US EPA RECORDS CENTER REGION 5
447920

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

A. GENERAL INFORMATION

SITE: Beck's Lake TDD NO.: F05-8611-149

CERCLIS/ACCOUNT NO. FIN 0476SA

LOCATION: Lasalle City Park, South Bend, In. (Washington & Dunder ST)

PLAN PREPARED BY: John Nordine DATE: 3-29-88

APPROVED BY: Anne M. ~~Stumpf~~ DATE: 4/12/88

OBJECTIVE(S): (including description of work to be performed): a site inspection & interview will be conducted. 5 soil samples will be collected. Sediment samples (~3) be collected from a rowboat using a post hole digger

PROPOSED DATE OF INVESTIGATION: 4-20-88

BACKGROUND REVIEW: Complete: ____ Preliminary: ✓

DOCUMENTATION/SUMMARY: Overall Hazard: Serious: ____ Moderate: ____ Low: ✓ Unknown: ____

B. SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): Liquid ✓ Solid ✓ Sludge ✓ Gas ____

CHARACTERISTIC(S): Corrosive ✓ Ignitable ✓ Radioactive ____ carcinogenic

Volatile ✓ Toxic ✓ Reactive ✓ Unknown ____ Other (Name) Persistent, Asbestos

FACILITY DESCRIPTION: Site was used as a open dump by Local industryes - Previous to Dumping, the area was probably a gravel Pit.

Principal Disposal Method (type and location): Open Dumping (Possibly below and/or above orginal ground surface) also possible in lake. Site has been covered over

Unusual Features (dike integrity, power lines, terrain, etc.): site is a city Park now - with a lake.

Status (active, inactive, unknown): Inactive, used until mid 1950's. Site is now active as a city park.

History: (worker or non-worker injury; complaints from public; previous agency action): Allied (Bendix) Corp. admitted to disposing of various waste stream sludges with heavy metals (, chrome, copper, Cadmium & nickel), Solvents such as, TCE, methyl chloroform, cyanide, perchlorethylene, methylene chloride - other industries likely to have dumped here also data incomplete.
No complaints or any agency action at this site.

C. HAZARD EVALUATION

Use Hazard Evaluation of Chemicals sheets for specific or representative chemicals present):
Asbestos - may be "pelletized" or in auto brake shoes
TCE, Sodium Dichromate waste, laquer Thinner waste, copper cyanide stripper waste, chromic Acid waste, nickel cyanide wastes, cyanide waste, methylene chloride, methyl chloroform Perchlorethylene, Foundry sands w/ Heavy metals

These compounds were known to be disposed of by Bendix at various locations, and may or may not be at this site.

D. SITE SAFETY WORK PLAN

SITE ESTABLISHMENT: Map/Sketch Attached? yes Site Secured? NO
Owner Identified: NO Area(s) of Contamination Identified: no.

Assume entire site contaminated.

PERSONAL PROTECTION:

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

Modifications: Due to the site is a city park the initial walk around the site will be conducted with booties and site entry equipment. All on site soil samples will be sampled in full level D protection with possible upgrade to level C if HNU/OVA reads 1 to 5 ppm above back ground. If readings exceed 5 ppm above background abandon site & contact RSC. No explosimeter or O_2 meter will be used because the landfill is covered and is now a park. Upgrade to Level C if dry, dusty conditions exist or inadequate cover is noticed.

Monitoring Equipment and Materials: Action Levels:
OVA 0-1 ppm over background - level D
1-5 " " " - " C
5-500 " " " - " B, abandon site contact RSC
> 500 " " " - " A
Rad-pin: >.1 mR/Hr or if alarm sounds " " " " "
HCN Monitox Reading > 0 ppm " " " " "

DECONTAMINATION PROCEDURES: All contaminated equipment will be washed with detergent solution and/or (solvent) and rinsed with distilled water. Wash and rinse water will be left on site. Prior permission to be obtained.

Special Equipment, Facilities, or Procedures: [illegible] at all times with the [illegible] boat. Life preserver [illegible] will be worn by boat member(2) at all times. A [illegible] to the boat from shore will be tied

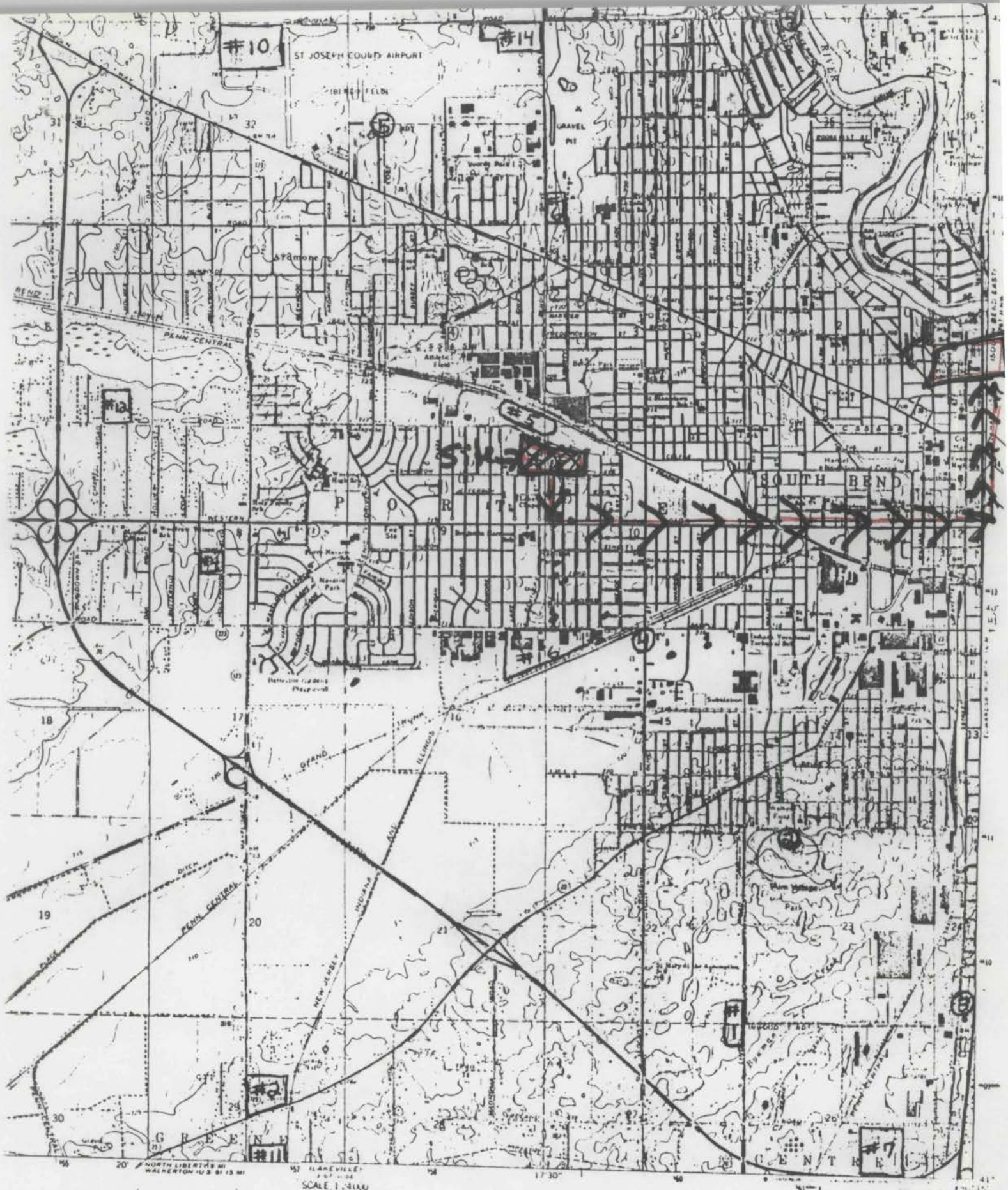
SITE ENTRY PROCEDURES: Obtain permission from owner/operator prior to site entry. Observe "buddy system" at all times. Stay upwind of contamination as much as possible. Obey water safety regulations when taking sediment samples.

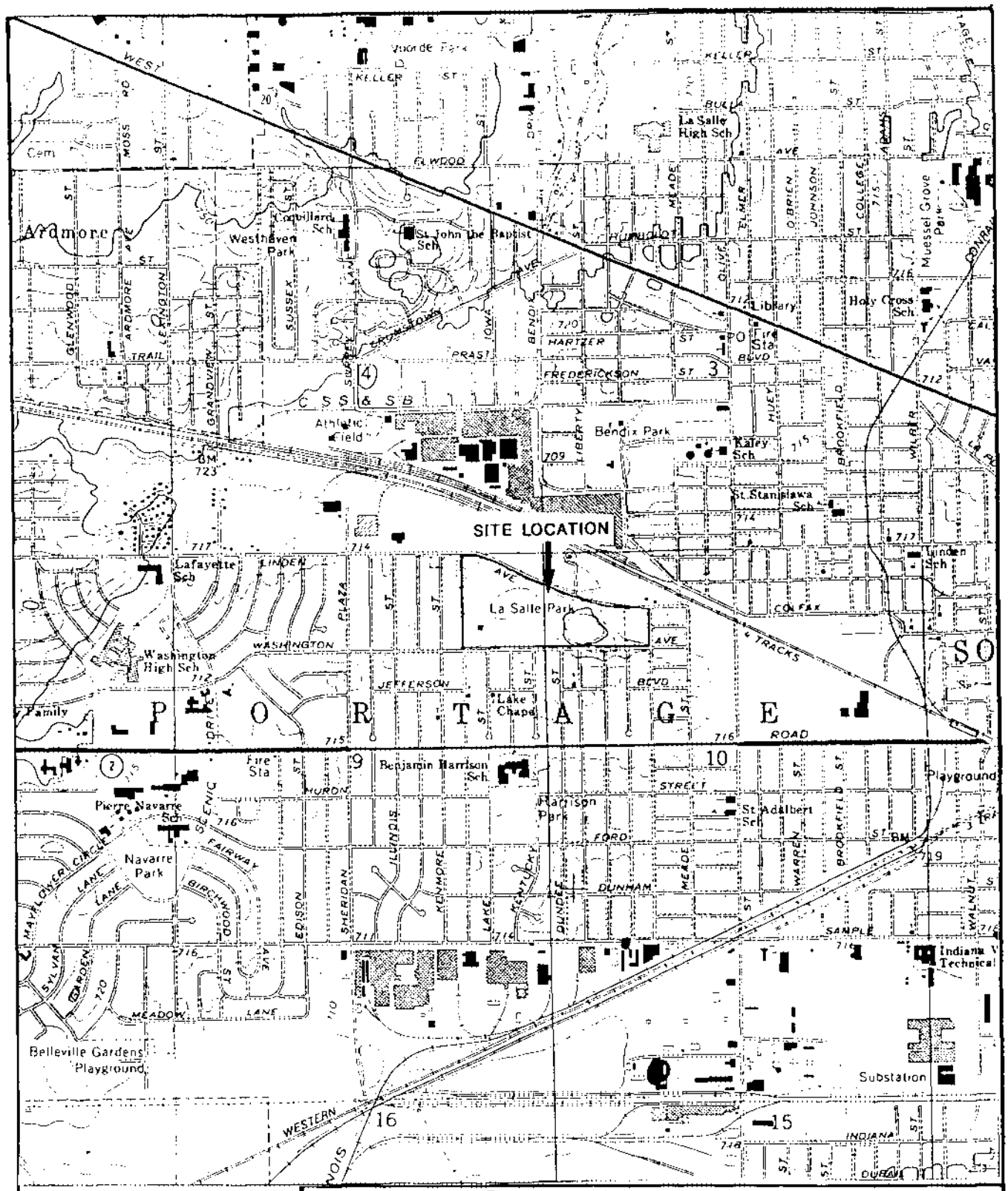
Team Member	Responsibility
STeve Anderson	Team Leader
Tim Mayers	Site Safety Officer
Gordon Ferguson	Sampler
Joe Corns	Team Member
Zelma Zieman	Team Member

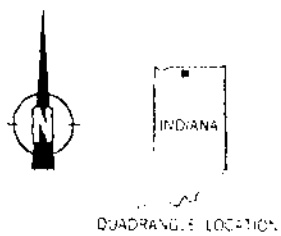
WORK LIMITATIONS (Time of day, etc.): Work during daylight hours only, Monitor Personnel for heat/cold stress. Work may also be limited due to nature of site. Site is NOW a Park

INVESTIGATION-DERIVED MATERIAL DISPOSAL: All material will be decontaminated and disposed of properly offsite.

ONE PAGE REDACTED
Exemption 6,
5 U.S.C. §552(b)(6)
Personal Privacy Information


#10
#14
ST JOSEPH COUNTY AIRPORT
GRAVEL PIT
PENN CENTRAL
#12
#5
SOUTH BEND
#16
#2
#11
#7
GREENE
CENTRE
NORTH LIBERTY 9 MI
WALKERTON (U S 6) 15 MI
(LAKEVILLE)
SCALE 1:24 000
CONTOUR INTERVAL 5 FEET
DATUM IS MEAN SEA LEVEL
ROAD CLASSIFICATION
Primary highway, all weather hard surface
Light duty road, all weather improved surface
Secondary highway, all weather hard surface
Unimproved road, fair or dry weather
Interstate Route
U S Route
State Route
UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
QUADRANGLE LOCATION
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U S GEOLOGICAL SURVEY, WASHINGTON, D C 20242
AND INDIANA DEPARTMENT OF NATURAL RESOURCES, INDIANAPOLIS, INDIANA 46204
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
HOSPITAL ROUTE
SOUTH BEND WEST, IND.
1969





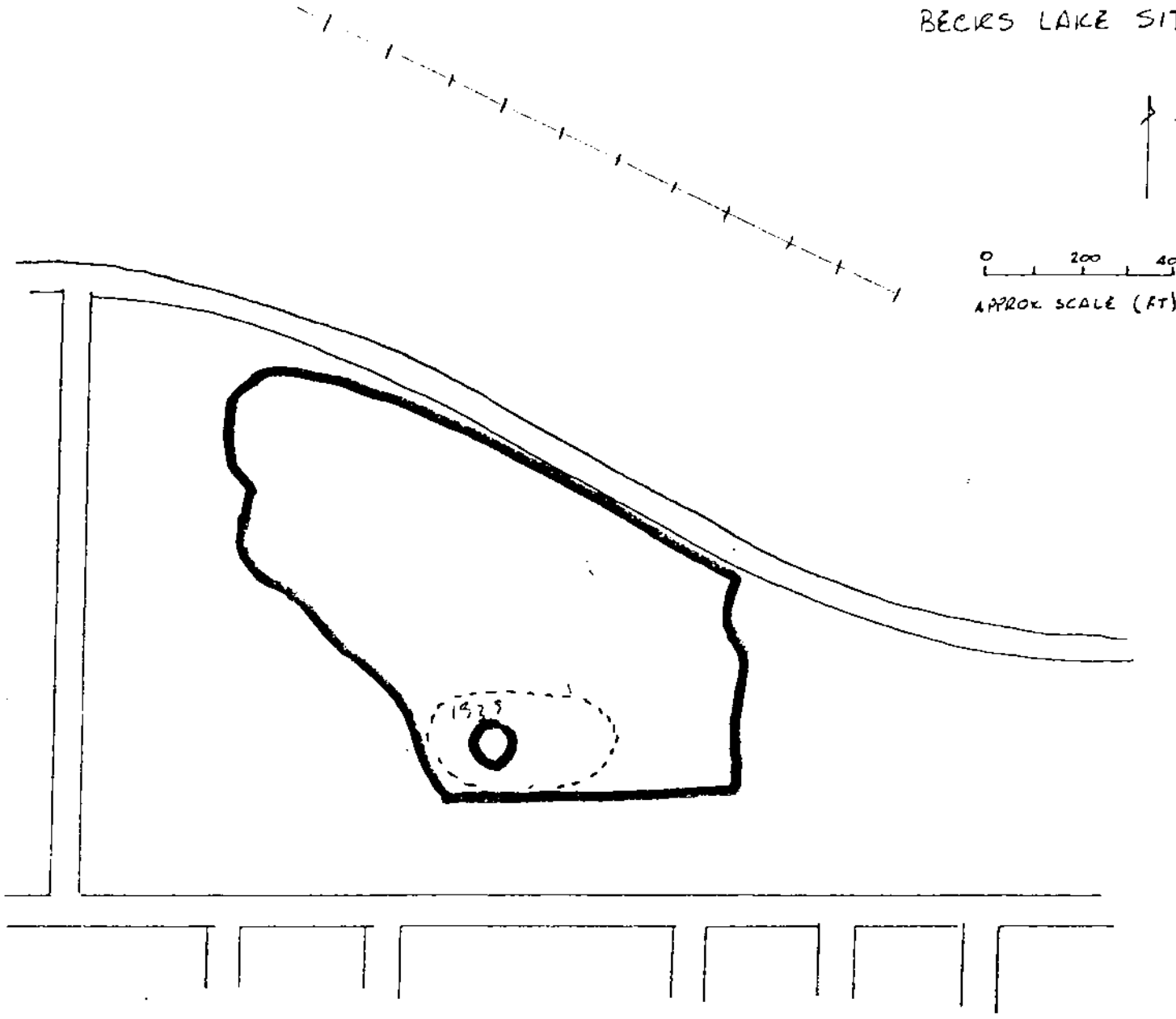
ecology and environment, inc.

111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415

TITLE: SITE LOCATION MAP	FIGURE #: 1
SITE: BECK'S LAKE	SCALE: 1:24,000
CITY: SOUTH BEND — STATE: INDIANA	P.A.N.: FIN0476
SOURCE: U.S.G.S. TOPO, SOUTH BEND WEST	DATE: 1969 — REVISED: 1980

SITE 15

BEERS LAKE SITE



---- 1939
1951 Major activity
1957 May be totally inactive
1965 Reclaimed as rec area

no disturbance 1973

APPROXIMATE LIMITS OF DISTURBED AREA (FROM AERIAL PHOTOS)

PRELIMINARY

WASTE-DISPOSAL METHODS

The disposal methods outlined below are intended only as guides. We cannot assume responsibility for their use. Careful consideration must be given to the chemical and physical properties of the substance. In addition, local laws and regulations may preclude the use of these methods which are primarily designed for small quantities. Observe all federal, state, and local laws.

The disposal of some chemicals may require deactivation or modification of the material by chemical means. Chemical waste-disposal reactions must be handled with the same care and consideration used with synthetic procedures. Appropriate consideration must be given to reaction conditions, *i.e.*, stoichiometry, order and rate of addition, heat of reaction, evolution of gaseous products, pH, efficiency of stirring, rate of reaction, atmospheric sensitivity, etc.

Chemical waste-disposal reactions should be carried out in a chemical fume hood and in appropriate laboratory glassware. Because these reactions are often vigorous, protective safety equipment such as safety goggles, respirator, gloves, face and/or safety shield and other protective equipment must be used.

Initial reactions in a disposal sequence should be carried out on a small scale (5-10g). The reactant concentrations should not exceed 10% of the reaction volume and the final reaction volume should not exceed 50% of the working capacity of the reaction vessel, regardless of the reaction scale. Larger quantities of the material should be handled in several small-size reactions. To ensure completion of reaction, the waste disposal procedure should be run for at least an additional 4 to 8 hours after all materials have been mixed.

All reactions should be run by technically qualified persons familiar with the potential hazards of the chemical reactions.

A Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

B The material should be ignited in the presence of sodium carbonate and slaked lime (calcium hydroxide). The substance should be mixed with vermiculite and then with the dry caustics, wrapped in paper and burned in a chemical incinerator equipped with an afterburner and scrubber.

C This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber.

D Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

E To a solution of the product in water, add an excess of dilute sulfuric acid. Let stand overnight. Remove any insolubles and bury in a landfill site approved for hazardous-waste disposal.

F Cautiously dissolve the material in water. Neutralize immediately with sodium carbonate or, if the material does not dissolve completely, add a little hydrochloric acid followed by sodium carbonate. Add calcium chloride in excess of the amount needed to precipitate the fluoride and/or carbonate. Separate the insoluble [illegible] bury in a landfill site approved for hazardous-waste disposal.

G Under an inert atmosphere, cautiously add the material to dry butanol in an appropriate solvent. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for venting of large volumes of highly flammable hydrogen and/or hydrocarbon gases. Neutralize the solution with aqueous acid. Filter off any solid residues for disposal as hazardous waste. Burn the liquid portion in a chemical incinerator equipped with an afterburner and scrubber.

H Neutralize the solution and add filtering agent (10g per 100ml). Evaporate the liquid and bag the residual solid for burial in a landfill site approved for hazardous-waste disposal.

I Dissolve the solid in (or dilute the solution with) a large volume of water. Carefully add a dilute solution of acetic acid or acetone to the mixture in a well ventilated area. Provisions should be made to vent safely the hydrogen gas given off during the decomposition. Check acidity of the solution and adjust to pH 1 if necessary. Let stand overnight. Neutralize the solution (pH 7). Evaporate the solution and bury the residue in a landfill site approved for hazardous-waste disposal.

J Cautiously acidify a 3% solution or a suspension of the material to pH 2 with sulfuric acid. Gradually add a 50% excess of aqueous sodium bisulfite with stirring at room temperature. An increase in temperature indicates that a reaction is taking place. If no reaction is observed on the addition of 10% of the sodium bisulfite solution, initiate it by cautiously adding more acid. If manganese, chromium, or molybdenum is present, adjust the pH of the solution to 7 and treat with sulfide to precipitate for burial as hazardous waste. Destroy excess sulfide, neutralize and flush solution down the drain.

K Please contact the Technical Services Department. Be sure to mention name, catalog number and quantity of the material.

L The material should be dissolved in 1) water; 2) acid solution or 3) oxidized to a water-soluble state. Precipitate the material as the sulfide, adjusting the pH of the solution to 7 to complete precipitation. Filter the insolubles and dispose of them in a hazardous-waste site. Destroy any excess sulfide with sodium hypochlorite. Neutralize the solution before flushing down the drain.

M A slurry of the arenediazonium salt with water can be disposed of by adding it gradually to a stirred solution of 5-10% excess 2-naphthol in 3% aqueous sodium hydroxide at 0-20°C. After 12 hours, the resulting azo dye is filtered and either incinerated or buried in a landfill site approved for hazardous-waste disposal. Neutralize the remaining solution before disposal.

N For small quantities: cautiously add to a large stirred excess of water. Adust the pH to neutral, separate any insoluble solids or liquids and package them for hazardous-waste disposal. Flush the aqueous solution down the drain with plenty of [illegible] The hydrolysis and neutralization reaction may generate heat and fumes which can be controlled by the rate of addition.

O Bury in a landfill site approved for the disposal of chemical and hazardous waste.

P Material in the elemental state should be recovered for reuse or recycling.

Q Cautiously make a 5% solution of the material in water or dilute acid. There may be a vigorous, exothermic reaction and fumes may be generated due to the hydrolysis of the material. Control any reaction by cooling and by the rate of addition of the material. Gradually add dilute ammonium hydroxide to pH 10. Filter off any precipitate for disposal in a chemical landfill. If there is no precipitation, gradually adjust the pH from 10 to 6, stopping when precipitation occurs.

R Catalysts and expensive metals should be recovered for reuse or recycling.

S Treat a dilute basic solution (pH 10-11) of the material with a 50% excess of commercial laundry bleach. Control the temperature by the addition rate of bleach and adjust pH if necessary. Let stand overnight. Cautiously adjust solution to pH 7. Vigorous evolution of gas may occur. Filter any solids for burial in a chemical landfill. Precipitate any heavy metals by addition of sulfide and isolate for burial. Additional equivalents of hypochlorite may be needed if the metal can be oxidized to a higher valence state. For metal carbonyls, the reaction should be carried out under nitrogen.

T Cautiously make a 5% solution of the product in water; vent because of possible vigorous evolution of flammable hydrogen gas. Acidify the solution to pH 1 by adding 1M sulfuric acid dropwise. Acidification will cause vigorous evolution of hydrogen gas. Allow the solution to stand overnight. Evaporate the solution to dryness and bury the residue in a landfill site approved for hazardous-waste disposal.

U Take the material (or a solution) and make a 5% solution in tetrahydrofuran. Cautiously add the solution dropwise to an ice-cooled, stirred basic solution of commercial bleach. Oxidation may release flammable hydrocarbon gases which must be vented. Let stand overnight. Adjust the pH to 7 and destroy excess hypochlorite with sodium bisulfite before disposal of the solution.

V Under an inert atmosphere cautiously add dry butanol or a mixture of dry butanol in an appropriate solvent, to a solution of the material in tetrahydrofuran. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for the venting of a large volume of flammable hydrogen gas. When gas evolution ceases, cautiously add a basic hypochlorite solution dropwise to the reaction solution. Let stand overnight. Neutralize the solution and treat with sodium bisulfite to destroy any excess hypochlorite. Filter any solids for burial in a landfill site approved for hazardous-waste disposal.

These recommendations are intended only as guides. Sigma-Aldrich shall not be held liable for any damage resulting from their use. See Foreword of the Sigma-Aldrich Library of Chemical Safety Data for more information.

THE SIGMA-ALDRICH LIBRARY OF CHEMICAL SAFETY DATA

Explanation of Codes

PROCEDURES FOR SPILLS OR LEAKS

1 Absorb on sand or vermiculite and place in closed container for disposal.
2 Cover with dry lime, sand, or soda ash. Place in covered containers using nonsparking tools and transport outdoors.
3 Shut off all sources of ignition.
4 Evacuate area.
5 Cover with an activated carbon adsorbent, take up and place in closed container. Transport outdoors.
6 Ventilate area and wash spill site after material pickup is complete.
7 Sweep up, place in a bag and hold for waste disposal.
8 Avoid raising dust.
9 Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.
10 Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.
11 Cover with dry lime or soda ash, pick up, keep in a closed container and hold for waste disposal.
12 Carefully sweep up and remove.
13 Flush spill area with copious amounts of water.
14 Mix with solid sodium bicarbonate.
15 Place in appropriate container.
16 Wear protective equipment.
17 Wash spill site with soap solution.
18 Please contact the Technical Services Department. Be sure to mention the name and catalog number of the material.

FIRE-EXTINGUISHING MEDIA

1 Carbon dioxide.
2 Dry chemical powder.
3 Water spray.
4 Alcohol or polymer foam.
5 Class D fire-extinguishing material only.
6 Water may be effective for cooling, but may not effect extinguishment.
7 Carbon dioxide, dry chemical powder, alcohol or polymer foam.
8 Foam and water spray are effective but may cause frothing.
9 Do not use dry chemical powder extinguisher on this material.
10 Do not use carbon dioxide extinguisher on this material.
11 Noncombustible.
12 Do not use water.
13 Use extinguishing media appropriate to surrounding fire condition

Sigma-Aldrich Corporation, P.O. Box 355, Milwaukee, Wisconsin 53201 USA
(Sigma: 314-771-5765; Aldrich: 414-273-3850)

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name Asbestos Date 3-29-88

DOT Classification _____ Job Number FIN6476SA

CAS Number 1332-21-4

REFERENCES CONSULTED (circle; also include MSDS if approprate.)
NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris(vol.III)
ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich
RTECS other: GA Tech Manual:Supervision of asbestos abatement

CHEMICAL PROPERTIES:(Synonyms:Chrysotile, Amosite,Crocidolite,Tremolite)
Chemical Formula Varies MW N/A Ionization Potential N/A
Physical State Solid Boiling Point N/A Freezing Point N/A
Flash Point N/A Flammable Limits N/A Vapor Pressure N/A
Specific Gravity/Density varies Odor/Odor Threshold N/A
Solubility-water: Non-soluble Solubility-other: N/A
Incompatabilities & Reactivity: None

TOXICOLOGICAL PROPERTIES:
Exposure Limits: TLV-TWA (ACGIH) 0.2-2.0Fibers/CC PEL (OSHA)0.2Fibers/CC
STEL N/A Ceiling Limits N/A IDLH N/A
Toxicity Data: (Indicate duration of study)
Human; IHL TDLo:2.8fibers/cc Dermal N/A Oral _____
Rat/Mouse;IHL TDLo:100mg/kg:ETA Dermal N/A Oral _____
Aquatic: _____ Other: _____
Carcinogen Known human Mutagen N/A Reproductive Toxin N/A
Route(s) of exposure - (circle all that apply): Inhalation Ingestion
Dermal Contact Eye(ocular) Dermal Absorption Other _____

HANDLING RECOMMENDATIONS: (personal protective measures)
Respirators:HEPA filters with airpurifying up tooil fibers/cc;air supplied
Protective Clothing:Full body disposable covering, inc.hood,gloves & boots
Special Equipment:If not in full face piece respirator wear eye protection

DISPOSAL,FIRE and SPILLS:(Use numbered codes;see attached sheets for explanation.)
Disposal approved landfill Fire N/A Leaks&Spills vacume
Decomposition Products: None

FIRST AID:
ING: None
IHL: None
Eye/Skin: N/A

SYMPTOMS:
acute(immediate) exposure effects: None

chronic(long term) exposure effects: Asbestosis, lung cancer & possible GI tract cancer, mesothelioma and carcinogenic properties greatly potentiated by cigarette smoke.

Reproductive effects: N/A

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name Methylene Chloride Date 3-29-88

DOT Classification _____ Job Number FIN0476SA

CAS Number 75-09-2

REFERENCES CONSULTED (circle; also include MSDS if approprate.)
NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris(vol.III)
ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich
RTECS other: _____

CHEMICAL PROPERTIES: (Synonyms: Methane dichloride, methylene dichloride)
Chemical Formula CH_2Cl_2 MW 85 Ionization Potential 11.35ev
Physical State liquid Boiling Point 104°F Freezing Point -142°F
Flash Point None Flammable Limits 12-19% Vapor Pressure 350mm
Specific Gravity/Density 1.322 Odor/Odor Threshold 205-307ppm

Solubility-water: insoluble Solubility-other: _____
Incompatabilities & Reactivity: Strong oxidizers, caustics, chem. active metals

TOXICOLOGICAL PROPERTIES:
Exposure Limits: TLV-TWA (ACGIH) 100ppm PEL (OSHA) 500ppm
STEL None est. Ceiling Limits 1000ppm IDLH 5000ppm
Toxicity Data: (Indicate duration of study)
Human; IHL Tclo 500ppm/8/ Dermal _____ Oral _____
Rat/Mouse; IHL Tclo 500ppm/6Hr Dermal _____ Oral _____
Aquatic: T/M 96:1000-100ppm Other: _____
Carcinogen Indef. Mutagen exper. Reproductive Toxin N/A
Route(s) of exposure - (circle all that apply): Inhalation Ingestion
Dermal Contact Eye(ocular) Dermal Absorption Other _____

HANDLING RECOMMENDATIONS: **(personal protective measures)**
Respirators: 750 ppm use SCBA
Protective Clothing: good-viton, polyurethane; fair-butyl, nitrile, neoprene
Special Equipment: None

DISPOSAL, FIRE and SPILLS: **(Use numbered codes; see attached sheets for explanation.)**
Disposal B Fire 11.13 Leaks&Spills 1,4,6,9
Decomposition Products: hydrogen chloride & phosgene gas

FIRST AID:
ING: Contact physician immediately
IHL: Remove to fresh air, artifical resp. if necessary, med. attent.
Eye/Skin: Irrigate/flush with water immed. Wash skin thoroughly with soap & water.

SYMPTOMS:
acute(immediate) exposure effects: IHL: anesthetic effects, nausea, drunkeness, central nervous system depression loss of memory. ING: nausea, tingling/ numbness in limbs. irritating to skin/eyes.

chronic(long term) exposure effects: No late effects, but may cause dermatitis upon prolonged exposure. Can worsen angina or other heart diseases.

reproductive effects: None

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name Hydrogen Cyanide Date 3-29-88

DOT Classification _____ Job Number FIN0476SA

CAS Number 74-90-8

REFERENCES CONSULTED (circle; also include MSDS if approprate.)
NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris(vol.III)
ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich
RTECS other: Cassarett & Doull's Toxicology,Sittig.

CHEMICAL PROPERTIES:(Synonyms:Hydrocyanic acid,Prussic acid,formonitrile)
Chemical Formula HCN MW 27 Ionization Potential 13.91
Physical State Gas,liquid Boiling Point 79°F Freezing Point 7°F
Flash Point 0°F Flammable Limits 5.6-40% Vapor Pressure 0.95
Specific Gravity/Density 0.689@20°C Odor/Odor Threshold 1ppm*
Solubility-water: Miscible Solubility-other: Miscible-alcohol,ether
Incompatabilities & Reactivity: Bases,caustics,O_2,Peroxides,plastic,acids
*Odor not adequate warning property since effects occur rapidly.

TOXICOLOGICAL PROPERTIES:
Exposure Limits: TLV-TWA (ACGIH) 10ppm(skin) PEL (OSHA) 10ppm(skin)
STEL None est. Ceiling Limits 5mg/m³/10min.(NIOSH) IDLH 50ppm
Toxicity Data: (Indicate duration of study)
Human; IHL Lclo 200mg/m³/10min Dermal _____ Oral LDlo 570ug/kg
Rat/Mouse; IHL Lc50 484ppm/4H Dermal _____ Oral LDlo 10mg/kg
Aquatic: N/A Other: _____
Carcinogen N/A Mutagen N/A Reproductive Toxin N/A
Route(s) of exposure - (circle all that apply): Inhalation Ingestion Dermal Contact Eye(ocular) Dermal Absorption Other Quicly abesorbed thru skin.

HANDLING RECOMMENDATIONS: **(personal protective measures)**
Respirators: Supplied air with escape SCBA, SCBA with full face piece.
Protective Clothing: Avoid skin contact.
Special Equipment: None

DISPOSAL,FIRE and SPILLS:(Use numbered codes;see attached sheets for explanation.)
Disposal C Fire 7 Leaks&Spills _____
Decomposition Products: Toxic fumes of CN

FIRST AID:
ING: Give large quantities of milk or water,induce vomiting,medical atten.
IHL: Move to fresh air, give artifical resp. if necessary,medical atten.
Eye/Skin: Irrigate/rinse with large amounts of water for at least 15 min.

SYMPTOMS:
acute(immediate) exposure effects: Chemicial asphyxiant,rapid hypotension, convulsions,collapse,unconsciousness,coma,decreased respiration.Lower doses cause vomiting,headache,weakness,nausea.

chronic(long term) exposure effects: Little data avail.Reported symptoms: dizziness,weakness,lung congestion,hoarseness,conjunctivitis,loss of appetite,weight loss,dermatitis

reproductive effects: None specified for humans.

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name 1,1,1-Trichloroethane Date 3-29-88

DOT Classification _____ Job Number FIN0476SA

CAS Number 71-55-6

REFERENCES CONSULTED (circle; also include MSDS if appropriate.)
NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris(vol.III)
ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich
RTECS other: _____

CHEMICAL PROPERTIES: (Synonyms: Methyl Chloroform, Chlorothane)
Chemical Formula CH_3CCl_3 MW 133 Ionization Potential 10.2 ev
Physical State liquid Boiling Point 165°F Freezing Point -36°F
Flash Point None Flammable Limits 7-16% Vapor Pressure 100mm
Specific Gravity/Density 1.31 Odor/Odor Threshold 100pppm/chloroform
Solubility-water: Insoluble Solubility-other: _____
Incompatabilities & Reactivity: Strong oxidizers,caustics,chem. active metals.

TOXICOLOGICAL PROPERTIES:
Exposure Limits: TLV-TWA (ACGIH) 350ppm PEL (OSHA) 350ppm
STEL 450 ppm Ceiling Limits 350ppm IDLH 1000ppm
Toxicity Data: (Indicate duration of study)
Human; IHL Tclo 920ppm/70M Dermal _____ Oral Tdlo 670mg/kg
Rat/Mouse; IHL Lc10 1000ppm Dermal _____ Oral LD50 1030mg/kg
Aquatic: Tlm 96:100-10ppm Other: _____
Carcinogen Indef-anim. Mutagen exper. Reproductive Toxin teratogen
Route(s) of exposure - (circle all that apply): Inhalation Ingestion
Dermal Contact Eye(ocular) Dermal Absorption Other _____

HANDLING RECOMMENDATIONS: **(personal protective measures)**
Respirators: 500ppm - use APR; >1000ppm use SCBA.
Protective Clothing: Excel.-viton;good-butyl;poor-neoprene,nitrile.
Special Equipment: Avoid contact.

DISPOSAL,FIRE and SPILLS: **(Use numbered codes;see attached sheets for explanation.)**
Disposal A Fire 3.7 Leaks&Spills 6,9,11
Decomposition Products: CO, CO_2, hydrogen chloride, and phosgene gas.

FIRST AID:
ING: Get medical attent. immed.,induce vomiting.
IHL: Remove to fresh air,artifical resp. if necessary, medical attent.
Eye/Skin: Wash/irrigate with large amounts of water for at least 15 min.
Wash skin thoroughly with soap and water.

SYMPTOMS:
acute(immediate) exposure effects: Irritating to eyes,skin,mucous membranes.
IHL: Incoorindation, confusion, drowsiness, possible loss of consciousness, nausea if ingested.

chronic(long term) exposure effects: Dermatitis, liver and/or kidney damage. Consumption of alchohol may increase the toxic effects of exposure.

Reproductive effects: Caused teratogenic effects in animals. None documented in humans, still experimental.

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

Chemical Name Tetrachlorethylene Date 3-29-88

DOT Classification _____ Job Number FIN0 4265A

CAS Number 127-18-4

REFERENCES CONSULTED (circle; also include MSDS if approprate.)
NIOSH/OSHA Pocket Guide Merck Index Hazardline Chris(vol.III)
ACGIH TLV Booklet Toxic & Hazardous Safety Manual SAX Aldrich
RTECS other: Sittig

CHEMICAL PROPERTIES: (Synonyms: Perchloroethylene, 1,1,2,2-tetrachloroethylene)
Chemical Formula CCl_2CCl_2 MW 166 Ionization Potential 9.32ev
Physical State liquid Boiling Point 250°F Freezing Point -8°F
Flash Point Not flamm. Flammable Limits Not flam Vapor Pressure 14mm
Specific Gravity/Density 1.63 Odor/Odor Threshold 5ppm
Solubility-water: Insoluble Solubility-other: _____
Incompatabilities & Reactivity: Strong oxidizers bases, chem. active metals

TOXICOLOGICAL PROPERTIES:
Exposure Limits: TLV-TWA (ACGIH) 50ppm PEL (OSHA) 100ppm
STEL 200ppm Ceiling Limits 200 ppm IDLH 500ppm
Toxicity Data: (Indicate duration of study)
Human; IHL Tclo 96ppm/7H Dermal _____ Oral _____
Rat/Mouse; IHL Lclo 4000ppm/4H Dermal _____ Oral _____
Aquatic: Tlm 96:100-10ppm Other: Rat 400mg/kg-mutation
Carcinogen pos.-anim Mutagen exper. Reproductive Toxin negative
Route(s) of exposure - (circle all that apply): Inhalation Ingestion
Dermal Contact Eye(ocular) Dermal Absorption Other _____

HANDLING RECOMMENDATIONS: (personal protective measures)
Respirators: 500 ppm use SCBA
Protective Clothing: Excel-viton; Good-vinyl, nitrile; Poor-butyl, neoprene.
Special Equipment: Prevent prolonged contact with skin.

DISPOSAL, FIRE and SPILLS: (Use numbered codes; see attached sheets for explanation.)
Disposal A Fire 11,13 Leaks&Spills 1,4,6,9
Decomposition Products: CO, CO_2, hydrogen chloride & phosgene gas.

FIRST AID:
ING: Give large quantities of salt water, induce vomiting, medical attent.
IHL: Remove to fresh air, artifical resp. if necessary, medical attent.
Eye/Skin: Irrigate/wash with water, contact physician. Wash skin thoroughly with soap & water.

SYMPTOMS:
acute(immediate) exposure effects: Burning & irritation of eyes, nose, throat, vomiting, nausea, dizziness, headache.

hronic(long term) exposure effects: Damage to kidney and/or liver.
.cohol may increase toxic effects.

reproductive effects: None

nary Assessment Information Proposed Rule FEREAC 45,13646,80.

THR: A skn, eye irr. MOD orl. The main tox effects were associated with gastrointestinal irr, including salivation, lachrymation, dyspnea, weakness, emaciation, lethargy, diarrhea, coma and (following very high dosage) deaths after 1-8 days, showing irr of stomach and gastrointestinal tract, liver dysfunction and lung congestion. The conc material may be a little more toxic, due to greater gastrointestinal irr. In the dry form, it is not appreciably irr to dry skn, However, when moist, the conc material is irr to skn, and also may cause severe eye irr. Aqueous dilutions of 333 ppm or less sodium dichloro isocyanurate showed no irr to skin or eyes, despite daily application for 3 months. Rats and dogs were unaffected by the intake of up to 333 ppm in the diet for 6 months. Rats were unaffected by its inclusion in their drinking water for 30 days (33 ppm + 4000 ppm cyanuric acid). Rabbits were unaffected by daily dermal application of 5 ml of 333 ppm aqueous sodium dichloroisocyanurate on 5 day/week for 3 months.

Disaster Hazard: Dangerous, when heated to decomp it emits very tox fumes of Na_2O, Cl^- and NO_x.

SODIUM-2,4-DICHLOROPHENOXYACETATE

CAS RN: 2702729 NIOSH #: AG 8925000
mf: $C_8H_5Cl_2O_3 \cdot Na$; mw: 243.02

SYNS:
2,4-DICHLOROPHENOXYACETIC ACID, SODIUM SALT
SODIUM 2,4-D
SPRITZ-HORMIT

TOXICITY DATA: 3-2	CODEN:
orl-rat TDLo:100 ug/kg (10D preg)	GISAAA 44(4),70,79
orl-rat LD50:555 mg/kg	GTPZAB 17(3),35,73
ihl-man TCLo:23 mg/m3/3-5Y-I:CNS	HYSAAV 31,383,66
orl-rat LD50:666 mg/kg	AJVRAH 15,622,54
ipr-rat LD50:666 mg/kg	AEHLAU 7,202,63
orl-mus LD50:375 mg/kg	AEHLAU 7,202,63
ipr-mus LD50:375 mg/kg	AEHLAU 7,202,63
scu-mus LD50:280 mg/kg	AEHLAU 7,202,63
orl-rbt LD50:800 mg/kg	AEHLAU 7,202,63
ipr-rbt LD50:400 mg/kg	AEHLAU 7,202,63
ivn-rbt LD50:400 mg/kg	AEHLAU 7,202,63
orl-gpg LD50:1000 mg/kg	AEHLAU 7,202,63
ipr-gpg LD50:666 mg/kg	AEHLAU 7,202,63

Toxicology Review: 27ZTAP 3,62,69. "NIOSH Manual of Analytical Methods" VOL 5 S279#. Reported in EPA TSCA Inventory, 1980.

THR: A hmn CNS. HIGH orl, ipr, scu, ivn; MOD orl, ipr.

Disaster Hazard: When heated to decomp it emits tox fumes of Cl^- and Na_2O.

SODIUM DICHROMATE

CAS RN: 10588-01-9 NIOSH #: HX 7700000
mf: $Cr_2O_7 \cdot 2Na$; mw: 261.98

Anhydrous. mp: 356.7°; decomp @ about 400°. Very sol in water. d: 2.35 @ 13°.

SYNS:
BICHROMATE OF SODA
DISODIUM CHROMIC ACID
CHROMIUM SODIUM OXIDE
DISODIUM DICHROMATE
NATRIUMBICHROMAAT (DUTCH)
SODIO (DICROMATO DI) (ITALIAN)
SODIUM DICHROMATE DE (FRENCH)

MUTATION DATA: 3	CODEN:
mmo-sat 80 ug/plate	MUREAV 54,139,78
mma-sat 80 ug/plate	NATUAS 271,455,78
dnr-esc 200 nmol/plate	TEHD6 9,287,82
cyt-smc 1 mg/L	MUREAV 67,231,79
sce-smc 300 ug/L/39H	MUREAV 67,231,79
dnd-rat-ipr 20 mg/kg	JBCHA3 256(8),3623,81
cyt-ham:ovr 250 ug/L	TXCYAC 17,219,80
sce-ham:ovr 250 ug/L	TXCYAC 17,219,80

TUMORIGENIC DATA: 3	CODEN:
ipl-rat TDLo:160 mg/kg/69W-I:ETA	AEHLAU 5,445,62

TOXICITY DATA: 3	CODEN:
orl-rat LD50:50 mg/kg	GTPZAB 22(8),38,78
ivn-mus LDLo:26 mg/kg	EQSSDX 1,1,75
ivn-rbt LDLo:18 mg/kg	EQSSDX 1,1,75
skn-gpg LDLo:335 mg/kg	AEHLAU 11,201,65
ipr-gpg LDLo:335 mg/kg	AEHLAU 11,201,65
scu-gpg LDLo:23 mg/kg	HBAMAK 4,1330,35

Aquatic Toxicity Rating: TLm96:1000-100 ppm WQCHM* 4,-,74.

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Human Positive IARC** 23,205,80. *Toxicology Review:* FCTXAV 9,105,71; 85DHAX Cr,22,74; 27ZTAP 3,51,69. OSHA Standard: Air: CL 100 ug/(CrO_3)/M³ (SCF-O) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/M³; CL 50 ug/M³/15M NTIS**. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FEREAC 45,13646,80.

THR: MUT data. An exper ETA. HIGH orl, ivn, skn, ipr, scu. See chromium compounds. A caustic and irr. A powerful oxidizer.

Disaster Hazard: When heated to decomp it emits tox fumes of Na_2O.

Incomp: Hydrazine; acetic anhydride; ethanol; sulfuric acid; hydroxylamine; trinitrotoluene.

SODIUM DICHROMATE DIHYDRATE

CAS RN: 7789120 NIOSH #: HX 7750000
mf: $Cr_2Na_2O_7 \cdot 2H_2O$; mw: 298.02

Red crystals. mp: $-2H_2O$ @ 100°, mp(anhydrous): 356.7°, bp: decomp @ 400°, d: 2.35 @ 13°.

TOXICITY DATA:	CODEN:
mma-sat 10 ug/plate	AEMIDF 33,805,77
mmo-sat 50 mmol/plate	CRMGDP 2,283,81

THR: MUT data. HIGH ipr, scu; a caustic, irr. An exper CARC. See also sodium dichromate and chromium compounds. It can react violently with hydrazine.

SODIUM DIETHYLDITHIOCARBAMATE

CAS RN: 148185 NIOSH #: EZ 6475000
mf: $C_5H_{10}NS_2 \cdot Na$; mw: 171.27

SAX, 5th Ed.

COPPER CYANIDE (OUS)

CCY

Common Synonyms	Solid powder White
Cuprous cyanide Cupricin	Sinks in water

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

Fire

Not flammable.
POISONOUS GASES MAY BE PRODUCED WHEN HEATED

Exposure

CALL FOR MEDICAL AID.

DUST
Irritating to eyes, nose and throat.
If inhaled will cause dizziness or loss of consciousness.
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
POISONOUS IF SWALLOWED.
Irritating to skin and eyes.
If swallowed will cause dizziness and loss of consciousness.
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)

Issue warning-poison, water contaminant
Restrict access
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: Poison
2.2 Class: 6

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Not listed
3.2 Formula: CuCN
3.3 IMO/UN Designation: 6.1/1587
3.4 DOT ID No.: 1587
3.5 CAS Registry No.: 544-92-3

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Powder
4.2 Color: White
4.3 Odor: Data not available

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Dust respirator; protective goggles or face mask; protective clothing

5.2 Symptoms Following Exposure: Following severe exposure to dust, symptoms of cyanide poisoning may develop (see ingestion). Ingestion causes anxiety, confusion, dizziness, sudden loss of consciousness, odor of bitter almonds on breath or in vomitus, rapid weak pulse, convulsions, and paralysis. Contact with eyes causes irritation.

5.3 Treatment of Exposure: Get medical attention after all exposures to this substance. INHALATION: remove victim to fresh air. INGESTION: if breathing has stopped, begin artificial respiration immediately; administer by inhalation amyl nitrite pearls for 15-30 seconds of every minute, while a sodium nitrite solution is being prepared; discontinue amyl nitrite and immediately inject intravenously 10 ml of a 3% soln. of sodium nitrite (nonsterile if necessary) over a period of 2 to 4 min.; do not remove needle; through same needle infuse 50 ml of a 25% aqueous soln. of sodium thiosulfate; injection should take about 10 min. [Concentrations of 5-50% are permissible if total dose is approx. 12 grams.] Oxygen therapy may be of value in combination with the above. If symptoms recur, repeat injections of nitrite and thiosulfate at half the above doses. EYES: flush with water for at least 15 min. SKIN: flush with water; wash with soap and water

5.4 Threshold Limit Value: 5 mg/m³ (as cyanide)
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 4, LD_{50} < 50 mg/kg
5.7 Late Toxicity: Data not available
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
5.11 IDLH Value: 50 mg/m³ as cyanide

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 hydrogen cyanide gas may form in fires.
6.6 Behavior in Fire: Data not available
6.7 Ignition Temperature: Not pertinent
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: Not pertinent
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: Data not available
7.3 Stability During Transport: Stable. In presence of moisture, toxic hydrogen cyanide gas may collect in enclosed spaces.
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: Data not available

8. WATER POLLUTION

8.1 Aquatic Toxicity: Data not available
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: Copper known to be accumulated by shellfish. Hazard to humans unknown.

9. SHIPPING INFORMATION

9.1 Grades of Purity: Technical; C.P.
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Closed container

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

II

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Poison, B
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification: Not listed

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Solid
12.2 Molecular Weight: 89.56
12.3 Boiling Point at 1 atm: Not pertinent (decomposes)
12.4 Freezing Point: Not pertinent
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 2.92 at 20°C (solid)
12.8 Liquid Surface Tension: Not pertinent
12.9 Liquid Water Interfacial Tension: Not pertinent
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: Not pertinent
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: 30.1 cal/g
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

CHRIS VOL III

TETRACHLOROETHYLENE

TTE

Common Synonyms	Watery liquid	Colorless	Sweet odor
Tetrasol Perclene Perchloroethylene Perk	Sinks in water. Irritating vapor is produced.		

Stop discharge if possible
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Not flammable.
Poisonous gases are produced when heated.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to 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.

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)
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Not listed
3.2 Formula: $ClC=CCl_2$
3.3 IMO/UN Designation: 6.0/1897
3.4 DOT ID No.: 1897
3.5 CAS Registry No.: 127-18-4

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Ethereal; like chloroform; mildly sweet

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: For high vapor concentrations use approved canister or air-supplied mask; chemical goggles or face shield; plastic gloves.
5.2 Symptoms Following Exposure: Vapor can affect central nervous system and cause anesthesia. Liquid may irritate skin after prolonged contact. May irritate eyes but causes no injury.
5.3 Treatment of Exposure: INHALATION: if illness occurs, remove patient to fresh air, keep him warm and quiet, and get medical attention. INGESTION: induce vomiting only on physician's recommendation. EYES AND SKIN: flush with plenty of water and get medical attention if irritation or injury occurs.
5.4 Threshold Limit Value: 50 ppm
5.5 Short Term Inhalation Limits: 100 ppm for 60 min.
5.6 Toxicity by Ingestion: Grade 2; LD_{50} = 0.5 to 5 g/kg
5.7 Late Toxicity: None
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or throat if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: 5 ppm
5.11 IDLH Value: 500 ppm

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, irritating gases may be generated in fires.
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: Not flammable
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: Not flammable
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
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
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: Data not available

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: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Dry cleaning and industrial grades: 95+ %
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Pressure-vacuum

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)
A-X

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: ORM-A
11.2 NAS Hazard Rating for Bulk Water Transportation:

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

11.3 NFPA Hazard Classification: Not listed

12. PHYSICAL AND CHEMICAL PROPERTIES

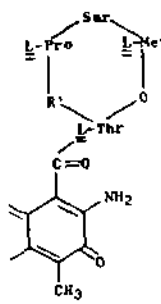
12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: 165.83
12.3 Boiling Point at 1 atm: 250°F = 121°C = 394°K
12.4 Freezing Point: −43°F = −22.4°C = 250.8°K
12.5 Critical Temperature: 657°F = 347°C = 620°K
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 1.63 at 20°C (liquid)
12.8 Liquid Surface Tension: 31.3 dynes/cm = 0.0313 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 44.4 dynes/cm = 0.0444 N/m at 25°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): 1.116
12.12 Latent Heat of Vaporization: 90.2 Btu/lb = 50.1 cal/g = 2.10×10^5 J/kg
12.13 Heat of Combustion: Not pertinent
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

CHRIS VOL III

in water.
duction indicator for
os. *Talanta* 10, 477 (19

omycin C; HBF 386;
duced by *Streptomyces*
er, *Naturwiss.* 36, 376 (19
(1951); U.S. pat. 2,953
bein, *Arch. Mikrobiol.* 17
is C_1 (dactinomycin
resp: Brockmann, Pie
kmann, Gröne. *ibid.* 40
tinomycins: Waksman
44, 602 (1958). Struc
n. 68, 70 (1956); Brock
). Synthesis of actinom
id. 47, 230 (1960); 48
ann *et al.*, Ger. pat. 1,17
ackner, *Ber.* 100, 353 (19
actinomycin C_3: Brock
1964, 3517. Comprehe
rschr. *Chem. Org. Natur*



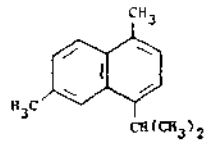
ramids from ethyl acetate
= 0.25 in ethanol). Sparing
in ethanol; sol in chlorofo
e. *Protect from light.*
$_{13}O_{16}$. R = D-valine;
mids, prisms or needles
$\alpha]_D^{20}$ −325° ± 10° (c =
nol): 443 nm (ε 25,400)
$_{15}O_{16}$. R = R' = D-allo
ids from ethyl acetate or
'c = 0.5 in ethanol).
n (ε 24,100). Weak bas
c.

l principles from fresh
Cactus grandiflorus, the
us grandiflorus (L.) Brit

s. Night-blooming
succulent stems of *Selen*
ose, Cactaceae. Habit
ne(?), acrid resinous

n used as circulatory stim

methyl-4-(1-methylethyl)
ethylnaphthalene; cadalin
15%, H 9.15%. Obtained
penes or sesquiterpene

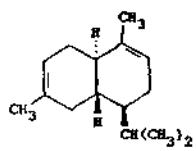


Liquid d_4^{25} 0.9667, bp_{10} 291-292°; bp_{10} 149°, n_D^{25} 1.5785. λ_{max} 228, 232, 280, 284, 295, 310, 317, 325 nm. Insol in water; sol in fat solvents, oils.

Picrate. $C_{21}H_{21}N_3O_7$, orange needles from alc, mp 115°.

sym-Trinitrobenzoate. $C_{21}H_{21}N_3O_6$, yellow needles from alc, mp 112-113°.

1599. **Cadinenes.** $C_{15}H_{24}$; mol wt 204.34. C 88.16%, H 11.84%. Sesquiterpenes occurring in essential oils from Juniper species and cedars (oil of cade). Nine possible isomers differing in stereochemistry and position of the double bonds, the principal isomer being *β-cadinene*: Sykora *et al.*, *Chem. Listy* 52, 1314 (1958). Prepn and structure: Campbell, Soffer, *J. Am. Chem. Soc.* 64, 417 (1942); Campbell *et al.*, *ibid.* 425; Rao *et al.*, *Tetrahedron Letters* no. 27, p 27 (1960); Herout *et al.*, *Coll. Czech. Chem. Commun.* 31, 3012 (1966). Synthesis: Soffer, Günay, *Tetrahedron Letters* 1965, 1155. Of the nine possible isomers, all able to yield (−)-cadinene dihydrochloride, six are known: Herout, Sykora, *Tetrahedron* 4, 246 (1958); Kartha *et al.*, *ibid.* 19, 241 (1963). Structure and configuration of isomers: Sykora *et al.*, *Coll. Czech. Chem. Commun.* 23, 2181 (1958). Brief review in *Rodd's Chemistry of Carbon Compounds*, vol. 2, pt. C, S. Coffey, Ed. (Elsevier, New York, 1969) pp 268-270.



δ-cadinene

γ-Cadinene, oil. Slight pleasant odor. bp_9 124°, d_4^{20} 0.9219, n_D^{20} 1.5059, $[\alpha]_D^{20}$ −251°.

1600. **Cadmium.** Cd; at. wt 112.40; at. no. 48; valence 2. Group 2b element. Abundance in earth's crust: 0.1 to 0.2 ppm. Natural isotopes: 114 (28.86%); 112 (24.07%); 111 (12.75%); 110 (12.39%); 113 (12.26%); 116 (7.58%); 106 (1.22%); 108 (0.88%); known isotopes range in mass number from 103 to 121. Found in zinc ores; also as CdS, greenockite; $CdCO_3$, otavite. Obtained in vapor form when roasting zinc ores, as sludge from zinc sulfate purification. Lab prepn from $CdSO_4$: Treadwell, *Helv. Chim. Acta* 4, 551 (1921). *Review:* Aylett "Group IIB" in *Comprehensive Inorganic Chemistry*, vol. 3, J. C. Bailar Jr. *et al.*, Eds. (Pergamon Press, Oxford, 1973) pp 187-328.

Silver-white, blue-tinged, lustrous metal; distorted hexagonal close-packed structure; easily cut with a knife; available in the form of bars, sheets or wire or a gray, granular powder. mp 321°; bp 765°; d^{25} 8.65; C_p (25°) 6.22 cal/mole deg. Slowly oxidized by moist air to form CdO. E° (aq) Cd/Cd^{2+} 0.4025 V. Insol in water; reacts readily with dil HNO_3; reacts slowly with hot HCl; does not react with alkalies. Other reactions similar to those of zinc. Solns of cadmium salts and H_2S or Na_2S yield a yellow ppt insol in excess Na_2S. Cadmium and its salts are highly toxic.

USE: A constituent of easily fusible alloys, e.g., Lichtenberg's, Abel's, Lipowitz', Newton's, and Wood's metal; soft solder and solder for aluminum; electroplating (major use); deoxidizer in Ni plating; process engraving, electrodes for cadmium vapor lamps, photoelectric cells; photometry of ultraviolet sun-rays; in Ni-Cd storage batteries. The powder: ... irritant reactiveness and irritability, pneumonitis, possibly brochopneumonia. Implicated as causative agent in Itai-Itai disease in Japan. *See* E. Browning, *Toxicity of Industrial Metals* (Appleton-Century-Crofts, New York, 2nd ed., 1969) pp 98-108; Flick *et al.*, *Environ. Res.* 4, 71-85 (1971); Fassett, *Ann. Rev. Pharmacol.* 15, 425-435 (1975).

THERAP CAT (VET): Many cadmium salts, especially the oxide and anthranilate, are used or have been suggested as anthelmintics in swine and poultry.

1601. **Cadmium Acetate.** $C_4H_6CdO_4$; mol wt 266.53. C 20.84%, H 2.62%, Cd 48.77%, O 27.77%. $Cd(CH_3COO)_2$. Prepd by treating cadmium nitrate with acetic anhydride: Späth, *Monatsh.* 33, 241 (1912); Wagenknecht, Juza, in *Handbook of Preparative Inorganic Chemistry*, vol. 2, G. Brauer, Ed. (Academic Press, New York, 2nd ed., 1965) p 1105.

Dihydrate, crystals. Slight acetic acid odor; becomes anhydr at about 130°. d 2.01. d (anhydr) 2.341. mp (anhydr) 255°. Freely sol in water; sol in alcohol. pH of 0.2 molar aq soln 7.1.

USE: Producing iridescent effects on porcelains and pottery; as a reagent for determination of S, Se, and Te; in cadmium electroplating.

1602. **Cadmium Bromide.** Br_2Cd; mol wt 272.24. Br 58.71%, Cd 41.29%. $CdBr_2$. Usually prepd from the elements: Honigschmid, Schloe, *Z. Anorg. Allgem. Chem.* 227, 184 (1936); Wagenknecht, Juza, in *Handbook of Inorganic Chemistry*, vol. 2, G. Brauer, Ed. (Academic Press, New York, 2nd ed., 1965) p 1096.

Hexagonal, pearly flakes; highly hygroscopic. mp 566°; bp 963°; d 5.192. Freely sol in water, alc; moderately sol in acetone; slightly sol in ether. Crystallizes as the monohydrate below 36°, as the tetrahydrate above 36°.

USE: In photography, process engraving, and lithography.

1603. **Cadmium Carbonate.** $CCdO_3$; mol wt 172.42. C 6.97%, Cd 65.20%, O 27.84%. $CdCO_3$. Occurs in nature as the mineral, *otavite*. Prepn: de Schulten, *Bull. Soc. Chim. France* [3] 19, 34 (1898); Biltz, *Z. Anorg. Allgem. Chem.* 220, 312 (1934).

Powder or rhombohedral leaflets. d 4.26. Practically insol in water; sol in concd solns of ammonium salts, dil acids.

1604. **Cadmium Chloride.** $CdCl_2$; mol wt 183.32. Cd 61.32%, Cl 38.68%. Prepn: *Gmelin's, Cadmium* (8th ed.) 33, pp 82-83 (1925); supplement, pp 464-465 (1959); Pray, *Inorg. Syn.* 5, 153 (1957).

Hygroscopic, rhombohedral crystals. mp 568°; bp 960°; d 4.05. Freely sol in water; sol in acetone; slightly sol in methanol, ethanol; practically insol in ether. LD_{50} orally in rats: 88 mg/kg. *Toxic Substances List*, H. E. Christensen *et al.*, Eds. (1974).

Hemipentahydrate, efflorescent granules or rhombohedral leaflets. d^{25} 3.33. Freely sol in water.

USE: Photography; dyeing and calico printing; in the vacuum tube industry; manuf of cadmium yellow; galvanoplasty; manuf of special mirrors; as ice-nucleating agent; as lubricant; in analysis of sulfides to absorb the H_2S; in testing for pyridine bases.

1605. **Cadmium Cyanide.** C_2CdN_2; mol wt 164.45. C 14.61%, Cd 68.36%, N 17.04%. $Cd(CN)_2$. Prepn from $Cd(OH)_2$ and HCN: Biltz, *Z. Anorg. Allgem. Chem.* 170, 161 (1928); Wagenknecht, Juza in *Handbook of Preparative Inorganic Chemistry*, vol. 2, G. Brauer, Ed. (Academic Press, New York, 2nd ed., 1965) p 1105.

Crystals or white powder. Turns brown on heating in air. *Very poisonous!* d 2.226. Soly in water (15°) 1.71 g/100 ml. Slightly sol in alc; sol in solns of alkali cyanides or hydroxides; not appreciably attacked by organic acids, but readily dec by dil mineral acids with evolution of hydrogen cyanide. Readily forms complex cyanides.

used in copper bright electroplating.

Merck Index

Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: HIGH ipr, ivn; MOD orl, scu.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-, NO_x.
For further information see Vol. 3, No. 5 of *DPIM Report.*

CHOLINE SALICYLATE

CAS RN: 2016366 NIOSH #: GA 6475000
mf: $C_{12}H_{19}NO_4$; mw: 241.32

SYNS:
CHOLINE SALICYLATE B
(2-HYDROXYETHYL)TRIMETHYLAMMONIUM SALICYLATE

TOXICITY DATA:	2	CODEN:
orl-rat LD50:1530 mg/kg		12VXA5 8,255,68

Reported in EPA TSCA Inventory, 1980.
THR: MOD orl.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

CHOLINE SUCCINATE (2:1) (ESTER)

CAS RN: 306401 NIOSH #: GA 7000000
mf: $C_{14}H_{30}N_2O_4$; mw: 290.46

SYNS:
CHOLINE SUCCINATE (ESTER)
DIACETYLCHOLINE
SUCCINIC ACID DIESTER WITH CHOLINE
SUCCINOYLCHOLINE
SUCCINYLBISCHOLINE
SUCCINYLDICHOLINE

TOXICITY DATA:	3	CODEN:
orl-mus LD50:125 mg/kg		27ZIAQ -,-,65
ipr-mus LD50:2140 ug/kg		AIPTAK 152,277,64
scu-mus LD50:7500 ug/kg		ARZNAD 15,126,65
ivn-mus LD50:480 ug/kg		ARZNAD 19,1598,69
ivn-dog LDLo:300 ug/kg		AIPTAK 88,1,51
ivn-rbt LD50:800 ug/kg		AIPTAK 88,1,51

THR: HIGH orl, ipr, scu, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

CHONDROITINSULFURIC ACID

CAS RN: 9007287 NIOSH #: GA 8430000

SYNS:
CHONDROITIN, HYDROGEN SULFATE
CHONDROITIN POLYSULFATE
CHONDROITIN SULFATE

TOXICITY DATA:	3	CODEN:
par-mus TDLo:800 mg/kg/(9-11D preg):TER		85DGAU 2,37,76

Reported in EPA TSCA Inventory, 1980.
THR: An exper TER.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x.

CHROMACID FAST RED 3B

CAS RN: 1836222 NIOSH #: QJ 6402600
mf: $C_{17}H_{12}N_2O_9S_2 \cdot 3Na$; mw: 521.40

SYNS:
C.I. 16105
ERIO CHROME RED PE
EXT. D AND C RED NO. 2

TOXICITY DATA:	2	CODEN:
mmo-sat 500 ug/plate		MUREAV 56,249,78

Reported in EPA TSCA Inventory, 1980.
THR: MUT data.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

CHROMIC ACETATE

CAS RN: 1066304 NIOSH #: AG 2975000
mf: $C_6H_9O_6 \cdot Cr$; mw: 229.15

Gray, green powd or bluish green pasty mass.

SYNS:
CHROMIUM(III) ACETATE
CHROMIUM TRIACETATE

TOXICITY DATA:	3	CODEN:
mmo-esc 16 mmol/L		MUREAV 58,175,78
mrc-bcs 160 mmol/L		MUREAV 58,175,78
cyt-hmn:leu 16 umol/L		MUREAV 58,175,78
imp-rat TDLo:1000 mg/kg/56W-I:ETA		AEHLAU 5,445,62
ivn-mus LDLo:2290 mg/kg		EQSSDX 1,1,75
ivn-rbt LDLo:1604 mg/kg		EQSSDX 1,1,75

Carcinogenic Determination: Indefinite IARC** 2, 100,73; IARC** 23,205,80. *Toxicology Review:* 85DHAX Cr,22,74. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper ETA, ± CARC. MOD ivn. See also chromium compounds.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

CHROMIC ACID

CAS RN: 7738945 NIOSH #: GB 2450000
mf: CrH_2O_4; mw: 118.02

SYNS:
ACIDE CHROMIQUE (FRENCH)
CHROMIC (VI) ACID

TOXICITY DATA:	CODEN:
mmo-sat 80 ug/plate	MUREAV 54,139,78

Aquatic Toxicity Rating: TLm96:000-under 1 ppm WQCHM* 2,-,74. Criteria Document: Occupational Exposure to Cr(VI) rec std: Air: TWA 25 ug (Cr (VI))/m3; CL 50 ug/m3/15M NTIS**.
Standards and Regulations: OSHA Standard Air: CL 100 ug(CrO_3/m3 (SCP-0) FEREAC 39,23540,74. NIOSH Manual of Analytical Methods VOL. 1 152,169, VOL. 3 S317. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. See also chromium compounds. A poison.
Disaster Hazard: When heated to decomp it emits smoke and irr fumes.
Incomp: Acetone.
For further information see Vol. 2, No. 2 and Vol. 3, No. 3 of *DPIM Report.*

SAX, 5th Ed.

CHROMIC ACID (MIXTURE)

NIOSH #: GB 2650000

mf: CrO_3; mw: 100.01

mp: 196°; d: 2.70; dark red cryst; decomp @ 250° to $Cr_2O_3 + O_2$; a powerful oxidizer. Water sol.

SYNS:
CHROMIUM TRIOXIDE
CHROMIC ANHYDRIDE

TOXICITY DATA: CODEN:
DOT: Oxidizer, Label: Oxidizer FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.
THR: A poison. See also chromium compounds and chromates. A powerful irr of skn, eyes and mu mem; can cause a dermatitis, bronchoasthma, "chrome holes," damage to the eyes.
Disaster Hazard: May explode in a fire.
Incomp: Acetic acid; acetic anhydride; tetrahydronaphthalene; acetone; alcohols; alkali metals; ammonia; arsenic; bromine penta fluoride; butyric acid; n,n-dimethylformamide; hydrogen sulfide; peroxyformic acid; phosphorus; potassium hexacyanoferrate; pyridine; selenium; sodium; sulfur.

CHROMIC ACID (SOLUTION)

NIOSH #: GB 2670000

SYN: CHROMIC ACID SOLUTION (DOT)

TOXICITY DATA: 3 CODEN:
DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.
THR: See chromic acid, dry. See also chromium compounds.

CHROMIC CHLORIDE STEARATE

CAS RN: 15242963 NIOSH #: GB 7280000
mf: $C_{18}H_{36}Cl_4Cr_2O_3$; mw: 546.34

SYNS:
TETRACHLORO-MU-HYDROXY-(MU-OCTADECANOATO-O:O') DI-CHROMIUM
NCI-c60800
STEARATO-CHROMIC CHLORIDE COMPLEX
TETRACHLORO-MU-HYDROXY-(MU-STEARATO)DI-CHROMIUM

TOXICITY DATA: 3 CODEN:
ivn-mus LD50:180 mg/kg CSLNX* NX#03305

Reported in EPA TSCA Inventory, 1980.
THR: HIGH ivn. See also chromium compounds.
Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

CHROMIC CHROMATE

CAS RN: 24613896 NIOSH #: GB 2850000
mf: $Cr_3O_{12}\cdot 2Cr$; mw: 452.00

SYNS:
CHROMIC ACID, CHROMIUM (3+) SALT (3:2)
CHROMIUM CHROMATE

TOXICITY DATA: 3 CODEN:
imp-rat TDLo:112 mg/kg:NEO AIHAAP 20,274,59

Carcinogenic Determination: Animal Positive IARC** 2,100,73. Occupational Exposure to Chromium(VI) recm std: Air: CL 1 ug(Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.
THR: An exper NEO, CARC. See also chromium compounds. Very powerful oxidizer.

CHROMITE (MINERAL)

CAS RN: 1308312 NIOSH #: GB 4000000
mf: Cr_2FeO_4; mw: 223.85

SYNS:
CHROME ORE
IRON CHROMITE
CHROMITE ORE

TOXICITY DATA: 3 CODEN:
Carcinogenic Determination: Indefinite IARC** 23,-205,80.
THR: See also chromium compounds and iron. An exper ± CARC.

CHROMIUM

CAS RN: 7440473 NIOSH #: GB 4200000
Af: Cr; Aw: 52.0

SYN: CHROME

TOXICITY DATA: CODEN:
ivn-rat TDLo:2160 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rat TDLo:1200 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rbt TDLo:75 mg/kg:ETA ZEKBAI 52,425,42

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Animal Indefinite IARC** 23,205,80. TLV-TWA 500 ug/m3 DTLVS* 4,98,80. *Toxicology Review:* 85CVA2 5,63,70; KOTTAM 11(11),1300,75; FOREAE 7,313,42; MIBUBI 9(4),321,75; FCTXAV 9,105,71; PEXTAR 12,102,69; 85DHAX Cr,22,74; BNYMAM 54,413,78; NTIS** Conf-691001. OSHA Standard: Air: TWA 1 mg/m3 (SCP-0) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 1 152,182, VOL 3; S323,352, VOL 5 173#. NIOSH Current Intelligence Bulletin 4, 1975. Reported in EPA TSCA Inventory, 1980. Proposed OSHA Medical Records Rules FEREAC 47,30420,82.
THR: An exper ETA, CARC.
Disaster Hazard: Powder will explode spont in air.
Incomp: Oxidants.
For further information see Vol. 3, No. 3 of *DPIM Report.*

CHROMIUM ACETATE HYDRATE

CAS RN: 628524 NIOSH #: AG 3000000
mf: $C_4H_6CrO_4\cdot H_2O$; mw: 188.12

Red crystals.

SAX, 5th Ed.

NINE PAGES REDACTED
Exemption 6,
5 U.S.C. §552(b)(6)
Personal Privacy Information

SITE DOSIMETER LOG

TDD# F05-8611-149 SITE NAME Bick's Lake

SITE SAFETY OFFICER Tim Mayers WEEK OF 4-18-88

NAME AND DOSIM. #	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Steve Anderson 160							
Joe Corns 147							
Gordon Ferguson 134							
Tim Mayers 149							
Zelma Zieman							

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".

ECOLOGY AND ENVIRONMENT, INC.
CHICAGO
FIELD EQUIPMENT CHECKLIST

Beck's Lake

TEAM LEADER: Steve Anderson
PAN: FIN0476 SA
DATE OF DEPARTURE: 4-18-88
EXPECTED DATE OF RETURN: 4-22-88

A) Safety Instruments
- ___ Photovac TIP ID#
- 1 Monitox (HCN) ID#
- ___ HNU, 10.2 OR 11 LAMP ID#
- 1 OVA (organic vapor analyzer ID#
- ___ Explosimeter/O2 meter ID#
- ___ Drager pump, specify tube type (HCN, Natural Gas, or other) ID#
- 1 Rad-Mini ID#
- ___ Radiation, other: ___ ID#
- ___ Monitox (HCN) ID#
- ___ Heat stress monitor ID#
- ___ Noise equipment ID#
- ___ Dust monitor-MDA system ID#

B) First Aid Equipment (specify quantity)
- 1 First aid kit
- ___ Oxygen Inhaler
- 1 Eyewash bottle

C) Miscellaneous Safety Equipment (specify quantity)
- ___ Hard hat
- 4 Safety glasses
- 2 Life vests
- ___ Ice vests
- ___ Hearing protection

D) Respiratory Equipment (specify quantity)
- ___ Racal P.A.P.R. ID#
- ___ Robert Shaw escape mask ID#
- ___ MSA SCBA ID#
- ___ Extra air cylinders ID#

E) Respiratory Cartridges (specify quantity)
- 20 GMC-H
- ___ GM-P
- ___ AP-3 (for Racal)
- ___ Other

F) Protective Clothing

1. Suits (specify quantity)
   - ___ Saranex, Size: M__, L__, XL__, XXL__
   - ___ Splash apron
   - ___ Butyl acid suits
   - ___ Fully encapsulated suits
   - X Tyvek, size: M__, L2, XL6, XXL2

2. Gloves (specify quantity)
   - /Box X Latex disposable, Size: M__, L X
   - ___ Butyl Rubber, Size: M__, L__
   - ___ Nitrile, Size: M__, L__
   - ___ Neoprene, Size: M__, L__
   - X Viton, Size: M 1, L 4
   - 5 Glove liners, Size: M__, L__

3. Boots (specify quantity)
   - ___ Neoprene, Size:
   - X Latex disposable, Size: L 1, XL 9
   - (if cold) 5 Winter boots, ___ Size:
   - ___ Other: ___ Size

G) Vehicles
- ___ Suburban ID#
- ___ Cargo Van ID#
- ___ Step Van ID#

H) Sample Bottles (specify quantity)
- ___ 80 oz. amber glass
- ___ 1 L. amber glass
- ___ 40 mL. vial
- ___ 1 L. plastic
- 12 8 oz. glass
- 12 120 mL. glass
- ___ Dioxin Sample Kit

5 soil

I) Preservatives (specify quantity)
- ___ HNO3
- ___ NaOH
- ___ Other:

J) Decon Supplies (specify quantity)
- 1 Wash tubs
- 2 Buckets
- 2 Scrub brushes
- 1 Solvent
- 1 Detergent (Alconox)
- 4 MSA Sanitizing Solution

K) Field Equipment (specify quantity)
- ___ Conductivity meter ID#
- ___ PH meter ID#
- ___ Thermometer ID#
- ___ Masterflex pump and filter apparatus ID#
- 1 Camera ID#
- ___ Compass ID#
- ___ Water-level indicator ID#
- ___ Split-spoon samplers ID#
- ___ Bailers ID#
- ___ Magnetometer ID#
- ___ Resistivity meter ID#
- ___ Robair pump system ID#
- ___ PVC hand pump ID#
- ___ Well point sampler ID#
- ___ Air sampling pump kits ID#
- ___ Buck calibrator ID#
- ___ Meteorological station ID#
- ___ Level/tripod and rod ID#
- ___ Pitcher pump ID#
- ___ Photovac ID#
- ___ Thermal desorber ID#
- ___ Other: ___ ID#

1 H_2 CYLINDER
1 waders
2 life preserver jackets

(F. D. Most, 12/87)

ECOLOGY AND ENVIRONMENT, INC.
FIELD INVESTIGATION TEAM
ON-SITE SAFETY MEETING

Project Beck's Lake

Date _____ Time _____ Job No. FIN047651

Address _____

Specific Location _____

Type of Work _____

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment _____

Chemical Hazards _____

Physical Hazards _____

Emergency Procedures _____

Hospital/Clinic Memorial Hospital Phone 219-284-7458

Special Equipment _____

Other _____

ECOLOGY AND ENVIRONMENT, INC.
FIELD INVESTIGATION TEAM
ON-SITE SAFETY MEETING

ATTENDEES

Name (Printed)	Signature
Steve Anderson	
TIM Mayers	
Joe Corns	
Gordon Ferguson	
Zelma Zieman	

Meeting Conducted By:

Site Safety Officer:

Tim Mayers

Team Leader:

Steve Anderson

Tim Mayers

ON-SITE SAFETY LOG

ECOLOGY AND ENVIRONMENT, INC.
CHICAGO

A. ON-SITE MONITORING

EQUIPMENT USED	BACKGROUND READING IN BREATHING ZONE	CALIBRATED AT	ON-SITE READING IN BREATHING ZONE
1. OVA			
2. Monitox			
3. Rad-Mini			
4.			
5.			

B. PROTECTIVE CLOTHING WORN: _____

C. SITE NAME: Beck's Lake PAN/JOB NUMBER: FIN C476SA

DATE: _____

WEATHER CONDITIONS: _____

NAMES OF ATTENDEES AT SITE: _____

D. COMMENTS ON MONITORING OR PROTECTIVE CLOTHING: _____

	NAME	SIGNATURE
TEAM LEADER:	Steve Anderson	
SITE SAFETY OFFICER:	Tim Mayers	

(P.D. Moss 12/87)