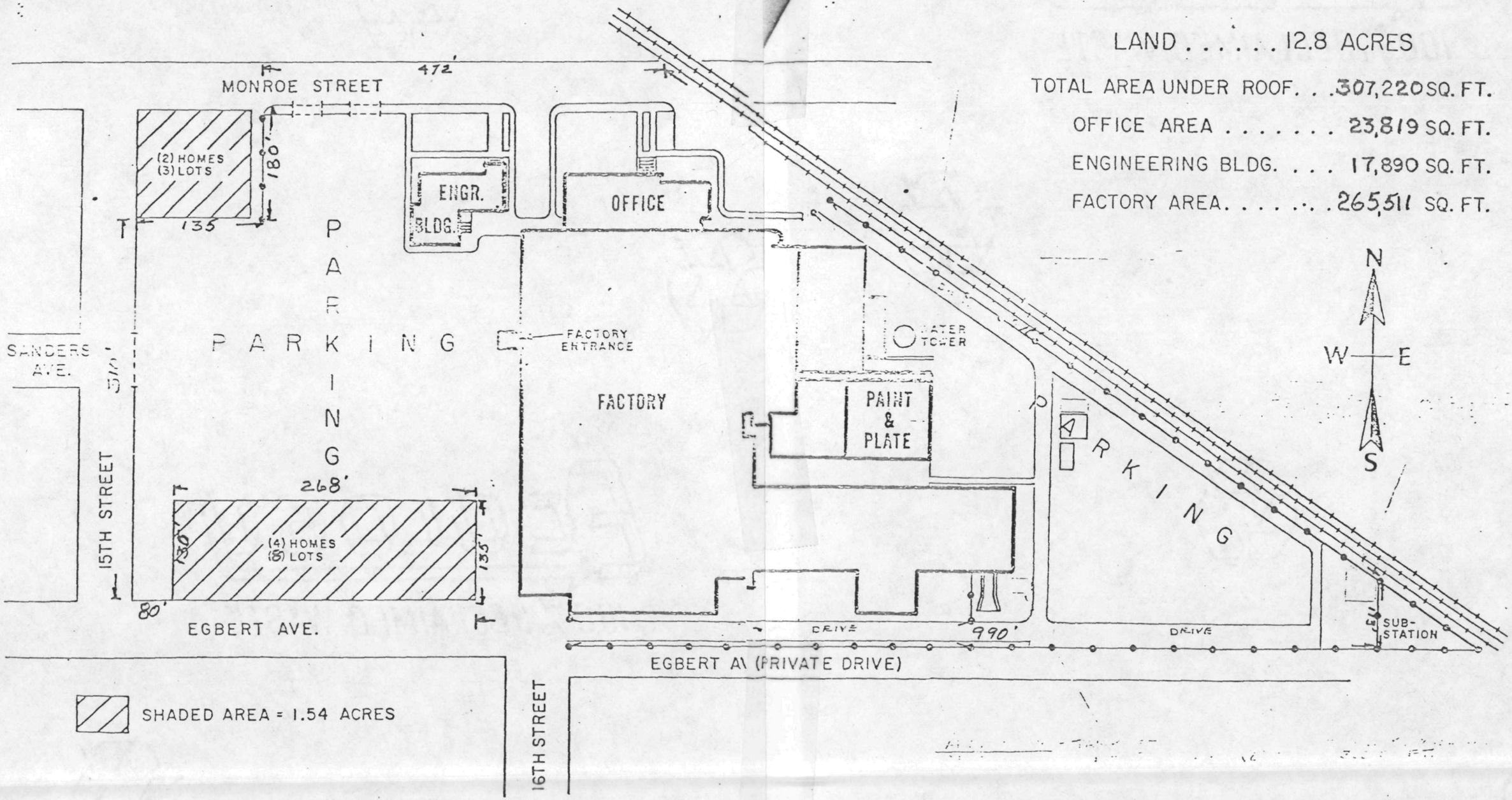
LAND . . . . . 12.8 ACRES

TOTAL AREA UNDER ROOF. . .307,220 SQ. FT.

OFFICE AREA . . . . . 23,819 SQ. FT.

ENGINEERING BLDG. . . . 17,890 SQ. FT.

FACTORY AREA. . . . . .265,511 SQ. FT.



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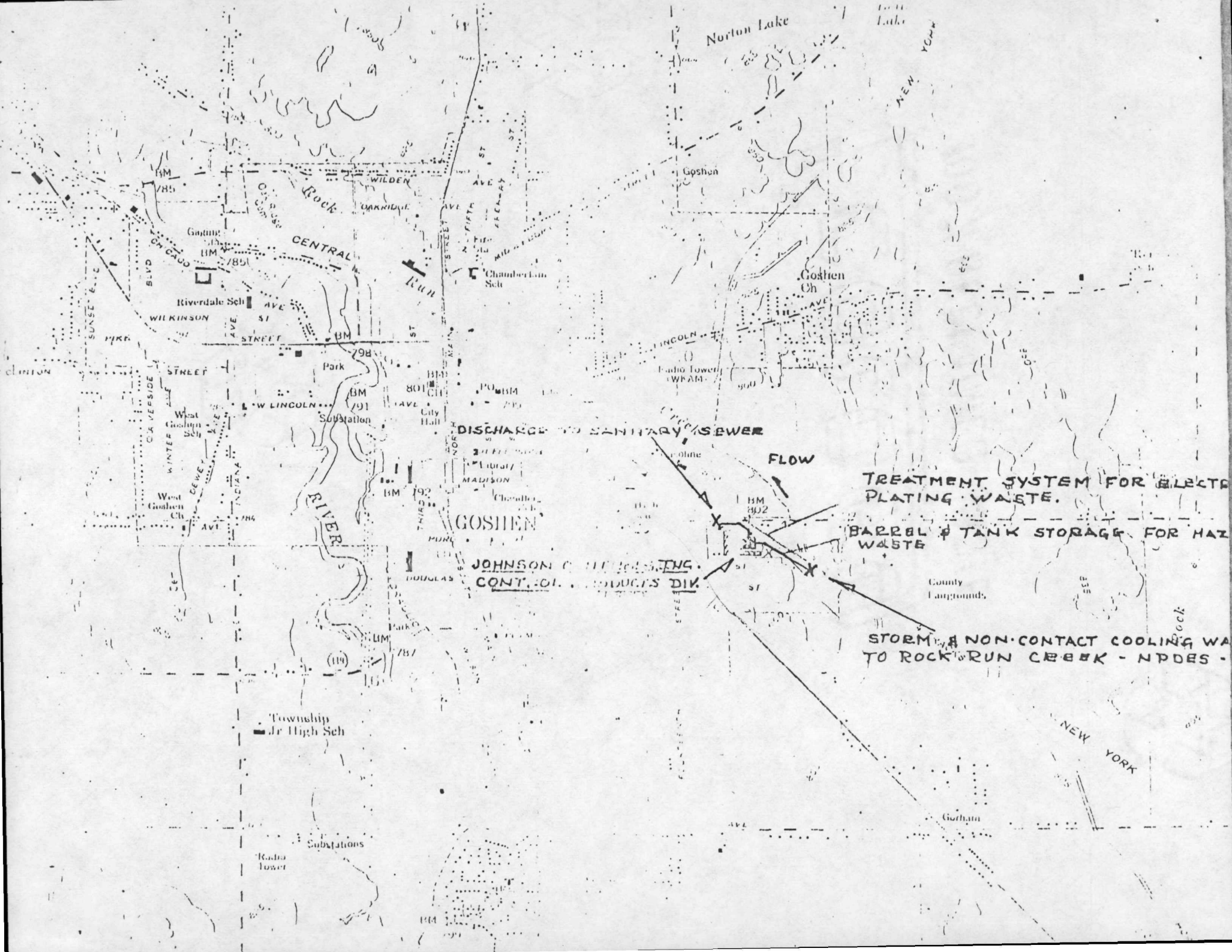
Norton Lake
Goshen
Goshen Ch
Rock
CENTRAL
Run
Riverdale Sch
WILKINSON
STREET
Park
W LINCOLN
West Goshen Sch
West Goshen Ch
Substation
City Hall
Chamberlain Sch
RIVER
GOSHEN
MADISON
DOUGLAS
Radio Tower (WKAM)
LINCOLN
DISCHARGE TO SANITARY SEWER
FLOW
TREATMENT SYSTEM FOR ELECTR
PLATING WASTE.
BARREL & TANK STORAGE FOR HAZ
WASTE
JOHNSON
CONT.OL
DIV.
County Fairgrounds
STORM & NON-CONTACT COOLING WA
TO ROCK RUN CREEK - NPDES -
Township Jr High Sch
Substations
Radio Tower
NEW YORK
Gorham

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HAZARD EVALUATION OF CHEMICALS

Chemical Name TIN Date 8/30/84

DOT Name TIN TDD Number 8307-04E

CAS Number 76-87-9

References Consulted (circle):

NIOSH/OSHA Pocket Guide Verschueren Merck Index Hazardline Chris (Vol. II)

Toxic and Hazardous Safety Manual ACGIH Other: SAX, SITTIG

Chemical Properties: (Synonyms:)

Chemical Formula Sn Molecular Weight 118.70

Physical State solid Solubility (H_2O) NON Boiling Point 2260°

Flash Point NA Vapor Pressure/Density 7.31 Freezing Point 231.9°

Specific Gravity NA Odor/Odor Threshold none Flammable Limits NA

Incompatabilities strong oxidizers - BrF_3, BrF_3, Cl_2, ClF_3, $Cu(NO_3)$, SO_2

Biological Properties:

TLV-TWA 2 ppm STEL, 2 mg/m³ PEL .1 mg/m³

IDLH 200 mg/m³ Human NA Aquatic NA Rat/Mouse NA

Route of Exposure inhal, contact, ingest, absorption

Carcinogen NO Teratogen NO Mutagen NO

Handling Recommendations: (Personal protective measures)

skin contact should be prevented by protective clothing

Disposal/Waste Treatment:

recycling

Health Hazards and First Aid:

irrigate immediately upon contact, move to fresh air if inhaled. If swallowed induce vomiting

Symptoms: Acute: compounds may burn skin - sore throat, cough, abdominal pain

Chronic: NONE - bio accumulation heavy metal

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(12/83, DLD)

CHRIS NOT AVAILABLE

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HAZARD EVALUATION OF CHEMICALS

Chemical Name Hydrogen Cyanide Date 8/30/84

DOT Name HCN TDD Number 8307-04E

CAS Number 74-90-8

References Consulted (circle):

NIOSH/OSHA Pocket Guide Verschueren Merck Index Hazardline Chris (Vol. II)

Toxic and Hazardous Safety Manual ACGIH Other:

Chemical Properties: (Synonyms: Hydrocyanic Acid, Prussic Acid)

Chemical Formula HCN Molecular Weight 27.03

Physical State gas/liq Solubility (H_2O) — Boiling Point 26°C

Flash Point -18°C Vapor Pressure/Density .941 Freezing Point -14°C

Specific Gravity .69 Odor/Odor Threshold almond Flammable Limits 6-41%

Incompatabilities alkalis, heating, explosion

Biological Properties:

TLV-TWA 10ppm PEL

IDLH 50ppm Human NA Aquatic NA Rat/Mouse LD50-3700mg/kg

Route of Exposure inhal, absorbtion, ingestion

Carcinogen no Teratogen no Mutagen no

Handling Recommendations: (Personal protective measures)

suites, gloves, scba, apron or impervious clothing, ACTION LEVELS ON PAGE 2 USED FOR DRAGER TUBES

Disposal/Waste Treatment:

Seal cylinder + return to supplier

Health Hazards and First Aid:

irrigate + for wash well. inhal - move to fresh air, wash w klaber, O2 + ass. resp if nec.

Symptoms: Acute: headache, vertigo, nausea, vomiting, muscles, palpitation

Chronic: paralysis, respiratory arrest, dyspnoea, convulsions + death

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HCN — HYDROGEN CYANIDE

Common Synonyms
Hydrocyanic acid
Prussic acid

Watery liquid, or gas — Colorless — Bitter almond odor

Sinks and mixes with water. Poisonous, flammable vapor is produced and rises. Boiling point is 78° F.

AVOID CONTACT WITH LIQUID AND VAPOR. EVACUATE AREA.
WEAR CHEMICAL PROTECTIVE SUIT WITH SELF-CONTAINED BREATHING APPARATUS.
Stop discharge if possible. Call fire department.
Shut off ignition sources.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
WEAR CHEMICAL PROTECTIVE SUIT WITH SELF-CONTAINED BREATHING APPARATUS.
Stop discharge if possible.
Cool exposed containers and protect men effecting shutoff with water.
Let fire burn.

Exposure

CALL FOR MEDICAL AID.

VAPOR
POISONOUS IF INHALED OR IF SKIN IS EXPOSED.
Irritating to eyes.
Move to fresh air.
If breathing has stopped, give artificial respiration (but NOT mouth to mouth).
If breathing is difficult, give oxygen.

LIQUID
POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.
Irritating to eyes.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

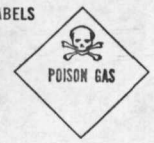
HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning—high flammability, water contaminant
Restrict access
Evacuate area

2. LABELS



3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Hydrocyanic acid, Prussic acid
3.2 **Coast Guard Compatibility Classification:** Not applicable
3.3 **Chemical Formula:** HCN
3.4 **IMCO/United Nations Numerical Designation:** 2.0/1051

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless to bluish white
4.3 **Odor:** Characteristic sweetish, like almond

5. HEALTH HAZARDS

CAUTION—Class A poison; asphyxiation can be caused by ingestion, inhalation, or absorption of liquid or vapor through skin (particularly eyes, mucous membranes, and feet).

5.1 **Personal Protective Equipment:** Escape purposes only—air escape mask with 5-minute air cylinder. Work purposes—vapor-proof emergency suit or vinyl-coated coverall, plus air mask with clear-view facepiece, speaking diaphragm, demand regulator, and 30-minute air cylinder. Rubber gloves; chemical safety goggles; quick-opening safety shower.

5.2 **Symptoms Following Exposure:** Irritation of throat, palpitation, difficult breathing, reddening of eyes, salivation, nausea, headache, weakness of arms and legs, giddiness—followed by collapse and convulsions.

5.3 **Treatment for Exposure:** Call a doctor. If breathing has stopped, give artificial respiration until doctor arrives. INHALATION: remove patient to fresh air. SKIN CONTACT: remove contaminated clothing and wash skin thoroughly with copious quantities of water and soap. EYE CONTACT: hold eyelids apart and wash eye with continuous gentle stream of water for at least 15 min.
If patient is unconscious, administer amyl nitrite by crushing a pearl (ampule) in a cloth and hoding this under patiept's nose for 15 seconds in every minute. Do not interrupt artificial respiration. Replace amyl nitrite pearl when its strength is spent. Continue treatment until patient's condition improves or doctor arrives.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 10 ppm

5.5 **Short-Term Inhalation Limits:** 20 ppm for 30 min.

5.6 **Toxicity by Ingestion:** Grade 4; LD_{50} less than 50 mg/kg

(Continued on page 4)

6. FIRE HAZARDS

6.1 **Flash Point:** 0°F C.C.
6.2 **Flammable Limits in Air:** 5.6%—40.0%
6.3 **Fire Extinguishing Agents:** Stop flow of gas
6.4 **Fire Extinguishing Agents Not to be Used:** None
6.5 **Special Hazards of Combustion Products:** Extremely toxic vapors are generated even at ordinary temperatures.
6.6 **Behavior in Fire:** Containers may explode with ignition of contents.
6.7 **Ignition Temperature:** 1004°F
6.8 **Electrical Hazard:** Data not available
6.9 **Burning Rate:** 1.8 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** Dissolves with a moderate reaction.
7.2 **Reactivity with Common Materials:** None
7.3 **Stability During Transport:** May become unstable and subject to explosion if stored for extended time or exposed to high temp. and pressure.
7.4 **Neutralizing Agents for Acids and Caustics:** The weak acidity can be neutralized by slaked lime, but this does not destroy the poisonous property.
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 0.16 ppm/72 hr/young bass/TL_m/fresh water
0.069 ppm/24 hr/pin perch/TL_m/salt water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** Data not available
8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. E. I. duPont de Nemours & Co., Inc.
Electrochemicals Dept.
Wilmington, Del. 19898
2. Monsanto Polymers & Petrochemicals Co.
800 North Lindbergh Blvd.
St. Louis, Mo. 63166
3. Rohm and Haas Co.
Independence Mall West
Philadelphia, Pa. 19105

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** 96%; sometimes shipped as a water solution, or absorbed on an inert solid. All forms are extremely toxic.
10.2 **Storage Temperature:** Data not available
10.3 **Inert Atmosphere:** May be padded
10.4 **Venting:** Data not available

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-B-C-K-L-M-N

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Poisonous gas or liquid, Class A

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	4
Health	
Vapor Irritant	2
Liquid or Solid Irritant	1
Poisons	4
Water Pollution	
Human Toxicity	4
Aquatic Toxicity	4
Aesthetic Effect	1
Reactivity	
Other Chemicals	3
Water	0
Self-Reaction	3

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	4
Flammability (Red)	4
Reactivity (Yellow)	2

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid
13.2 **Molecular Weight:** 27.03
13.3 **Boiling Point at 1 atm:** 78.3°F = 25.7°C = 298.9°K
13.4 **Freezing Point:** 8.1°F = − 13.3°C = 259.9°K
13.5 **Critical Temperature:** 362.3°F = 183.5°C = 456.7°K
13.6 **Critical Pressure:** 735 psia = 50 atm = 5.07 MN/m^2
13.7 **Specific Gravity:** 0.689 at 20°C (liquid)
13.8 **Liquid Surface Tension:** Not pertinent
13.9 **Liquid-Water Interfacial Tension:** Not pertinent
13.10 **Vapor (Gas) Specific Gravity:** 0.9
13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.303
13.12 **Latent Heat of Vaporization:** 444 Btu/lb = 247 cal/g = 10.3×10^5 J/kg
13.13 **Heat of Combustion:** −10,560 Btu/lb = − 5864 cal/g = -245.3×10^5 J/kg
13.14 **Heat of Decomposition:** Not pertinent
13.15 **Heat of Solution:** Not pertinent
13.16 **Heat of Polymerization:** Not pertinent

(Continued on pages 5 and 6)

5. HEALTH HAZARDS (Cont'd.)

5.7 **Late Toxicity:** Data not available
5.8 **Vapor (Gas) Irritant Characteristics:** Vapor is not very irritating but is extremely poisonous.
5.9 **Liquid or Solid Irritant Characteristics:** Liquid is not irritating but is extremely poisonous if absorbed through skin or eyes.
5.10 **Odor Threshold:** 1 mg/m^3

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HAZARD EVALUATION OF CHEMICALS

Chemical Name CHROMIUM Date 8/30/84

DOT Name TDD Number R05-8307-04E

CAS Number 7440-47-3

References Consulted (circle):

NIOSH/OSHA Pocket Guide Verschueren Merck Index Hazardline Chris (Vol. II)

Toxic and Hazardous Safety Manual ACGIH Other: SAX, SITTIG, RTECS

Chemical Properties: (Synonyms: Chrome)

Chemical Formula Cr Molecular Weight 52.0

Physical State Solid Solubility (H_2O) insol. Boiling Point 2640°C

Flash Point N/A Vapor Pressure/Density N/A Freezing Point 1900°C

Specific Gravity 7.2 Odor/Odor Threshold None Flammable Limits N/A

Incompatabilities Strong oxidizers & readily oxidiz materials eg - paper, wood, sulfur, aluminum

Biological Properties:

TLV-TWA .05 mg/m³ PEL .1 mg/m³

IBLH 30 mg/m³ Human Aquatic Rat/Mouse

Route of Exposure inhal, ingest, contact

Carcinogen yes (EXP.) Teratogen no Mutagen no

Handling Recommendations: (Personal protective measures)

when exposed to as dust-wear respirator w/ 1-5 mg/m³ dust filter, 5-10 HEPA filter CARTRIDGE

Disposal/Waste Treatment:

Chemical reduction to Chromium(III) + precip by pH adjustment. Filter, dry + PACKAGE.

Health Hazards and First Aid:

EYES - IRRIGATE SKIN - WASH W/WATER + SOAP INHAL - fresh air - artif resp. INGEST - H_2O + induce vomiting

Symptoms: Acute: Respir. system + nasal Septum irritation coughing, shortness of breath, chest pain, fever,

Chronic: skin irritation, weight loss, conjunctivitis, Anemia, skin ulcers, liver + kidney damage, lung cancer

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(12/83, DLD)

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CHROMIC ANHYDRIDE

Common Synonyms
Chromic oxide
Chromium trioxide
Chromic acid

Solid flakes or powder — Dark red — Odorless

Sinks and mixes with water.

Avoid contact with solid and dust. Keep people away.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Stay upwind and use water spray to "knock down" dust.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Not flammable.
May cause fire on contact with combustibles.
Containers may explode when heated in a fire.
Extinguish with water.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

SOLID
Will burn skin and eyes.
Harmful if swallowed.

Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

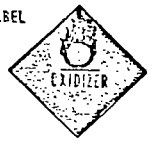
HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning—water contaminant
Disperse and flush

2. LABEL



3. CHEMICAL DESIGNATIONS

3.1 Synonyms:
Chromic acid
Chromic oxide
Chromium trioxide

3.2 Coast Guard Compatibility Classification: Not applicable

3.3 Chemical Formula: CrO_3

3.4 IMCO/United Nations Numerical Designation: 5.1/1463

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Solid

4.2 Color: Dark red

4.3 Odor: None

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Goggles and respirator. (Special chromic acid filters are available for respirators to prevent inhalation of dust or mist.)

5.2 Symptoms Following Exposure: Very irritating to eyes and respiratory tract. Ingestion causes severe gastrointestinal symptoms. Contact with eyes or skin causes burns; prolonged contact produces dermatitis ("chrome sores").

5.3 Treatment for Exposure: INGESTION: call a physician, do NOT induce vomiting. SKIN OR EYES: wash eyes thoroughly for at least 15 min.; flush contacted skin areas with water, remove contaminated clothing and wash before reuse.

5.4 Toxicity by Inhalation (Threshold Limit Value): Not pertinent

5.5 Short-Term Inhalation Limits: Not pertinent

5.6 Toxicity by Ingestion: Grade 3. LD_{50} 50 to 500 mg/kg

5.7 Late Toxicity: Lung cancer

5.8 Vapor (Gas) Irritant Characteristics: Not pertinent

5.9 Liquid or Solid Irritant Characteristics: Severe skin irritant. Causes second- and third-degree burns on short contact; very injurious to the eyes.

5.10 Odor Threshold: Not pertinent

6. FIRE HAZARDS

6.1 Flash Point: Not flammable

6.2 Flammable Limits in Air: Not flammable

6.3 Fire Extinguishing Agents: Water

6.4 Fire Extinguishing Agents Not to be Used: Not pertinent

6.5 Special Hazards of Combustion Products: Not pertinent

6.6 Behavior in Fire: Containers may explode

6.7 Ignition Temperature: May ignite organic materials on contact.

6.8 Electrical Hazard: Not pertinent

6.9 Burning Rate: Not flammable

7. CHEMICAL REACTIVITY

7.1 Reactivity with Water: No reaction

7.2 Reactivity with Common Materials: May react with organic materials rapidly enough to generate sufficient heat to cause ignition. Prolonged contact, particularly on wood floors, may produce a fire hazard.

7.3 Stability During Transport: Stable

7.4 Neutralizing Agents for Acids and Caustics: Flood with water, rinse with sodium bicarbonate solution.

7.5 Polymerization: Not pertinent

7.6 Inhibitor of Polymerization: Not pertinent

8. WATER POLLUTION

8.1 Aquatic Toxicity: 0.01 ppm/48 hr/daphnia/TLm
52 ppm/96 hr/goldfish/died

8.2 Waterfowl Toxicity: Data not available

8.3 Biological Oxygen Demand (BOD): None

8.4 Food Chain Concentration Potential: None

9. SELECTED MANUFACTURERS

1. Allied Chemical Corp.
Industrial Chemicals Division
Morristown, N. J. 07960

2. Diamond Shamrock Corp.
Soda Products Division
Castle Haynes, N. C. 28429

3. Essex Chemical Corp.
Chemicals Division
Kearny, N. J. 07032

10. SHIPPING INFORMATION

10.1 Grades or Purity: Technical; technical flake: 99.75%

10.2 Storage Temperature: Data not available

10.3 Inert Atmosphere: Data not available

10.4 Venting: Data not available

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

SS

12. HAZARD CLASSIFICATIONS

12.1 Code of Federal Regulations: Oxidizing material

12.2 NAS Hazard Rating for Bulk Water Transportation: Not listed

12.3 NFPA Hazard Classifications:

Category	Classification
Health Hazard (Blue)	3
Flammability (Red)	0
Reactivity (Yellow)	1

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 Physical State at 15°C and 1 atm: Solid

13.2 Molecular Weight: 100.01

13.3 Boiling Point at 1 atm: Not pertinent

13.4 Freezing Point: Not pertinent

13.5 Critical Temperature: Not pertinent

13.6 Critical Pressure: Not pertinent

13.7 Specific Gravity: 2.70 at 20°C (solid)

13.8 Liquid Surface Tension: Not pertinent

13.9 Liquid-Water Interfacial Tension: Not pertinent

13.10 Vapor (Gas) Specific Gravity: Not pertinent

13.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent

13.12 Latent Heat of Vaporization: Not pertinent

13.13 Heat of Combustion: Not pertinent

13.14 Heat of Decomposition: Not pertinent

13.15 Heat of Solution: Not pertinent

13.16 Heat of Polymerization: Not pertinent

(Continued on pages 5 and 6)

NOTES

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HAZARD EVALUATION OF CHEMICALS

Chemical Name CADMIUM Date 8/30/84

DOT Name — TDD Number 8307-01E

CAS Number 7440-43-9

References Consulted (circle):

NIOSH/OSHA Pocket Guide Verschueren Merck Index Hazardline Chris (Vol. II)

Toxic and Hazardous Safety Manual ACGIH Other: SAX, SITTIG

Chemical Properties: (Synonyms: NONE)

Chemical Formula Cd Molecular Weight 112.4

Physical State SOLID Solubility (H_2O) insol. Boiling Point 767°C

Flash Point N/A Vapor Pressure/Density N/A Freezing Point 320.9°C

Specific Gravity 8.65 Odor/Odor Threshold none Flammable Limits NR

Incompatabilities Strong oxidizers, elemental sulfur.

Biological Properties:

TLV-TWA .05 mg/m3 PEL .2 mg/m3

IBLH 40 mg/m3 Human 39 mg/m3/30m Aquatic UNK Rat/Mouse oral 225 mg/kg

Route of Exposure inhal, ingest.

Carcinogen lung/liver Teratogen exp + Mutagen NO

Handling Recommendations: (Personal protective measures)

wash at end of most shift, wear goggles, respirator w/ dust filter 0-1 mg/m3, glov 1-2 mg/m3 high effic particulates

Disposal/Waste Treatment:

precipitate from solution as sulfides, dry & package

Health Hazards and First Aid:

EYES - IRRIGATE SKIN - WASH INHAL - fresh air, artif. respir if nec. INGEST - give water, induce vomiting

Symptoms: Acute: pulmonary edema, coughing, chest pain, headache, chills, resp tract irritation, weakness, anemia

Chronic: proteinuria, lung + resp tract damage, emphysema, kidney damage, proteinuria, prostrate + blood damage

375103

(12/83, DLD)

COX

CADMIUM OXIDE

Common Synonyms			
Cadmium fume	Solid	Yellow-brown	Odorless
	Sinks in water.		

AVOID CONTACT WITH SOLID AND DUST. KEEP PEOPLE AWAY.
Wear a dust respirator.
Stop discharge if possible.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Not flammable.
POISONOUS GASES MAY BE PRODUCED IN FIRE.
Wear goggles and self-contained breathing apparatus.

Exposure

CALL FOR MEDICAL AID.

DUST
POISONOUS IF INHALED.
If inhaled will cause coughing.
If in eyes, hold eyelids open and flush with plenty of water.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

SOLID
Irritating to skin and eyes.
If swallowed will cause nausea and vomiting.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Should be removed
Chemical and physical treatment

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 Synonyms: Cadmium fume
3.2 Coast Guard Compatibility Classification: Not listed
3.3 Chemical Formula: CdO
3.4 IMCO/United Nations Numerical Designation: Not listed

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Solid
4.2 Color: Yellow-brown to brown
4.3 Odor: None

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Bu. Mines approved respirator, goggles, rubber gloves
5.2 Symptoms Following Exposure: A single exposure to cadmium oxide fumes can cause severe or fatal lung irritation, chronic poisoning is characterized by lung injury (emphysema) and kidney disfunction. Ingestion produces severe toxic effects, both kidney and liver injuries may occur. Contact with eyes causes irritation.
5.3 Treatment for Exposure: INHALATION: if there has been known exposure to dense cadmium oxide fume or if cough, chest tightness, or respiratory distress occur after possible exposure, place patient at bed rest and call a physician. INGESTION: induce vomiting; stop irritation by giving milk or egg whites at frequent intervals; perform gastric lavage; seek medical attention. EYES: flush with water for at least 15 min.
5.4 Toxicity by Inhalation (Threshold Limit Value): 0.1mg/m³
5.5 Short-Term Inhalation Limits: 0.1mg/m³, 30 min.
5.6 Toxicity by Ingestion: Grade 3; oral rat LD_{50} = 72 mg/kg
5.7 Late Toxicity: Delayed liver, lung, and kidney damage has followed respiratory exposures to cadmium salts in industry.
5.8 Vapor (Gas) Irritant Characteristics: Data not available
5.9 Liquid or Solid Irritant Characteristics: Data not available
5.10 Odor Threshold: Data not available

6. FIRE HAZARDS

6.1 Flash Point: Not flammable
6.2 Flammable Limits in Air: Not flammable
6.3 Fire Extinguishing Agents: Not pertinent
6.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
6.5 Special Hazards of Combustion Products: Toxic cadmium oxide fume may form in fires.
6.6 Behavior in Fire:
6.7 Ignition Temperature: Not pertinent
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: Not pertinent

7. CHEMICAL REACTIVITY

7.1 Reactivity with Water: No reaction
7.2 Reactivity with Common Materials:
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent

8. WATER POLLUTION

8.1 Aquatic Toxicity: Data not available
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): None
8.4 Food Chain Concentration Potential: Concentrated by shellfish

9. SELECTED MANUFACTURERS

1. American Smelting and Refining Co.
   120 Broadway
   New York, N.Y. 10005
2. J. T. Baker Chemical Co.
   Phillipsburg, N.J. 08865
3. Varlacoid Chemical Co.
   666 South Front St.
   Elizabeth, N.J. 07202

10. SHIPPING INFORMATION

10.1 Grades of Purity: Reagent; technical
10.2 Storage Temperature: Ambient
10.3 Inert Atmosphere: No requirement
10.4 Venting: Open

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

II

12. HAZARD CLASSIFICATIONS

12.1 Code of Federal Regulations: Not listed
12.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
12.3 NFPA Hazard Classifications: Not listed

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 Physical State at 15°C and 1 atm: Solid
13.2 Molecular Weight: 128.4
13.3 Boiling Point at 1 atm: Not pertinent (decomposes)
13.4 Freezing Point: Not pertinent
13.5 Critical Temperature: Not pertinent
13.6 Critical Pressure: Not pertinent
13.7 Specific Gravity: 6.95 at 20°C (solid)
13.8 Liquid Surface Tension: Not pertinent
13.9 Liquid-Water Interfacial Tension: Not pertinent
13.10 Vapor (Gas) Specific Gravity: Not pertinent
13.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
13.12 Latent Heat of Vaporization: Not pertinent
13.13 Heat of Combustion: Not pertinent
13.14 Heat of Decomposition: Not pertinent
13.15 Heat of Solution: Not pertinent
13.16 Heat of Polymerization: Not pertinent

(Continued on pages 5 and 6)

NOTES

FOREWORD

The purpose of this document is to explain the response mechanism within E & E for dealing with accidental injuries or chemical exposures which may occur in the course of REM/FIT work. All REM/FIT personnel are responsible for following the provisions of this plan as part of the Corporate Health and Safety Program. In addition, each regional FIT office will draw up emergency telephone contact lists where indicated in this plan and disseminate them to their team members. A copy of this plan should accompany each team when working in the field.

EMERGENCY MED-TOX SYSTEM

The emergency MED-TOX system consists of the following response elements:

(1) Field Team

(2) Local REM/FIT Office

(3) REM/FIT ZPMO

(4) E & E Corporate Headquarters

(5) MED-TOX Hotline

(6) Health and Safety Advisory Committee

Figure 1 summarizes the activation process for this system.

EMERGENCY ACTIONS

A. Types of Emergencies

Emergencies that may occur during REM/FIT work include physical injury caused by motor vehicle accidents, falls, fires, etc. and chemical exposures caused by splashes, reactions, etc. Such incidents may involve one person or many on the REM/FIT team and could potentially involve the public offsite. For example, a fire could generate a sudden cloud or toxic vapors or gases.

The level of mobilization of the corporate-wide MED-TOX system will depend on the severity of the injury or exposure. For example, a sprained ankle does not have to be reported to the respective ZPMO until it is convenient during normal business hours. Traumatic physical injuries are considered severe and thereby require immediate reporting when they result in:

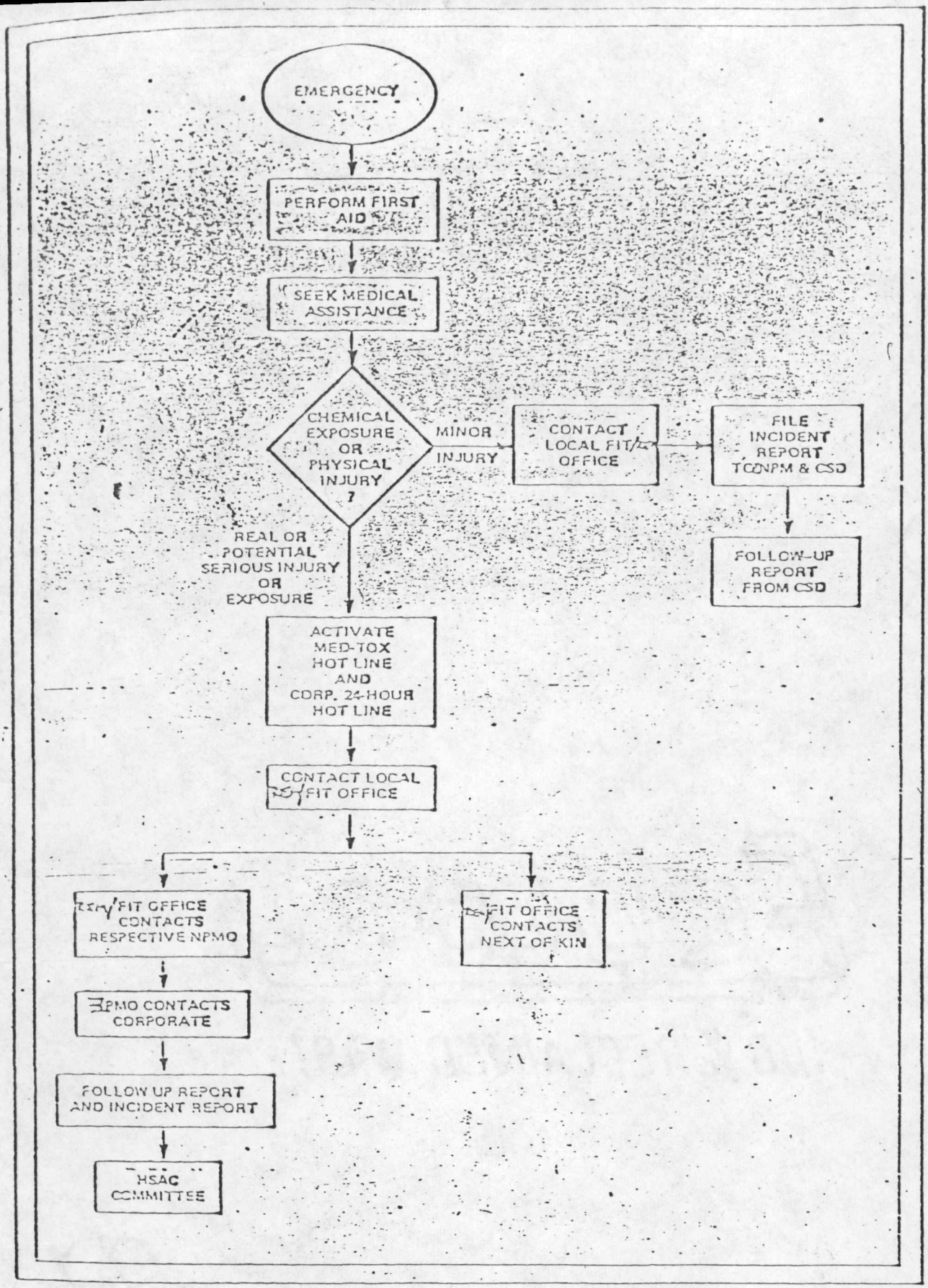

Figure 1 EMERGENCY MED–TOX SYSTEM

- o Death
- o Loss of consciousness
- o Medical treatment other than first aid

All Chemical exposures should be reported through the emergency system. However, any chemical exposure will be reported to the ZPMO as soon as possible after it occurs. The ZPMO will then decide whether it is necessary to pass the report on to corporate as an emergency or handle it through routine reporting procedures.

Responsibilities

B. (1) The REM/FIT project site leader at the work site has prime responsibility for activating the emergency MED-TOX system onsite. If he or she is unable to do so, the responsibiity will follow the order predetermined in the Site Safety Plan beginning with the Site Safety Officer. This person is responsible for:

(a) Initiating first aid (It may first be necessary to evacuate the person from the site if he is in imminent danger. Follow standard first aid procedure.) Normally the Site Safety Coordinator will be available to begin emergency first aid.

(b) Obtaining medical assistance by either transporting the victim to a hospital or medical center as determined under the Site Safety Plan, or obtaining an ambulance. The problem of contaminating medical assistance personnel must be considered.

(c) Activating the MED-TOX System in case of a chemical exposure or potential exposure.

(d) Contacting the local REM/FIT office

If no one is available to help, the project team leader will carry out the first two responsibilities first with the remaining two to be completed as soon as practical. All four actions may be carried out simultaneously if help is available.

(2) The REM/FIT Leader at the local office is the prime contact for the project team leader. If he is unavailable, the responsibility follows the following line:

(a) Assistant REM/FIT Leader

(c) Regional Safety Coordinator

The office contact is responsible for:

(a) Contacting the injured/exposed party's designated next-of-kin, with programmed information.

(b) Contacting the respective ZPMO with information updates.

(c) Setting up a command post in the office if necessary to monitor the situation and provide assistance as needed to the field team. The severity of the accident will indicate the degree to which the command post is operated.

(d) Acting as a clearing center for information on the accident, status of individual, background on site both to EPA and within the project.

(3) The respective ZPMO will provide any assistance required by the Regional office such as information on chemicals. The line of responsibility in the ZPMO follows this line:

(a) FIT

i) Assistant Zone Project Manager for Health and Safety (For FIT) D. Dahlstrom (Corp. Safety Director)

ii) Assistant Zone Project Manager for Technical Performance (For FIT) L. Welzel

(b) Remedial Programs (CH_2m Hill)

i) Corporate Safety Director (M. Chillingsworth)

ii) Assistant Zone Project Manager (REM) B. Agesteno

The ZPMO is responsible for:

(a) Contacting corporate headquarters

(b) Contacting EPA headquarters as necessary

(c) Serving as a clearinghouse for information for the regional office

(4) (d) Coordinating preparation of followup reports

E & E corporate headquarters will monitor incidents and bring the resources of the corporation to bear as needed. The callout line is:

(a) [illegible] Line

(b) Corporate Safety Director

(c) Assistant Corporate Safety Director (P. Gorton)

MED-TOX Hot-Line

A. The purpose of the MED-TOX Hot-Line is to provide the physician attending an E & E Ch_2M Hill employee who is exposed or injured:

(1) Toxicological information on the chemicals that may be involved.

(2) Quick access to the individual's medical records for use in treating the person.

(3) A Communications Channel to Corporate Headquarters for further assistance.

B. The MED-TOX System is activated by the project site leader or other senior team member at the site of the exposure or injury A.S.A.P. This person calls

(501) 370-8263

which is a 24-hour line to an answering service. The answering service will contact one of three toxicologists in the MED-TOX System. (Drs. Raymond Harbison, Richard Freeman, or Morris Cramer.) One of these Toxicologists will contact you.

C. When the first call is made to MED-TOX, give the person answering the following information:

(1) State: This is an emergency

(2) Your name and region

(3) Telephone number to reach you

(4) Your location

(5) Name of person injured or exposed

(6) Nature of emergency

Give the same information to the toxicologist calling back, and answer any questions he has.

D. If the toxicologist does not return your call within 15 minutes, call the Corporate 24-hour pager for assistance and then go to the following callout list for toxicological information at E & E headquarters in Buffalo. Start with the first and continue calling them in order until contact is made:

	Office	Home
	(EST to 8:30-5:30)	
(1) David Dahlstrom	(716) 632-4491	(716) 741-2384
(2) Dr. Edward Carr	(716) 831-2803	(716) 434-7384
(3) Dr. James Nolan	(716) 898-4814	(716) 839-4276

WHAT TO REPORT

In all cases of contact made in the chain of reporting within E & E, the following information will be the minimum provided:

1. Name and REM/FIT region of person making call
2. Telephone number and location of person making call
3. Name of person(s) exposed or injured
4. Nature of emergency
5. Actions taken

DEALING WITH THE PRESS

If an accident attracts the attention of the media, and if EPA has an OSC, direct all media contact to him. If an OSC is not present, direct all media contact to the respective REM/FIT ZPMO. Nothing is to be said about the cause of the incident, the people involved, or the extent of injury or exposure.

INCIDENT REPORTS

Any exposure or injury to REM/FIT personnel will require that an incident report be filed by the affected individual. In addition, the person in charge at each reporting level will prepare a report on the actions taken at his/her location during the emergency and followup. This report will be submitted to E & E Corporate Safety Director for collection and preparation of the final report on the incident.

	Office	Home
	(EST to 8:30-5:30)	
(1) David Dahlstrom	(716) 632-4491	(716) 741-2324
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(3) Dr. James Nolan	(716) 898-4814	(716) 839-4276

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LIST OF TELEPHONE NUMBERS

Regional Office

Office Phone Number: (312) 663-9415

	Name	Home
Team Leader	Joe Petrilli	(312) 663-9415
Assistant Team Leader	Bill Goode	(312) 564-8344
Regional Safety Coordinator	Paul Moss	(312) 358-9342

REM/FIT NATIONAL ZONE MANAGEMENT OFFICES

Office Phone Number: (703) 522-6055 - FIT (303) 620-5200 - REM

	Name	Home	Office
Assistant Zone Project Manager for Health and Safety	David Dahlstrom	(716) 741-2384	(716) 632-4491
CH_2M Hill's Corporate Safety Director	Mary Anne Chillinsworth		
Assistant Zone Project Manager (FIT)	Roger Gray	(703) 534-8584	
Assistant Zone Project Manager (REM)	Bob D'Agastero		

E & E's CORPORATE HEADQUARTERS

Office Phone Number: (716) 632-4491

	Name	Home
Corporate Safety Director	David Dahlstrom	(716) 741-2384
Assistant Corporate Safety Director	Peter Gorton	(716) 877-2761
Vice President for Special Projects	Gerry Gallagher	(716) 652-0134
24-hour call line	(716) 882-2804	

SITE DOSIMETER LOG

TDD# 8307-046 SITE NAME Johnson Controls

SITE SAFETY OFFICER Pearce WEEK OF Sept 16-22

NAME AND DOSIM. #	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY

To the nearest half-hour, record time spent downrange as "S" (e.g., S: 2.5 hrs), time spent in active PDS operation as "P", and any time spent downrange in rescue activity as "R".

NAME: Johnson Controls TDD: RS-8307-04 DATES Sept 18-20

Place a check in front of each item taken, and circle the letter that corresponds to the letter affixed to the instrument taken.

2. Indicate the quantity of each item taken.

____	Airdrive Pump (Geofilter)	A
____	Air Powered Respiration	A B C D E
____	Canon AEL Camera	A B C
____	Conductivity Meter	A B C D
✓	Drager Pump	A B C
____	Ear Plugs	
____	Eyewash Bottle	
____	Explosimeter	A B C
✓	First Aid Kit	1 2 3 4 5 6 7 8
____	HCN Detector	A
✓	HNU	A B
✓	Lamp Type 10.2	
____	Level/Tripod and Rod	A B
____	Lifevests	
____	Masterflex Pump and Filter	A B
____	Metal Detector	A B C
____	O_2 Indicator	A B C
____	Organic Vapor Analyses	A B
____	pH Meter	A B C D
____	Polaroid 1-step	A B C D
✓	Radiation Det. - Mini	A B C D
____	Radiation - Survey Meter	A B C
____	Radiation - Tad.	A B C
____	Radiation - Thyac III/Probe	A B C
____	Resistivity Meter	A
____	Resusciator	A B C
____	Robair Pump System	A
____	Safety Glasses	
____	VAN	A B C
____	Walkie-Talkie	A B C
____	Water-Level Indicator	A B C

SAMPLE BOTTLES: NON

1/2 gallon ____

1 Liter ____

8 oz. Jar ____

VOA ____

Metal cans, lids and clips ____

PRESERVATIVES:

NaOH ____

HN_3 ____

H_2SO_4 ____

Other ____

BAILERS:

Stainless ____

Copper ____

PVC ____

DECONTAMINATION EQUIPMENT (LIST ALL ITEMS TAKEN)

3. Indicate the quantity and type of each item taken.

OUTERWARE (INCLUDE TYVEK, APRONS, etc.)

Type: NONE

Gloves Qty.____

Type: 1 Box surgical?

Boots Qty.____

Type: Steel toed

TLD Badges 1 per member Qty. 2

Drager Tubes Qty. 1 PACK

Type: HCN

Respirator Cartridges Qty. 1 Box

Type: GMC-H

Fully-Encapsulated Suits Qty.____

I.D. Letters:

Air-Cylinders Qty.____

I.D. Letters:

S.C.B.A.'s Qty.____

I.D. Letters:

Rohert Shaws Qty.____

I.D. Letters:

KS:4W

4. List all other equipment taken into the field. Include generators, pumps, shovels, etc.