(

Soil sampling

Environmental Site Investigation,
for

Dover Electronics Company

SEM-East and Kirkwood North Losegons



Propaged By:
Hagiopian Engineering Associates
23 Alice Street
Binghamton, NY 13904
(607) 772-0012

Environmental Site Investigation

for

Dover Electronics Company

DEM-East and Kirkwood North Locations

Prepared By:
Hagopian Engineering Associates
28 Alice Street
Binghamton, NY 13904
(607) 772-0012



28 Alice St. Binghamton, NY 13904 (607) 772-0012

		ghamto) 772-00	n, NY 13904 012		6/21/91 ATTENTION Mr. Tom Suoz	zo
TO	NYS DEC				Dover Electron	
то :	Box 1803					
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GENTLE	MEN:				9	the following items:
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DATE

JOB NO.

IF ENCLOSURES ARE NOT AS NOTED, KINDLY NOTIFY US AT ONCE.

October 8, 1990

ENVIRONMENTAL SITE INVESTIGATION for Dover Electronics

Hagopian Engineering Associates performed an environmental site investigation for Dover Electronics Co. at their Conklin Avenue, DEM-East, and Kirkwood Industrial Park, Kirkwood North, locations. The purpose of this environmental investigation is for Dover to establish an environmental base line for both of these facilities subsequent to their taking them over from Universal Corp.

Conklin Avenue DEM-East Facility

The investigation of the DEM-East facility involves two separate investigations. The first investigation was to identify the problem causing the oil staining of the floor tiles in the older portion of the complex; specifically, the 1956 building, and to determine how to resolve this problem. The second portion was to investigate the property around the building to establish if any contamination is present on site from past operations at this location.

Site History

The original building was constructed in 1956 to house the Binghamton Plastics operation. The building has been expanded on three occasions: 1963, 1974 and 1982. Universal Instruments Corporation purchased the facility in the early 1980s and continued

operations until Universal was taken over by Dover Electronics Corporation.

A review of information received from the Broome County Health Department found that allegedly, Binghamton Plastics had a dump site at the facility as identified in the Register of Hazardous Waste Dump Sites, Broome County, New York, 1981, Attachment 1. According to the register, plastics and oil were dumped at the site. A review of the aerial photographs for 1955, 1965 and 1968 showed no obvious areas of dumping.

There was a 1,000 gallon underground storage tank located next to the southwest corner of the 1956 building. The tank was used as a reservoir for the hydraulic oil used in the plastic extrusion equipment. The tank was never used by Universal, and in approximately 1986 Universal had the tank removed. The tank was found to contain approximately 650 gallons of hydraulic oil contaminated with 1,1,1 - Trichloroethane and Trichloroethylene.

This information was used to help establish sampling locations for the investigation of the property.

1956 Building

Concrete core samples from six locations identified on the location map were taken and sent to Upstate Laboratories for analysis to determine if there was any chemical or hydraulic oil contamination that may be causing seepage through the concrete to the surface of the tiles. The analysis of these core samples, attachment 2 - #3 concrete core and #6 concrete core, found no

chemical contamination; however, hydraulic oil was detected in the top surface of the #3 concrete core. There was no contamination found in the below slab soil samples taken from the concrete core locations, Attachment 2-TH3 and TH5.

Joseph Leva Sr., owner of Leva Brothers Tile and Marble, was contacted, and the seepage problem was discussed with him. According to Mr. Leva, the practice of applying cutback on concrete and replacing the tiles without letting the cutback cure a minimum period of time as required by the manufacturer's specifications will cause seepage to the surface of the tile. This problem will continue as long as the tile is allowed to remain in place. Also according to Mr. Leva, if there is oil impregnated in the top surface of the concrete, it will enhance this problem and make the seepage reappear quickly after cleaning.

The tile staining problem does not represent an environmental problem from contamination below the tiles, and it also does not represent an employee exposure problem because no chemical contamination was detected, Attachment 2. However, if Dover wants to correct the problem for cosmetic reasons, the following procedures are recommended.

- 1. Remove tile in effected area.
- 2. Bush hammer the concrete floor.
- 3. Sweep and clean the area.
- 4. Apply new underlayment leveling course.

5. Apply new cutback floor tile adhesive and let cure according to manufacturer's specifications prior to applying the new tile.

Investigation of the property

Based on the historical review, location of the former underground tank and review of the chemicals used at the facility (past and present), soil boring locations and analytical requirements were established (see map).

The analysis of soil samples where contamination was detected is summarized in the following table (Refer to map for exact boring locations).

Parameter	Boring Location B-3C	Boring Location B4 <u>C</u>
Lubricating Oil	Detected	Detected
1,1,1 - Trichloroethane	230 ug/Kg	59 ug/Kg
Trichloroethylene	31 ug/Kg	88 ug/Kg
Carbon Tetrachloride	33 ug/Kg	Not detected

No contamination was detected in the samples taken from both the south and east sides of the facility (Attachment 3 - boring locations B-8C and B-9C).

Based on this information, it appears that the contamination is restricted to the western portion of the property.

It is unknown how the contamination got into the soil, and it is also unknown if the groundwater is contaminated.

Kirkwood North Facility

The Dover Kirkwood North site investigation involved testing

an area in the still/perchloroethylene storage area, soil testing next to the 10,000 gallon #2 fuel oil underground storage tank, soil testing next to the waste perchloroethylene above ground tanks and soil testing next to the empty drum storage shed, which used to be the hazardous waste drum storage area (see boring location map).

Internal Investigation

A concrete core and below slab soil sample was taken from the diked still/perchloroethylene storage area. The analysis of the concrete showed trace amounts, 69 ppb, of perchloroethylene (tetrachloroethylene), but the soil sample from below the core showed no trace of contamination (see Attachment 4 - C1-K concrete core and TH1K soil). The concrete is coated with an epoxy sealer; therefore, any perchloroethylene contamination of the concrete is effectively encapsulated and should not pose a threat to the environment.

Investigation of Property

The sample taken from next to the 10,000 gallon underground #2 fuel oil tank showed no signs of contamination (see Attachment 3 - B3K). However, the only way to be absolutely sure the tank is not leaking is to run a tightness test, which is periodically required by the NYS Department of Environmental Conservation based on the age and type of the tank.

Soil contamination was found in two areas; next to the empty drum storage shed (Attachment 3 - B5K) and next to the waste

Dover Electronics Page 6 October 8, 1990

perchloroethylene tanks (Attachment 3 - BK1 and BK1A), summarized in the following table.

	Boring Location BK1	Boring Location BK1A	Boring Location B5K
1,1,1 - Tri- Chloroethane	<15 ug/Kg**	< 15 ug/Kg**	22 ug/Kg
Tetrachloro- ethylene	0.00		
(Perchloro- ethylene)	260 ug/Kg	31 ug/kg	390 ug/Kg
	** Less than d	etection limit	

It is unknown what caused the contamination at both these locations. In the case of the empty drum storage shed, there was some trapped water under the pavement. The trapped water disappeared as soon as the soil boring began and there was no recharge. The water could have contained the contamination; water that dripped off of the drums or minor drippage of the raw material from the drums that leached through the blacktop. The soil at the bottom of the test hole was dry.

The perchloroethylene contamination next to the waste perchloroethylene tank seems to significantly decrease based on the sample depth. The sample taken from 2' - 4' below grade (BK1) had a concentration of 260 ug/Kg, and the sample taken from 4' - 5.3' below grade, BK1A, had a concentration of 31 ug/Kg.

Based on the location of the borings BK1 and BK1A in relation to the waste perchloroethylene tanks and discharge lines, it is possible that the contamination is the result of minor releases when a tank is on or off loading.

Recommendations - DEM-East and Kirkwood North

Contamination was detected in the soil on the west side of the DEM-East facility, and next to the empty drum storage shed and waste perchloroethylene tanks at the Kirkwood North facility. The extent of contamination is unknown, and it is also unknown if the groundwater is contaminated.

We recommend that Dover Electronics Company undertake an investigation to determine the extent of the identified contamination at both sites. These investigations should involve a concentrated soil gas sampling and groundwater monitoring program to determine the physical size of the area affected and the potential impact on the surrounding environment.

We appreciate the opportunity to be of service to you, and if you have any questions regarding this report, please feel free to contact us.

Yours truly,

HAGOPIAN ENGINEERING ASSOCIATES

Donald J. Wright

Manager, Environmental Services

ATTACHMENT 1

Broome County Health Department Information On Sites and Surrounding Areas Kathleen A. Gaffney, M.D., M.P.H., Commissioner

Timothy M. Grippen, County Executive

June 19, 1990

Mr. Donald Wright Hagopian Engineering Associates 28 Alice Street Binghamton, NY 13904

RE: Request for Area Record Search (ARS) - Binghamton (T) Dover Electronics Facility, 498 Conklin Ave.

Dear Mr. Wright:

The above-mentioned parcel of land is located in the Susquehanna River watershed, specifically Subshed No. 99-011 as identified by the Broome County Health Department. A review of our files has revealed three contaminated sites within a 1/2 mile radius of the property in question. The first of these is the Binghamton Plastics dump, which is listed as having the same address as the above-mentioned Dover facility. Waste plastics and oils are thought to have been disposed here during the years of operation of the Binghamton Plastics Co. manufacturing operation. Mardin and Channery silt loams are the primary on-site soils. Depth to seasonal high water table in the vicinity of the property is about two feet.

The Contro-Neville dump is situated about 1/8 mile to the southeast of the Dover property. This site received assorted demolition debris of unknown composition. It is not known what, if any, measures were taken to line this site or provide a cap prior to its abandonment.

The Stein Builders site is located about 1/4 mile to the south of the Dover facility. This is another uncontrolled demolition debris dump similar to the Contro-Neville site.

Conklin well #1 is located about 1/2 mile to the east of the Dover property. It became necessary to abandon this well when volatile organics contamination in excess of New York State standards was observed there in the early 1980s. The source of at least some of this contamination is thought to be the nearby Savin facility.

Health Department files do not at present show problems other than those mentioned above with groundwater or surface water contamination on or hear the property. This, however, does not

preclude the existence of nearby unrecorded contaminant sources such as unregulated dump sites or leaks from underground chemical storage tanks.

The files searched contain information collected for the Ground Water Management Program (GWMP) and records of the Broome County Health Department. These include data from SPDES permits, public wells, New York State and Federal Superfund sites, watershed and landfill plume data, engineering site plans, reports from local citizens, NYS ICS, US RCRA, well point and sewage permits. For spill site and underground chemical storage locations, please refer to the New York State Department of Environmental Conservation.

Thank you for your request. I hope this information will be of some assistance in your investigation. If there are any questions concerning the above information, I can be contacted at 778-2887.

Respectfully,

Ronald S. Brink

Ronald Sing

Groundwater Management Specialist

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OF SOUTHERN ITER PLOOTICS

Prc. 6/2/90

Kathleen A. Gaffney, M.D., M.P.H., Commissioner

Timothy M. Grippen, County Executive

June 19, 1990

Mr. Donald Wright Hagopian Engineering Associates 28 Alice Street Binghamton, NY 13904

RE: Request for Area Record Search (ARS) - Kirkwood (T)
Dover Electronics Facility, Kirkwood Industrial Park

Dear Mr. Wright:

The above-mentioned parcel of land is located in the Susquehanna River watershed, specifically Subshed No. 39-006 as identified by the Broome County Health Department. A review of our files has revealed three contaminated sites within a 1/2 mile radius of the property in question. The first of these is the Truck Stops of America dump, which is located approximately 1/2 mile to the southwest of the Dover plant. Liquid hazardous wastes of unknown composition are thought to have been illegally disposed here directly adjacent to Stratton Mill Creek. Shallow subsurface geology at this site includes alluvial sand and gravel overlying lacustrine clays.

A 2000 gallon xylene spill occurred about 3/8 mile to the southeast of the Dover property near Route 11 on 1/20/83. A large proportion of this chemical was not recovered during subsequent clean-up efforts.

Approximately 1000 gallons of a combined phosphoric/nitric acid solution (45%/10% mixture) was spilled at the Frito Lay factory on 8/10/84, about 1/2 mile to the south of the Dover plant. Much of this chemical solution escaped into the ground, with the remainder ultimately reaching the Susquehanna River.

A SPDES permit is in effect for discharges from the Singer-Link plant located about 1/4 mile to the southeast of the Dover property. Local sewage and water systems are publicly owned.

Health Department files do not at present show problems other than those mentioned above with groundwater or surface water contamination on or near the property. This, however, does not preclude the existence of nearby unrecorded contaminant sources such as unregulated dump sites or leaks from underground chemical storage tanks.

The files searched contain information collected for the Ground Water Management Program (GWMP) and records of the Broome County Health Department. These include data from SPDES permits, public wells, New York State and Federal Superfund sites, watershed and landfill plume data, engineering site plans, reports from local citizens, NYS ICS, US RCRA, well point and sewage permits. For further spill site and underground chemical storage locations, please refer to the New York State Department of Environmental Conservation.

Thank you for your request. I hope this information will be of some assistance in your investigation. If there are any questions concerning the above information, I can be contacted at 778-2887.

Respectfully,

Ronald S. Brink

Ronald Ering

Groundwater Management Specialist

RSB/eh
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PRELIMINARY

28 POTENTIAL SITES

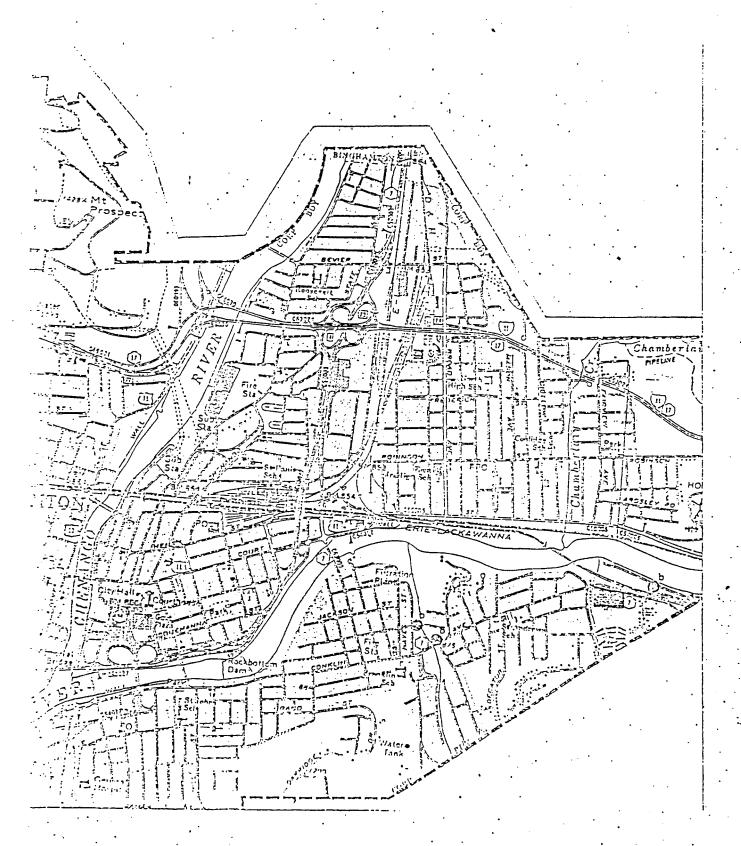
Register of Hazardous Waste
Dump Sites,
Broome County, New York
1981

Ву

Principle Author Kenneth Goldstein

Contributing Authors
Karen Berk
Elizabeth Hagg

State University of New York, Binghamton
Department of Geography
Internship Program
for the
Broome County Environmental Management Council



SITE LOCATION:

Binghamton Plastics-498 Conklin Avenue, Binghamton, New York, between Chambers Street and 3t. Clair.

STATUS:

WASTE MATERIAL:

Plastics and oil

SOIL SERIES:

	Depth to Bedrock (ft.)	Depth to Seasonal High Water Table (ft.)	Permeability Rate (in./hr.)
Mardin Channery Silt	5+	112-2	0.63-2.0 0.20

POPULATION DENSITY AND LAND USE:

0-9 people/acre, Industrial/Commercial

PRIORITY:

1 (low)

Loam

COMMENTS:

Binghamton Plastics has moved from this location, and no longer owns the property. Consequently, this firm has ceased dumping there.

INFORMATION SOURCES:

Broome County Industrial Survey, Broome County Planning Department, June, 1978;

"Broome County Toxic Waste Inventory," Broome County Environmental Management Council, December, 1979.

USERS:

Binghamton Plastics

WELLS AND TEST BORINGS:

04-25b, 48-19b, 51-24b

SURFACE WATER:

GROUND WATER:

ATTACHMENT 2

Dover DEM-East Laboratory Results of Concrete Cores and Below Slab Soil Samples from the 1956 Building

Upstate Laboratories inc.

Shipping: 6034 Corporate Drive • East Syracuse, New York 13057 • (315) 437-0255 __ Mailing: Box 289 • Syracuse, New York 13206 Southern Region (607) 724-0478 Western Region (716) 436-9070

August 1, 1990

Mr. John K. Hagopian President Hagopian Engineering Associates 28 Alice Street Binghamton, New York 13904

Re: Analysis Report #080190055 - Dover Conklin Ave

Dear Mr. Hagopian:

Please find enclosed the results for your samples which were picked up by ULI personnel on June 28, 1990.

We have now included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LAPORATORIES, INC.

anthony J. Scala

Director

AJS/clc

Enclosures: report, invoice

cc/encs: N. Scala, ULI

file

Note: These results were faxed to your office on 7/25/90. AJS

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 06/27/90

Lab I.D.: 10170

DOVER CONKLIN AVE

#3 CONC. CORE 6/27/90 1700H

LI I.D.: 18390068	Matrix: Solid	
ARAMETERS	RESULTS	KEY
FID(Pet Prod)		
Gasoline	ND	25
Kerosene	<500mg/kg	19
Fuel Oil	<500mg/kg	19
Lubricating Oil	DETECTED	
EPA 8010		
Dichlorodifluoromethane (12)	<20ppb	
Chloromethane	. <20ppb	
Vinyl Chloride	<20ppb	
Bromomethane	<20ppb	
Chloroethane	<20ppb	
Trichlorofluoromethane (11)	<20ppb	
Trichlorotrifluoroethane (113)	<20ppb	
1,1-Dichloroethylene	<20ppb	
Methylene Chloride	<20ppb	
t-1,2-Dichloroethylene	<20ppb	
1,1-Dichloroethane Chloroform	<20ppb	
1,1,1-Trichloroethane	<20ppb	
Carbon Tetrachloride	<20ppb	
1,2-Dichloroethane	<20ppb <20ppb	
Trichloroethylene	<20ppb	
1,2-Dichloropropane	<20ppb	
Bromodichloromethane	<20ppb	
2-Chloroethylvinyl Ether	<20ppb	
c-1,3-Dichloropropylene	<20ppb	
t-1,3-Dichloropropylene	<20ppb	
1,1,2-Trichloroethane	<20ppb	
Tetrachloroethylene	<20ppb	
Dibromochloromethane	<20ppb	
Bromoform	<20ppb	
1,1,2,2-Tetrachloroethane	<20ppb	
Dibromomethane	<20ppb	
Chlorobenzene	<20ppb	
1,1,1,2-Tetrachloroethane	<20ppb	
Trichloropropane	<20ppb	
Bromobenzene	<20ppb	
2-Chlorotoluene	<20ppb	
1,2-Dichlorobenzene	<20ppb	
1,3-Dichlorobenzene	<20ppb	

All results are on an as rec.d basis unless otherwise stated.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

Date Sampled: 06/27/90

APPROVAL:_

Lab I.D.: 10170

DOVER CONKLIN AVE

#3 CONC. CORE 6/27/90 1700H

ULI I.D.: 18390068	Matrix: Solid	
PARAMETERS	RESULTS	KEY
Benzyl Chloride Bis(2-chloroethoxy)Methane Bis(2-chloroisopropyl)Ether Chloroacetaldehyde	ND ND ND ND	21 25 21 25 21 25 21 25 21 25
1-Chlorohexane Chloromethyl Methyl Ether Chloral	ND ND ND	21 25 21 25 21 25
EPA 8020 Benzene Toluene Ethylbenzene Xylenes Chlorobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene	<20ppb <20ppb <20ppb <20ppb <20ppb <20ppb <20ppb <20ppb	

All results are on an as rec.d basis unless otherwise stated.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

QC: <u>PCV</u> Lab I.D.: 10170

DOVER CONKLIN AVE

#6 CONC. CORE 6/27/90 1800H

Date Sampled: 06/27/90

ULI I.D.: 18390069	Matrix: Solid	
PARAMETERS	RESULTS	KEY
FID(Pet Prod)		
Gasoline	ND	25
Kerosene	<500mg/kg	19
Fuel Oil	<500mg/kg	19
Lubricating Oil	ND	25
EPA 8010		
Dichlorodifluoromethane (12)	<20ppb	
Chloromethane	<20ppb	
Vinyl Chloride	<20ppb	
Bromomethane	<20ppb	
Chloroethane	<20ppb	
Trichlorofluoromethane (11)	<20ppb	
Trichlorotrifluoroethane (113)	<20ppb	
1,1-Dichloroethylene	<20ppb	
Methylene Chloride	<20ppb	
t-1,2-Dichloroethylene	<20ppb	
1,1-Dichloroethane	<20ppb	
Chloroform	<20ppb	
1,1,1-Trichloroethane	<20ppb	
Carbon Tetrachloride	<20ppb	
1,2-Dichloroethane	<20ppb	
Trichloroethylene	<20ppb	
1,2-Dichloropropane Bromodichloromethane	<20ppb	
2-Chloroethylvinyl Ether	<20ppb <20ppb	
c-1,3-Dichloropropylene	<20ppb	
t-1,3-Dichloropropylene	<20ppb	
1,1,2-Trichloroethane	<20ppb <20ppb	
Tetrachloroethylene	<20ppb	
Dibromochloromethane	<20ppb	
Bromoform	<20ppb	
1,1,2,2-Tetrachloroethane	<20ppb	
Dibromomethane	<20ppb	
Chlorobenzene	<20ppb	
1,1,1,2-Tetrachloroethane	<20ppb	
Trichloropropane	<20ppb	
Bromobenzene	<20ppb	
2-Chlorotoluene	<20ppb	
1,2-Dichlorobenzene	<20ppb	
1,3-Dichlorobenzene	<20ppb	
1,4-Dichlorobenzene	<20ppb	

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

Sampled by: Client Date Sampled: 06/27/90

DOVER CONKLIN AVE

<20ppb

<20ppb

<20ppb

#6 CONC. CORE 6/27/90 1800H

1	ULI I.D.: 18390069	Matrix: Solid	
]	PARAMETERS	RESULTS	KEY
	Benzyl Chloride Bis(2-chloroethoxy)Methane Bis(2-chloroisopropyl)Ether Chloroacetaldehyde 1-Chlorohexane Chloromethyl Methyl Ether Chloral	ND ND ND ND ND ND ND ND ND	21 25 21 25 21 25 21 25 21 25 21 25 21 25 21 25
	EPA 8020 Benzene Toluene Ethylbenzene Xylenes Chlorobenzene	<20ppb <20ppb <20ppb <20ppb <20ppb	

All results are on an as rec.d basis unless otherwise stated.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

Lab I.D.: 10170 DOVER CONKLIN AVE

TH3 DOVER CONK 6/27/90 1700H C

APPROVAL:_

Date Sampled: 06/27/90

ULI I.D.: 18390070	Matrix: Solid	
PARAMETERS	RESULTS	KEY
FID(Pet Prod)		
Gasoline	ND	25
Kerosene	<100mg/kg	19
Fuel Oil	<100mg/kg	19
Lubricating Oil	ND	25
EPA 8010		
Dichlorodifluoromethane (12)	<20ppb	
Chloromethane	<20ppb	
Vinyl Chloride	<20ppb	-
Bromomethane	<20ppb	
Chloroethane	<20ppb	
Trichlorofluoromethane (11)	<20ppb	
Trichlorotrifluoroethane (113)	<20ppb	
1,1-Dichloroethylene	<20ppb	
Methylene Chloride	<20ppb	
t-1,2-Dichloroethylene	<20ppb	
1,1-Dichloroethane	<20ppb	
Chloroform	<20ppb	
1,1,1-Trichloroethane	<20ppb	
Carbon Tetrachloride	<20ppb	
1,2-Dichloroethane	<20ppb	
Trichloroethylene	<20ppb	
1,2-Dichloropropane	<20ppb	
Bromodichloromethane	<20ppb	
2-Chloroethylvinyl Ether	<20ppb	
c-1,3-Dichloropropylene	<20ppb	
t-1,3-Dichloropropylene	<20ppb	
1,1,2-Trichloroethane	<20ppb	
Tetrachloroethylene	<20ppb	
Dibromochloromethane	<20ppb	
Bromoform	<20ppb	
1,1,2,2-Tetrachloroethane	<20ppb	
Dibromomethane	<20ppb	
Chlorobenzene	<20ppb	
1,1,1,2-Tetrachloroethane	<20ppb	
Trichloropropane	<20ppb	
Bromobenzene	<20ppb	
2-Chlorotoluene	<20ppb	
1,2-Dichlorobenzene	<20ppb	
1,3-Dichlorobenzene	<20ppb	
1 A Dielilensbergers	-00 1	

<20ppb

1,4-Dichlorobenzene

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

DOVER CONKLIN AVE

TH3 DOVER CONK 6/27/90 1700H C

APPROVAL:____QC:____

Date Sampled: 06/27/90

ULI I.D.: 18390070	Matrix: Solid	
PARAMETERS	RESULTS	KEY
Benzyl Chloride	 ND	21 25
Bis(2-chloroethoxy)Methane	ND ND	
	•	21 25
Bis(2-chloroisopropyl)Ether	ND	21 25
Chloroacetaldehyde	ND	21 25
1-Chlorohexane	ND	21 25
Chloromethyl Methyl Ether	ND	21 25
Chloral	ND	21 25
EPA 8020		
Benzene	<20ppb	
Toluene	<20ppb	
Ethylbenzene	<20ppb	
Xylenes	<20ppb	
Chlorobenzene	<20ppb	
1,2-Dichlorobenzene	<20ppb	
1,3-Dichlorobenzene	<20ppb	
1,4-Dichlorobenzene	<20ppb	

All results are on an as rec.d basis unless otherwise stated.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

Compled by: Client

Date Sampled: 06/27/90

APPROVAL: QS

Lab I.D.: 10170

DOVER CONKLIN AVE

TH5 DOVER CONK 6/27/90 1730H C

LI I.D.: 18390071	Matrix: Solid	
ARAMETERS	RESULTS	KEY
EID/D-L D		1 <u>2 </u>
FID(Pet Prod)		-
Gasoline	ND	25
Kerosene	<100mg/kg	19
Fuel Oil	<100mg/kg	19
Lubricating Oil	ND	25
EPA 8010		
Dichlorodifluoromethane (12)	<20ppb	
Chloromethane	<20ppb	
Vinyl Chloride	<20ppb	
Bromomethane	<20ppb	
Chloroethane	<20ppb	
Trichlorofluoromethane (11)	<20ppb	
Trichlorotrifluoroethane (113)	<20ppb	
1,1-Dichloroethylene	<20ppb	
Methylene Chloride	<20ppb	
t-1,2-Dichloroethylene	<20ppb	
1,1-Dichloroethane	<20ppb	
Chloroform	<20ppb	
1,1,1-Trichloroethane	<20ppb	
Carbon Tetrachloride	<20ppb	
1,2-Dichloroethane	<20ppb	
Trichloroethylene	<20ppb	
1,2-Dichloropropane	<20ppb	
Bromodichloromethane	<20ppb	
2-Chloroethylvinyl Ether	<20ppb	
c-1,3-Dichloropropylene	<20ppb	
t-1,3-Dichloropropylene	<20ppb	
1,1,2-Trichloroethane	<20ppb	
Tetrachloroethylene	<20ppb	
Dibromochloromethane	<20ppb	
Bromoform	<20ppb	
1,1,2,2-Tetrachloroethane	<20ppb	
Dibromomethane	<20ppb	
Chlorobenzene	<20ppb	
1,1,1,2-Tetrachloroethane	<20ppb	
Trichloropropane	<20ppb	
Bromobenzene	<20ppb	
2-Chlorotoluene	<20ppb	
1,2-Dichlorobenzene	<20ppb	
1,3-Dichlorobenzene	<20ppb	
1,4-Dichlorobenzene	<20ppb	

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080190055

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

Date Sampled: 06/27/90

Lab I.D.: 10170

DOVER CONKLIN AVE

TH5 DOVER CONK 6/27/90 1730H C

ULI I.D.: 18390071	Matrix: Solid	
PARAMETERS	RESULTS	KEY
Benzyl Chloride	ND	 21 25
Bis(2-chloroethoxy)Methane	ND	21 25
Bis(2-chloroisopropyl)Ether	ND	21 25
Chloroacetaldehyde	ND	21 25
1-Chlorohexane	ND	21 25
Chloromethyl Methyl Ether	ND	21 25
Chloral	ND	21 25
EPA 8020		
Benzene	<20ppb	
Toluene	<20ppb	
Ethylbenzene	<20ppb	
Xylenes	<20ppb	
Chlorobenzene	<20ppb	
1,2-Dichlorobenzene	<20ppb	
1,3-Dichlorobenzene	<20ppb	
1,4-Dichlorobenzene	<20ppb	

All results are on an as rec.d basis unless otherwise stated.

KEY PAGE

- 1 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS
- 2 MATRIX INTERFERENCE
- 3 PRESENT IN BLANK
- 4 INSUFFICIENT SAMPLE
- 5 SAMPLE DILUTED
- 6 BLANK CORRECTED
- 7 HEAD SPACE PRESENT IN SAMPLE
- 8 BDL(BELOW DETECTION LIMITS)
- 9 MDL(METHOD DETECTION LIMITS)
- 10 ADL(AVERAGE DETECTION LIMITS)
- 11 PQL(PRACTICAL QUANTITATION LIMIT)
- 12 COMMON LABORATORY CONTAMINANT
- 13 T(TRACE)
- 14 PPM(PARTS PER MILLION)
- 15 MG/L(MILLIGRAMS PER LITER)
- 16 UG/L(MICROGRAMS PER LITER)
- 17 PPB(PARTS PER BILLION)
- 18 SPIKE RECOVERY OUT OF CONTROL
- 19 CALCULATION BASED ON DRY WEIGHT
- 20 SEE QUALITY CONTROL QUALIFIERS
- 21 METHOD PERFORMANCE STUDY HAS NOT BEEN COMPLETED
- 22 MG/KG AS REC.D / MG/KG DRY WT
- 23 INSUFFICIENT SAMPLE PRECLUDES LOWER DETECTION LIMITS
- 24 SAMPLE DILUTED/BLANK CORRECTED
- 25 ND(NON-DETECTED)
- 26 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS/BLANK CORRECTED
- 27 SPIKE RECOVERY ABNORMALLY HIGH/LOW DUE TO MATRIX INTERFERENCE

UPSTATE LABORATORIES, INC.

17-0-500012

MOBILITY - GRALL SOIL + STONE 940 CONCRETE COLD Received by: (Signature) OVICA O to DUE DATE: Lili battle prepriotikup. Date/Time CHAIN OF CUSTODY RECORD CO Remarks Relinquished by: (Signature) Relinquished by: (Signature) WWW COLOR (1) (2) (4) (10) (2) (10) (10) 311. NICE (Signature) TAINERS CON Received by: (S)gnature) Received by: (Signature) TH 3 DAVER CONK THE BOWRA-COUR *6 CONC CORE Dover Courthain Ave * 3 COME CORE STATION LOCATION DATE/TIME: 12 July 19:40 PROJECT NAME BARD COMP. Hagopian Engineering Assec. 6-27 17:30 18:00 G27/10 17:00 1700 TIME Sampled by: (Signature) 12/9 DATE 175 RollnaHI Styld ndai WITHESS: SAMPLE PRES. 77 XX 4.5 30

WEATHER CONDITIONS:

ATTACHMENT 3

Dover DEM-East and Kirkwood North Laboratory Results from Property Investigation

Upstate Laboratories inc.

Shipping: 6034 Corporate Drive • East Syracuse, New York 13057 • (315) 437-0255 __ Mailing: Box 289 • Syracuse, New York 13206 Southern Region (607) 724-0478 Western Region (716) 436-9070

August 9, 1990

Mr. John K. Hagopian President Hagopian Engineering Associates 28 Alice Street Binghamton, New York 13904

Re: Analysis Report #080990030 - Dover Electric Kirkwood North and Conklin Ave

Dear Mr. Hagopian:

Please find enclosed the results for your soil samples which were picked up by ULI personnel on July 9, 1990.

We have now included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Anthony J. Scala

AJS/bf

Enclosures: report, invoice

cc/encs: N. Scala, ULI

file

Note: These results were faxed to your office on 8/6/90. AJS

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90

DOVER ELECTRIC

KIRKWOOD NORTH BK1 2-41 7/6/90 1800H G

10170

APPROVAL:

DI 1.D.: 19290035	Natrix: 5011	
PARAMETERS	RESULTS	KEY
EPA 8010		 -
Dichlorodifluoromethane (12)	<15ug/kg	
Chloromethane	<15ug/kg	
Vinyl Chloride	<15ug/kg	
Bromomethane	<15ug/kg	
Chloroethane	<15ug/kg	
Trichlorofluoremethane (41)	<15ug/kg	
Trichlorotrifluoroethane (113)	<15ug/kg	
1,1-Dichloroethylene	<15ug/kg	
Methylene Chloride	<15ug/kg	
t-1,2-Dichloroethylene	<15ug/kg	
1,1-Dichloroethane	<15ug/kg	
Chloroform	<15ug/kg	
1,1,1-Trichloroethane	<15ug/kg	
Carbon Tetrachloride	<15ug/kg	
1,2-Dichloroethane	<15ug/kg	
Trichloroethylene	<15ug/kg	
1,2-Dichloropropane	<15ug/kg	
Bromodichloromethane	<15ug/kg	
2-Chloroethylvinyl Ether	415ug/kg	
c-1,3-Dichloropropylene	<15ug/kg	
t-1,3-Dichloropropylene	<15ug/kg	
1,1,2-Trichloroethane	<15ug/kg	
Tetrachloroethylene	260ug/kg	
Dibromochloromethane	<15ug/kg	
Bromoform	<15ug/kg	
1,1,2,2-Tetrachloroethane	<15ug/kg	
Dibromomethane	<15ug/kg	
Chlorobenzene	<15ug/kg	
1,1,1,2-Tetrachloroethane	<15ug/kg	
Trichloropropane	<15ug/kg	
Bromobenzene	<15ug/kg	
2-Chlorotoluene	<15ug/kg	
1,2-Dichlorobenzene	<15ug/kg	
1,3-Dichlorobenzene	<15ug/kg	
1,4-Dichlorobenzene	<15ug/kg	
Benzyl Chloride	ND	21 25
Bis(2-chloroethoxy)Methane	ND	21 25
Bis(2-chloroisopropyl)Ether	ND	21 25
Chloroacetaldehyde	ND	21 25
1-Chlorohexane	ND	21 25

All results are on an as rec.d basis unless otherwise stated.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC. .

Sampled by: Client

Date Sampled: 07/06/90

APPROVAL

QC: Lab I

DOVER ELECTRIC

KIRKWOOD NORTH BK1 2-4 7/6/90 1800H G

10170

ULI I.D.: 19290	0035	Matrix: Soil	
PARAMETERS		RESULTS	KEY
Chloromethyl	Methyl Ether	ND	21 25
Chloral		ND	21 25

All results are on an as rec.d basis unless otherwise stated.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/08/90 LOVER ELECTRIC

KIRKWOOD NORTH BK1A 4-5.3 7/6/90 1800H G

APPROVA,

ULI I.D.: 19290036 Matrix: Soil

	naurin. Golf	
PARAMETERS	RESULTS	KEY
EPA 8010		w <u>.</u> .
Dichlorodifluoromethane (12)	<15ug/kg	
Chloromethane	<15ug/kg	
Vinyl Chloride	<15ug/kg	
Bromomethane	<15ug/kg	
Chloroethane	<15ug/kg	
Trichlorofluoromethane (11)	<15ug/kg	
Trichlorotrifluoroethane (113)	<15ug/kg	
1,1-Dichloroethylene	<15ug/kg	
Methylene Chloride	<15ug/kg	
t-1,2-Dichloroethylene	<15ug/kg	
1,1-Dichloroethane	<15ug/kg	
Chloroform	<15ug/kg	
1,1,1-Trichloroethane	<15ug/kg	
Carbon Tetrachloride	<15ug/kg	
1,2-Dichloroethane	<15ug/kg	
Trichloroethylene	<15ug/kg	
1,2-Dichloropropane	<15ug/kg	
Bromodichloromethane	<15ug/kg	
2-Chloroethylvinyl Ether	<15ug/kg	
c-1,3-Dichloropropylene	<15ug/kg	
t-1,3-Dichloropropylene	<15ug/kg	
1,1,2-Trichloroethane	<15ug/kg	
Tetrachloroethylene	3lug/kg	
Dibromochloromethane	<15ug/kg	
Bromoform	<15ug/kg	
1,1,2,2-Tetrachloroethane	<15ug/kg	
Dibromomethane	<15ug/kg	
Chlorobenzene	<15ug/kg	
1,1,1,2-Tetrachloroethane	<15ug/kg	
Trichloropropane	<15ug/kg	
Bromobenzene	<15ug/kg	
2-Chlorotoluene	<15ug/kg	
1,2-Dichlorobenzene	<15ug/kg	
1,3-Dichlorobenzene	<15ug/kg	
1,4-Dichlorobenzene	<15ug/kg	
Benzyl Chloride	MD	21 2
Bis(2-chloroethoxy)Methane	ND	21 2
Bis(2-chloroisopropyl)Ether	MD	21.2

ND

ND

ND

21 25

21 25

21 25

All results are on an as rec.d basis unless otherwise stated.

Bis(2-chloroisopropyl)Ether

Chloroacetaldehyde

1-Chlorohexane

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90 LOVER ELECTRIC

KIRKWOOD NORTH BK1A 4-5.31 7/6/90 1800H G

APPROVAL

ULI I.D.: 19290036	Matrix: Soil	
PARAMETERS	RESULTS	KEY
Chloromethyl Methyl Ether Chloral	ND ND	21 25 21 25

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080900030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

Date Sampled: 07/06/90

APPROVAL:
QC:
Lab 1 .: 1017

LOVER ELECTRIC

KIRKWOOD NORTH B3K 10-11.9° 7/6/90 1800H G

ULI I.D.: 19290037	Matrix: Soil	
PARAMETERS	RESULTS	KEY
FID(Pet Prod)		
Gasoline Kerosene Fuel Oil Lubricating Oil	ND <100mg/kg <100mg/kg ND	25 19 19 25

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90 APPROVAL; QC:____ Lab I

<15ug/kg

<15ug/kg

Lab I DOVER ELECTRIC

KIRKWOOD NORTH B5K 0-2' 7/6/90 1800H G

KEY

ULI I.D.: 19290038	Matrix: Soil
PARAMETERS	RESULTS
EPA 8240	
Acetone	<50ug/kg
Acrolein	<500ug/kg
Acrylonitrile	<500ug/kg
2-Butanone	<50ug/kg
Carbon Disulfide	<50ug/kg
1,4-Dichloro-2-butene	<50ug/kg
Ethanol	<10000ug/kg
Ethyl Methacrylate	<50ug/kg
2-Hexanone	<50ug/kg
Iodomethane	<50ug/kg
4-Methyl-2-pentanone	<50ug/kg
Styrene	<50ug/kg
1,2,3-Trichloropropane	<50ug/kg
Vinyl Acetate	<50ug/kg
Chloromethane	<15ug/kg
Bromomethane	<15ug/kg
Vinyl Chloride	<15ug/kg
Chloroethane	<15ug/kg
Methylene Chloride	<15ug/kg
Trichlorofluoromethane	<15ug/kg
1,1-Dichloroethylene	<15ug/kg
t-1,2-Dichloroethylene	<15ug/kg
1,1-Dichloroethane	<15ug/kg
Chloroform	<15ug/kg
1,2-Dichloroethane	<15ug/kg
1,1,1-Trichloroethane	22ug/kg
Benzene	<15ug/kg
Carbon Tetrachloride	
1,2-Dichloropropane	<15ug/kg
Bromodichloromethane	<15ug/kg
Trichloroethylene	<15ug/kg
c-1,3-Dichloropropene	<15ug/kg <15ug/kg
t-1,3-Dichloropropene	CIOUE/KE
1,1,2-Trichloroethane	<15ug/kg
Toluene	<15ug/kg
Dibromochloromethane	<15ug/kg
Tetrachloroethylene	<15ug/kg
2-Chloroethylvinyl ether	390ug/kg
Chlorobenzene	<15ug/kg

All results are on an as rec.d basis unless otherwise stated.

Chlorobenzene

Ethylbenzene

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90 APPROVAL:
QC:
Lab I.D.: 10170

DOVER ELECTRIC

KIRKWOOD NORTH B5K 0-2: 7/6/90 1800H G

ULI I.D.: 19290038	Matrix: Soil	
PARAMETERSBromoform	RESULTS	KEY
1,1,2,2-Tetrachloroethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Total Xylenes Dichlorodifluoromethane Dibromomethane	<15ug/kg <15ug/kg <15ug/kg <15ug/kg <15ug/kg <15ug/kg <15ug/kg <15ug/kg	

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90 Q(-

0.: 10170

DOVER ELECTRIC

CONKLIN AVE B3C 5-7*+10-12* 7/6/90 1010H GC

ULI I.D.: 19290039		
0B1 1.D 102000.39	Matrix: Soil	
PARAMETERS '	RESULTS	KEY
FID(Pet Prod)		
Gasoline	NT	
Kerosene	ND	25
Fuel Oil	<100mg/kg	19
Lubricating Oil	<100mg/kg DETECTED	19
EPA 8010		
Dichlorodiflueromethane (12)	<15ug/kg	
Chlorome thane	<15ug/kg	
Vinyl Chloride	<15ug/kg	
Bromomethane	<15ug/kg	
Chloroethane	<15ug/kg	
Trichlorofluoromethane (11)	<15ug/kg	
Trichlorotrifluoroethane (113)	<15ug/kg	
1,1-Dichloroethylene	<15ug/kg	
Methylene Chloride	<15ug/kg	
t-1,2-Dichloroethylene	<15ug/kg	
1,1-Dichloroethane	<15ug/kg	
Chloroform	<15ug/kg	
1,1,1-Trichloroethane	230ug/kg	
Carbon Tetrachloride	33ug/kg	
1,2-Dichloroethane	<15ug/kg	
Trichloroethylene	31ug/kg	
1,2-Dichloropropane	<15ug/kg	
Bromodichloromethane	<15ug/kg	
2-Chloroethylvinyl Ether	<15ug/kg	
c-1,3-Dichloropropylene	<15ug/kg	
t-1,3-Dichloropropylene 1,1,2-Trichloroethane	<15ug/kg	
Tetrachloroethylene	<15ug/kg	
Dibromochloromethane	<15ug/kg	
Bromoform	<15ug/kg	
1,1,2,2-Tetrachloroethane	<15ug/kg	
Dibromome thane	<15ug/kg	
Chlorobenzene	<15ug/kg	
1,1,1,2-Tetrachloroethane	<15ug/kg	
Prichloropropane	<15ug/kg	
Bromobenzene	<15ug/kg	
2-Chlorotolueno	<15ug/kg <15ug/kg	
1,2-Dichlorobenzene	<15ug/kg	
1,3-Dichlorobenzene	<15ug/kg <15ug/kg	
l,4-Dichlorobenzene	アナハボRトアR	

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90 DOVER ELECTRIC

CONKLIN AVE B3C 5-7*+10-12* 7/6/90 1010H GC

ULI I.D.: 19290039	Matrix: Soil	
PARAMETERS	RESULTS	KEY
gang alban kalin hali man man hadi kepan kalan		
Benzyl Chloride	ND	21 25
Bis(2-chloroethoxy)Methane	ND	21 25
Bis(2-chloroisopropyl)Ether	ND	21 25
Chloroacetaldehyde	ИD	21 25
1-Chlorohexane	ND	21 25
Chloromethyl Methyl Ether	ND	21 25
Chloral	ND	21 25

DUIR: 08/08/80

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

Date Sampled: 07/06/90

APPROVAI: _______MF QC: ______MF Lab 1.17: 10170

DOVER ELECTRIC

CONKLIN AVE B4C 5-7*+10-12* 7/6/90 1010H GC

16d. 07700/50		
ULI I.D.: 19290040	Matrix: Soil	
PARAMETERS		
	RESULTS	KEY
FID(Pet Prod)		
-		
Gasoline	ND	25
Kerosene	· <100mg/kg	25 19
Fuel Oil	<100mg/kg	19
Lubricating Oil	DETECTED	10
EPA 8240		
Acatons		
Acetone Acrolein	<50ug/kg	
Acrylonitrile	<500ug/kg	
2-Butanone	<500ug/kg	
Carbon Disulfide	<50ug/kg	
1,4-Dichloro-2-butene	<50ug/kg	
Ethanol	<50ug/kg	
Ethyl Methacrylate	<10000ug/kg	
2-Hexanone	<50ug/kg	
Iodomethane	<50ug/kg	
4-Methyl-2-pentanone	<50ug/kg	
Styrene	<50ug/kg	
1,2,3-Trichloropropane	<50ug/kg	
Vinyl Acetate	<50ug/kg	
Chloromethane	<50ug/kg	
Bromomethane	<15ug/kg	
Vinyl Chloride	<15ug/kg	
Chloroethane	<15ug/kg <15ug/kg	
Methylene Chloride	<150g/kg <15ug/kg	
Trichlorofluoromethane	<15dg/kg <15ug/kg	
1,1-Dichloroethylene	<150g/kg <15ug/kg	
t-1,2-Dichloroethylene	<15ug/kg	
1,1-Dichloroethane	<15ug/kg	
Chloroform	<15ug/kg	
1,2-Dichloroethane	<15ug/kg	
1,1,1-Trichloroethane	59ug/kg	
Benzene	<15ug/kg	
Carbon Tetrachloride	<15ug/kg	
1,2-Dichloropropane	<15ug/kg	
Bromodichloromethane	<15ug/kg	
Trichloroethylene	88ug/kg	
c-1,3-Dichloropropene	<15ug/kg	
t-1,3-Dichloropropene	<15ug/kg	
1,1,2-Trichloroethane Foluene	<15ug/kg	
	<15ug/kg	

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030 Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90 APPROV/ QC: Lab I.

DOVER ELECTRIC

CONKLIN AVE B8C 10-12*+15-17* 7/6/90 1010H GC

ULI I.D.: 19290041	Matrix: Soil	
PARAMETERS	RESULTS	KEY
FID(Pet Prod)		· · · · · · · · · · · · · · · · · · ·
 Gasoline	NT	
Kerosene	ND	25
Fuel Oil	<100mg/kg	19
Lubricating Oil	<100mg/kg ND	19 25
EPA 8010		
Dichlorodifluoromethane (12)	<15ug/kg	
Chloromethane	<15ug/kg	
Vinyl Chloride	<15ug/kg	
Bromomethane	<15ug/kg	
Chloroethane	<15ug/kg	
Trichlorofluoromethane (11)	<15ug/kg	
Trichlorotrifluoroethane (113)	<15ug/kg	
1,1-Dichloroethylene	<15ug/kg	
Methylene Chloride	<15ug/kg	
t-1,2-Dichloroethylene	<15ug/kg	
1,1-Dichloroethane	<15ug/kg	
Chloroform	<15ug/kg	
1,1,1-Trichloroethane	<15ug/kg	
Carbon Tetrachloride	<15ug/kg	
1,2-Dichloroethane	<15ug/kg	
Trichloroethylene	15ug/kg	
1,2-Dichloropropane	<15ug/kg	
Bromodichloromethane	<15ug/kg	
2-Chloroethylvinyl Ether	<15ug/kg	
c-1,3-Dichloropropylene	<15ug/kg	
t-1,3-Dichloropropylene	<15ug/kg	
1,1,2-Trichloroethane	<15ug/kg	
Tetrachloroethylene	<15ug/kg	
Dibromochloromethane	<15ug/kg	
Bromoform	<15ug/kg	
1,1,2,2-Tetrachloroethane	<15ug/kg	
Dibromomethane	<15ug/kg	
Chlorobenzene	<15ug/kg	
1,1,1,2-Tetrachloroethane	<15ug/kg	
Trichloropropane	<15ug/kg	
Bromobenzene	<15ug/kg	
2-Chlorotoluene	<15ug/kg	
1,2-Dichlorobenzene	<15ug/kg	
1,3-Dichlorobenzene	<15ug/kg	
	C 1 to 1 to T (leave	

<15ug/kg

All results are on an as rec.d basis unless otherwise stated.

1,4-Dichlorobenzene

NATE: OR\OB\BO

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

Date Sampled: 07/06/90

APPROV QC:_

Lab I.U.: 10170

DOVER ELECTRIC

CONKLIN AVE B4C 5-7*+10-12* 7/6/90 1010H GC

ULI I.D.: 19290040	Matrix: Soil	
PARAMETERS	RESULTS	KEY
Dibromochloromethane Tetrachloroethylene 2-Chloroethylvinyl ether Chlorobenzene Ethylbenzene Bromoform 1,1,2,2-Tetrachloroethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Total Xylenes Dichlorodifluoromethane Dibromomethane	<15ug/kg	

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client

DOVER ELECTRIC

CONKLIN AVE B8C 10-12'+15-17' 7/6/90 1010H GC

Lab I.

APPROVAL

Date Sampled: 07/06/90

ULI I.D.: 19290041	Matrix: Soil	
PARAMETERS	RESULTS	KEY
Benzyl Chloride	ND	21 2 5
Bis(2-chloroethoxy)Methane	ND	21 25
Bis(2-chloroisopropyl)Ether	ND	21 25
Chloroacetaldehyde	ND	21 25
1-Chlorohexane	ND	21 25
Chloromethyl Methyl Ether	MD	21 25
Chloral	ND	21 25

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90

DOVER ELECTRIC

CONKLIN AVE B9C 5-7'+10-12' 7/6/90 1010H GC

APPROVAL.

•	,,	

JLI I.D.: 19290042	Matrix: Soil	
PARAMETERS	RESULTS	KEY
FID(Pet Prod)	•	
Gasoline	ND	25
Kerosene	<100mg/kg	19
Fuel Oil	<100mg/kg	19
Lubricating Oil	ИD	25
EPA 8010		
Dichloredifluoremethane (12)	<15ug/kg	
Chloromethane	<15ug/kg	
Vinyl Chloride	<15ug/kg	
Bromomethane	<15ug/kg	
Chloroethane	<15ug/kg	
Trichlorofluoromethane (11)	<15ug/kg	
Trichlorotrifluoroethane (113)	<15ug/kg*	
1,1-Dichloroethylene	<15ug/kg	
Methylene Chloride	<15ug/kg	
t-1.2-Dichloroethylene	<15ug/kg	
1,1-Dichloroethane	<15ug/kg	
Chloroform	<15ug/kg	
1,1,1-Trichloroethane	<15ug/kg	
Carbon Tetrachloride	<15ug/kg	
1,2-Dichloroethane	15ug/kg	
Trichloroethylene	<15ug/kg	
1,2-Dichloropropane	<15ug/kg	
Bromodichloremethane	<15ug/kg	
2-Chloroethylvinyl Ether	<15ug/kg	
c-1,3-Dichloropropylene	<15ug/kg	
t-1,3-Dichloropropylene 1,1,2-Trichloroethane	<15ug/kg	
Tetrachloroethylene	<15ug/kg	
Dibromochloromethane	<15ug/kg	
Bromoform	<15ug/kg <15ug/kg	
1,1,2,2-Tetrachloroethane	<15ug/kg	
Dibromomethane	<15ug/kg	
Chlorobenzene	<150g/kg <15ug/kg	
1,1,1,2-Tetrachloroethane	<15ug/kg	
Trichloropropane	<15ug/kg	
Bromobenzene	<15ug/kg	
2-Chlorotoluene	<15ug/kg	
1,2-Dichlorobenzene	<15ug/kg	
1,3-Dichlorobenzene	<15ug/kg	
1,4-Dichlorobenzene	<15ug/kg	

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990030

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 07/06/90 DOVER ELECTRIC

CONKLIN AVE B9C 5-71+10-121 7/6/90 1010H GC

ULI I.D.: 19290042	Matrix: Soil	
PARAMETERS	RESULTS	KEY
Benzyl Chloride	ND	21 25
Bis(2-chloroethoxy)Methane	ND	21 25
Bis(2-chloroisopropyl)Ether	ND	21 25
Chloroacetaldehyde	ИD	21 25
1-Chlorohexane	ND	21 25
Chloromethyl Methyl Ether	ND	21 25
Chloral	ND	21 25

KEY PAGE

- 1 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS
- 2 MATRIX INTERFERENCE
- 3 PRESENT IN BLANK
- 4 INSUFFICIENT SAMPLE
- 5 SAMPLE DILUTED
- 6 BLANK CORRECTED
- 7 HEAD SPACE PRESENT IN SAMPLE
- 8 BDL(BELOW DETECTION LIMITS)
- 9 MDL(METHOD DETECTION LIMITS)
- 10 ADL(AVERAGE DETECTION LIMITS)
- 11 PQL(PRACTICAL QUANTITATION LIMIT)
- 12 COMMON LABORATORY CONTAMINANT
- 13 T(TRACE)
- 14 PPM(PARTS PER MILLION)
- 15 MG/L(MILLIGRAMS PER LITER)
- 16 UG/L(MICROGRAMS PER LITER)
- 17 PPB(PARTS PER BILLION)
- 18 SPIKE RECOVERY OUT OF CONTROL
- 19 CALCULATION BASED ON DRY WEIGHT
- 20 SEE QUALITY CONTROL QUALIFIERS
- 21 METHOD PERFORMANCE STUDY HAS NOT BEEN COMPLETED
- 22 MG/KG AS REC.D / MG/KG DRY WT
- 23 INSUFFICIENT SAMPLE PRECLUDES LOWER DETECTION LIMITS
- 24 SAMPLE DILUTED/BLANK CORRECTED
- 25 ND(NON-DETECTED)
- 26 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS/BLANK CORRECTED
- 27 SPIKE RECOVERY ABNORMALLY HIGH/LOW DUE TO MATRIX INTERFERENCE

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IES, INC.	PROJECT NAME KIRKIYO	-4M00	X	2 2		200		ପ	(2)	B	B	3	B	ßS		0ate/Time		79.20 35	The your		
UPSTATE LABORATORIES,	HACONGA)	DATE TIME	1-4-10 18:00													Sampled by: (Signature)	Rel Maulshed-by: (Signature)	X Just	Haneg by: (Signature		
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WITHESS: WEATHER CONDITIONS:	ļ

HEATHER CONDITIONS:

ATTACHMENT 4

Dover Kirkwood North Laboratory Results from Concrete Core and Below Slab Soil Sample from Still/Perchloroethylene Storage Area

Upstate Laboratories inc.

Shipping: 6034 Corporate Drive • East Syracuse, New York 13057 • (315) 437-0255 _ Mailing: Box 289 • Syracuse, New York 13206 Southern Region (607) 724-0478 Western Region (716) 436-9070

August 9, 1990

Mr. John K. Hagopian President Hagopian Engineering Associates 28 Alice Street Binghamton, New York 13904

Re: Analysis Report #080990031 - Nover Electronics

Dear Mr. Hagopian:

Please find enclosed the results for your samples which were picked up by ULI personnel on July 3, 1990.

We have now included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

JPSTATE/LAPORATORIES, INC.

nthon 1. Scala

AJS/bf

Enclosures: report, invoice

cc/encs: N. Scala, ULI

file

Note: These results were faxed to your office on 8/1/90. AJS

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990031

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 06/29/90

Lal DOVER ELECTRONICS

TH-1K (SOIL) 6/29/90 1400H G

APPROVA,

ULI I.D.: 19190008	Matrix: Soil	
PARAMETERS	RESULTS	KEY
EPA 8010		
Dichlorodifluoromethane (12)	<20ppb	
Chloromethane	<20ppb	
Vinyl Chloride	<20ppb	
Bromomethane	<20 _{FP} b	
Chloroethane	<20ppb	
Trichlorofluoromethane (11)	<20ppb	
Trichlorotrifluoroethane (113)	<20ppb	
1,1-Dichloroethylene	<20ppb	
Methylene Chloride	<20ppb	
t-1,2-Dichloroethylene	<20ppb	
1,1-Dichloroethane	<20ppb	
Chloroform	<20ppb	
1,1,1-Trichloroethane	<20ppb	
Carbon Tetrachloride	<20ppb	
1,2-Dichloroethane	<20ppb	
Trichloroethylene	<20 _{FP} b	
1,2-Dichloropropane	<20ppb	
Bromodichloromethane	<20ppb	
2-Chloroethylvinyl Ether	<20ppb	
c-1,3-Dichloropropylene	<20 _{FP} b	
t-1,3-Dichloropropylene	<20ppb	
1,1,2-Trichloroethane	<20ppb	
Tetrachlorcethylene	<20ppb	
Dibromochloromethane	<20ppb	
Bromoform	<20ppb	
1,1,2,2-Tetrachloroethane	<20ppb	
Dibromomethane	<20ppb	
Chlorobenzene	<20ppb	
1,1,1,2-Tetrachloroethane	<20ppb	
Trichloropropane	<20ppb	
Bromobenzene	<20ppb	
2-Chlorotoluene	<20ppb	
1,2-Dichlorobenzene	<20 _{PP} b	
1,3-Dichlorobenzene	<20ppb	
1,4-Dichlorobenzene	<20 _{FP} b	
Benzyl Chloride	ND .	21 25
Bis(2-chloroethoxy)Methane	ND	21 25
Bis(2-chloroisopropyl)Ether	ND	21 25
Chloreacetaldehyde	ND	21 25
1-Chlorohexane	ND	21 25

21 25

All results are on an as rec.d basis unless otherwise stated.

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990031

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Date Sampled: 06/29/90

Sampled by: Client

Lab I LOVER ELECTRONICS

APPROVAL QC:__(

TH-1K (SOIL) 6/29/90 1400H G

ULI I.D.: 19190008	Matrix: Soil	
PARAMETERS	RESULTS	KEY
Chloromethyl Methyl Ether Chloral	ND ND	21 25 21 25

Upstate Laboratories, Inc. Analysis Results Report Number: 080990031

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 06/29/90

LOVER ELECTRONICS

C1-K (CONCRETE CORE) 6/29/90 1400H G

JLI I.D.: 19190009	Matrix: Solid	
PARAMETERS	RESULTS	KEY
	that was then the case only and	
EPA 8010		
Dichlorodifluoremethane (12)	<20 _{PF} b	
Chloromethane	<20ppb	
Vinyl Chloride	<20ppb	
Bromomethane	<20 _{PP} b	
Chloroethane	<20ppb	
Trichlorofluoromethane (11)	<20ppb	
Trichlorotrifluoroethane (113)	<20ppb	
1,1-Dichloroethylene	<20ppb	
Methylene Chloride	<20ppb	
t-1,2-Dichlorcethylene	<20ppb	
1,1-Dichloroethane	<20ppb	
Chloroform	<20ppb	
1,1,1-Trichloroethane	<20ppb	
Carbon Tetrachloride	<20ppb	
1,2-Dichloroethane	<20ppb	
Trichloroethylene	<20ppb	
1,2-Dichloropropane	<20ррь	
Bromodichloromethane	<20prb	
2-Chloroethylvinyl Ether	<20rpb	
c-1,3-Pichloropropylene	<20ppb	
t-1,3 Dichloropropylene	<20ppb	
1,1,2-Trichloroethane	<20 _{FP} b	
Tetrachloroethylene	69ppb	
Dibromochloromethane	<20p _F b	
Bromeform	<20ppb	
1,1,2,2-Tetrachloroethane	<20ppb	
Dibromomethane	<20ppb	
Chlorobenzene	<20ppb	
1,1,1,2-Tetrachloroethane	<20ppb	
Trichloropropane	<20ppb	•
Bromobenzene	<20ppb	•
2-Chlorotoluene	<20ppb	
1,2-Dichlorobenzene	<20 _{PF} b	
1,3-Dichlorobenzene	<20ppb	
1,4-Dichlorobenzene	<20ppb	
Benzyl Chloride	ND	21 2
Bis(2-chloroethoxy)Methane	ND	21 2
Bis(2-chloroisopropyl)Ether	ND	21 2
Chloroacetaldehyde	ND	21 2
1-Chlorohexane	ND	21 2

Upstate Laboratories, Inc.

Analysis Results

Report Number: 080990031

Client I.D.: HAGOPIAN ENGINEERING ASSOC.

Sampled by: Client Date Sampled: 06/29/90

APPROVAL

QC: Lab 1

LOVER ELECTRONICS

C1-K (CONCRETE CORE) 6/29/90 1400H G

ULI I.D.: 19190009	Matrix: Solid	
PARAMETERS	RESULTS	KEY
Chloromethyl Methyl Ether Chloral	ND ND	21 25 21 25

KEY PAGE

- MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS
- MATRIX INTERFERENCE
- PRESENT IN BLANK
- INSUFFICIENT SAMPLE
- SAMPLE DILUTED
- BLANK CORRECTED
- HEAD SPACE PRESENT IN SAMPLE
- BDL(BELOW DETECTION LIMITS)
- 9 MDL(METHOD DETECTION LIMITS)
- 10 ADL(AVERAGE DETECTION LIMITS)
- 11 PQL(PRACTICAL QUANTITATION LIMIT)
- 12 COMMON LABORATORY CONTAMINANT
- 13 T(TRACE) 14 PPM(PARTS PER MILLION)
- 15 MG/L(MILLIGRAMS PER LITER)
- 16 UG/L(MICROGRAMS PER LITER)
- 17 PPB(PARTS PER BILLION)
- 18 SPIKE RECOVERY OUT OF CONTROL
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- 25 ND(NON-DETECTED)
- 26 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS/BLANK CORRECTED
- 27 SPIKE RECOVERY ABNORMALLY HIGH/LOW DUE TO MATRIX INTERFERENCE

per los DUE DATE: -SEE TONY ON . 7/5 Received by: (Signature) JOSON WIT Serio 74. Pater Time Remarks 1/7/20. WEATHER CONDITIONS! Relinquished by: (Signature) Relinquished by: (Signature) CHAIN OF CUSTODY RECORD TAINERS for Laboratory by coN-P Received by: (Signature) Received by: (Signature) (concusted (501) STATION LOCATION PROJECT ENGINEERING ASSX. DOVER ELECTIONICS 75/40 130 Date/11me Date/Time PROJECT NAME UPSTATE LABORATORIES, INC. 8AS∂ COME (Signature) 700m 200 IN Signature) TIME Sampled by: (Signature) 106/67/a 129/90 DATE SAMPLE PRES.

TOXICITY DATA:

DOT: Flammable Liquid, Label: Flammable Liquid FER-EAC 41,57018,76.

THR: U. No data.

Fire Hazard: Dangerous, when exposed to heat or flame; can react with oxidizing materials.

To Fight Fire: CO2, dry chemical.

CARBON SULFIDE

mf: CS; mw: 44.08

Incomp: Gaseous radical readily polymerises explosively.

CARBON TETRABROMIDE

CAS RN: 558134

NIOSH #: FG 4725000

mf: CBr₄; mw: 331.65

Colorless, monoclinic tablets. mp: (α) 48.4°, (β) 90.1°, bp: 189.5°, d: 3.42, vap. press: 40 mm @ 96.3°.

SYNS:

CARBON BROMIDE

TETRABROMOMETHANE

TOXICITY DATA: orl-rat LDLo: 1000 mg/kg scu-mus LD50:298 mg/kg ivn-mus LD50:56 mg/kg

CODEN: 14CYAT 2,1270,63 TXAPA9 4,354,62 CSLNX* NX#01612

TLV: Air: 0.1 ppm DTLVS* 4,74,80. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: HIGH scu, ivn. MOD orl. Severe reaction with Li. Narcotic in high conc.

Disaster Hazard: See chlorinated HC, aliphatic. When heated to decomp it emits tox fumes of Br-. Incomp: lithium

CARBON TETRACHLORIDE

CAS RN: 56235

NIOSH #: FG 4900000

mf: CCl₄; mw: 153.81

Colorless liquid, heavy, ethereal odor. mp: -22.6°, bp: 76.8°, fp: -22.9°, flash p: none, d: 1.597 @ 20°, vap. press: 100 mm @ 23.0°.

SYNS:

BENZINOFORM CARBONA CARBON CHLORIDE CARBON TET CZTEROCHLOREK WEGLA (POL-ISH) ENT 4,705 FREON 10

TETRACHLOROCARBON METHANE TETRACHLORIDE (FRENCH) PERCHLOROMETHANE TETRACHLOORKOOLSTOF (ITALIAN) (DUTCH)

TOXICITY DATA: ihl-rat TCLo:300 ppm/7H (6-15D preg)

par-rat TDLo: 2384 mg/kg (18D preg) skn-rbt 4 mg MLD

TETRACHLORKOHLENSTOFF, TETRA (GERMAN) TETRACHLORMETHAN (GERMAN) TETRACLOROMETANO (ITALIAN) TETRACHLOROMETHANE TETRACHLORURE DE CARBONE TETRACLORURO DI CARBONIO

TETRACHLOORMETAAN (DUTCH)

CODEN: TXAPA9 28,452,72

BEXBAN 76,1467,73 XEURAQ MDDC-1715

eye-rbt 2200 ug/30S MLD eye-rbt 500 mg/24H SEV orl-rat TDLo:2 gm/kg (7-8D preg) scu-rat TDLo:31 gm/kg/12W-I:ETA orl-mus TDLo:8580 mg/kg/9W-I:CAR orl-ham TDLo:2942 mg/kg/30W-

I:ETA orl-mus TD:12 gm/kg/88D-I:NEO scu-rat TD:100 gm/kg/25W-I:ETA scu-rat TD:31 gm/kg/12W-I:ETA orl-hmn LDLo:43 mg/kg

orl-wmn TDLo:1800 mg/kg TFX:SYS ihl-hmn TCLo:20 ppm TFX:CNS orl-wmn TDLo: 1800 mg/kg

TFX:PUL orl-man TDLo: 1700 mg/kg TFX: CNS

ihl-hmn LCLo: 1000 ppm ihl-hmn TCLo:317 ppm/30M TFX:GIT

unk-man LDLo:93 mg/kg orl-rat LD50:2800 mg/kg ihl-rat LCLo:4000 ppm/4H skn-rat LD50:5070 mg/kg ipr-rat LD50:1500 mg/kg orl-mus LD50:12800 mg/kg ihl-mus LC50:9526 ppm/8H ipr-mus LD50:4675 mg/kg scu-mus LDLo:12 gm/kg orl-dog LDLo: 1000 mg/kg ihl-dog LCLo:14620 ppm/8H ipr-dog LD50:1500 mg/kg ivn-dog LDLo:125 mg/kg ihl-cat LCLo:38110 ppm/2H

scu-cat LDLo:300 mg/kg orl-rbt LD50:6380 mg/kg ipr-rbt LDLo:478 mg/kg scu-rbt LDLo: 3000 mg/kg ivn-rbt LD50:5840 mg/kg ihl-gpg LCLo:20000 ppm/2H ihl-frg LCLo:58000 mg/m3

XEURAQ MDDC-I 28ZPAK -,28,72 85DJA5 -,95,71 JNCIAM 45,1237,70 JNCIAM 4,385,44

JNCIAM 26,855,61

JNCIAM 4,385,44 KRMJAC 12,37,65 JNCIAM 38,891,67 32ZWAA 8,128,74 TXMDAX 69,86,73

85CYAB 2,136,59 TXMDAX 69,86,73

SAMJAF 49,635,75

PCOC** -,198,66 JAMAAP 103,962,34

85DCAI 2,73,70 TXAPA9 17,498.70 JIHTAB 31,343,49 SPEADM 74-1,-.74 XEURAQ MDDC-171 31ZOAD 1,69,68 JIHTAB 29,382,47 TXAPA9 13,287,68 AEXPBL 97,86,23 QJPPAL 7,205,34 NIHBAZ 191,1,49 TXAPA9 10,119,67 QJPPAL 7,205,34 HBAMAK 4,1405,35 JPETAB 63,153,38 GUCHAZ 6,83,73 GASTAB 71,118.76 QJPPAL 7,205,34 ZAPPAN 118,305,74 FLCRAP 1,197,67 **AEXPBL 97,86,23** AEPPAE 138,65,28

ihl-mam LCLo:50000 ppm/5M Aquatic Toxicity Rating: TLm96: 100-10 ppm WQCII 3,-,74. Carcinogenic Determination: Animal Post IARC** 20,371,79; Human Suspected IARC**! 371,79; Animal Positive IARC** 1,53,72.

TLV: Air: 5 ppm DTLVS* 4,74,80. Toxicology Reve ARZNAD 24(2),173,74;32XPAD -,49,75; PARE 4,1,52; AJMEAZ 38,409,65; BNYMAM 54,411 CTOXAO 13,231,78; 85CVA2 5,250,70. OSHA 54 dard: Air: TWA 10 ppm; CL 25; Pk 200/5M & (SCP-J) FEREAC 39,23540,74. DOT: ORM-A, L. None FEREAC 41,57018,76. Occupational Experience to Carbon Tetrachloride recm std: Air: CL 2 500 60M NTIS**. "NIOSH Manual of Analytical Met ods" VOL 1 127, VOL 3 S314. Reported in EPA IX Inventory, 1980. EPA TSCA 8E NO: 037801101 lowup Sent as of April, 1979.

THR: A skn, eye irr. An exper TER, ETA, CARC, No. A hmn SYS, CNS, PUL, GIT. A hmn susp CALL HIGH orl. MOD ihl, unk; MOD orl, ihl, ipr, LOW skn, orl, scu, ihl.

Carbon tetrachloride has a narcotic action resemble that of chloroform, though not as strong. Follow exposures to high cone, the victim may become un-

form of damage to the kidneys, liver and lungs. posure to lower cone, insufficient to produce unconcouness, usually results in severe gastro-intestinal upand may progress to serious kidney and hepatic Large. The kidney lesion is an acute nephrosis; the involvement consists of an acute degeneration of tentral portions of the lobules. Where recovery ha place, there may be no permanent disability. Marked variation in individual susceptibility to carbon sanchloride exists, some persons appear to be unaf-Leed by exposures which seriously poison their fellowworkers. Alcoholism and previous liver and kidney cange seem to render the individual more susceptible. Conc of the order of 1,000 to 1,500 ppm are sufficient because symptoms if exposure continues for several mun. Repeated daily exposure to such cone may result a poisoning.

much the common form of poisoning following indusral exposure is usually one of gastrointestinal upset, which may be followed by renal damage, other cases have been reported in which the CNS has been affected outh production of polyneuritis, narrowing of the visual his, and other neurological changes. Prolonged exposure to small amounts of carbon tetrachloride has also hen reported as causing cirrhosis of the liver.

[17], a dermatitis may be produced following long or repeated contact with the liquid. The skin oils are moned, and the skin becomes red, cracked and dry. The effect of carbon tetrachloride on the eyes either mayapor or as a liquid, is one of irr with lacrimation and burning.

hatnal poisoning is usually acute, with malaise, headand confusion, which may be thered by stupor and sometimes loss of consciousness. Imploms of liver and kidney damage may follow later, and development of dark urine, sometimes jaundice by scanty urine, albusepuria and renal casts, uremia may develop and cause where the exposure has been less acute, the inture is usually one of headache, dizziness, nausea, peniting epigastric distress, loss of appetite, and fa-Nisual disturbances (blind spots, spots before the nt a visual "haze" and restriction of the visual fields), trandary anemia, and occasionally a slight jaundice ocur. Dermatitis may be noticed on the exposed Caution: Severe reaction with allyl alcohol, Al, A(C₁H₃)₃, Ba, (benzoyl peroxide + C₂H₄), Be, BrF₃, (OCI)2, diborane, C2H4, dimethyl formamide, disiher, F₁, Li, Mg, liquid O₂, Pu, K, (AgClO₄ + HCl), trisi-L. U. Zr. burning wax. See chlorinated HC. It has tanned from household use by FDA.

muser Hazard: Dangerous; when heated to decomp, mits highly tox fumes of phosgene.

home. Aluminium trichloride; calcium disilicide; chlotufluoride; decarborane (14); dibenzoyl peroxide;

No. 5 of DPIM Report.

CARBON TETRAFLUORIDE

NIOSH #: FG 4920000 CAS RN: 75730

mf: CF4; mw: 88.01

Colorless gas. mp: -184°, bp: -127.7°, d: 1.96 @ -184°.

SYNS:

TETRAFLUOROMETHANE FREON 14

HALON 14

CODEN: TOXICITY DATA:

MRLR** No.23,50 ihl-rat LCLo:895000 ppm/15M

Reported in EPA TSCA Inventory, 1980.

THR: LOW via inhal route. Less chronically toxic than carbon tetrachloride. See halogenated HC. Violent reaction with Al.

Disaster Hazard: See halogenated HC, aliphatic. When heated to decomp it emits tox fumes of F-.

Incomp: Aluminium.

CARBON TETRAIODIDE

NIOSH #: FG 4960000 CAS RN: 507255

mf: Cl₄; mw: 519.61

Octahedral, red crystals. mp: 171° decomp, d: 4.32.

SYNS:

CARBON IODIDE TETRAIODOMETHANE

CODEN: TOXICITY DATA:

CSLNX* NX#02298 ivn-mus LD50:178 mg/kg

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn. See also iodoform. Vigorous reaction with BrF3.

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

Incomp: Bromine trifluoride; lithium.

CARBON TRIFLUORIDE

NIOSH #: PB 6900000 CAS RN: 75467

mf: CHF₃; mw: 70.02

Colorless, odorless gas. mp: -163°, bp: -82.2°, d: 1.52

(liq) @ -100° .

SYNS:

METHYL TRIFLUORIDE **FLUOROFORM** TRIFLUOROMETHANE FREON F-23

CODEN: TOXICITY DATA:

ENVRAL 7,275,74 sln-dmg-ihl 98 pph/10M

THR: MUT data. A MLD resp irr. Narcotic in HIGH conc. See also fluorides.

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

TLV: Air: 5 ppm DTLVS* 3,249,71. DOT: ORM-A, Label: None FEREAC 41,57018,76. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45.13646.80.

THR: HIGH orl, ihl in rat. MOD skn, ipr in rbt, gpg. Disaster Hazard: When heated to decomp it emits tox fumes of CI-.

For further information see Vol. 1, No. 5 of DPIM Report.

1,1,1,2-TETRACHLOROETHANE

CAS RN: 630206 NIOSH #: KI 8450000 mf: C₂H₂Cl₄; mw: 167.84

Liquid; d: 1.588 @ 20°/4°; bp: 129°-130°; sol in water; misc in alc, ether.

SYN: NCI-C52459

TOXICITY DATA: 2 / CODEN: skn-rbt 500 mg/24H AMPMAR 35,593,74 eye-rbt 100 mg SEV AMPMAR 35,593,74

Toxicology Review: AIHAAP 40,A46,79. Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. NIOSH Current Intelligence Bulletin 27, 1978. Reported in EPA TSCA Inventory, 1980.

THR: Possible CARC. An irr (SEV) in rbt eyes and MOD in rbt skn.

Disaster Hazard: When heated to decomp it emits very tox fumes of C1-.

Incomp: Dinitrogen tetraoxide.

For further information see Vol. 2, No. 6 and Vol. 3, No. 2 of DPIM Report.

1,1,2,2-TETRACHLOROETHYLENE

CAS RN: 127184 NIOSH #: KX 3850000 mf: C₂Cl₄; mw: 165.82

Colorless liquid, chloroform-like odor. mp: -23.35°, bp: 121.20°, flash p: none, d: 1.6311 @ 15°/4°, vap. press: 15.8 mm @ 22°, vap. d: 5.83.

SYNS:

preg)

CARBON BICHLORIDE PERCHLORETHYLENE, PER CARBON DICHLORIDE (FRENCH) CZTEROCHI OROETYLEN (POLISH) PERCHI OROETHYLENE DOW-PER PERCLENE ETHYLENE TETRACHLORIDE PERCLOROETILENE (ITALIAN) NCI-C04580 TETRACHLOORETHEEN (DUTCH) PERCHLOORETHYLEEN, PER TETRACHLORAETHEN (GERMAN) (DUTCH) TETRACHLOROETHYLENE (DOT) PERCHLORAETHYLEN, PER (GER-TETRACLOROETENE (ITALIAN) MAN)

TOXICITY DATA: 3 CODEN: ihl-rat TCLo:1000 ppm/24H (14D APTOD9 19,A21,80 pre/1-22D preg) ihl-rat TCLo:1000 ppm/24H (1-22D ihl-rat TCLo:900 ppm/7H (7-13D preg) ihl-rat TCLo:300 ppm/7H (6-15D

APTOD9 19,A21,80 TJADAB 19,41A,79 TXAPA9 32,84,75

ihl-mus TCLo:300 ppm/7H (6-15D TXAPA9 32,84,75 preg) skn-rbt 810 mg/24H SEV JETOAS 9,171,76 eye-rbt 162 mg MLD JETOAS 9,171,76 mmo-sat 50 uL/plate NIOSH* 5AUG77 mma-sat 200 uL/plate NIOSH* 5AUG77 orl-mus TDLo: 195 gm/kg/50W-NCITR* NCI-CG-TR-I:CAR 13.77 orl-mus TD:240 gm/kg/62W-I:CAR NCITR • NCI-CG-TR-13,77 ihl-hmn TCLo:96 ppm/7H:SYS NTIS** PB257-185 ihl-man TCLo:280 ppm/2H:EYE AMIHBC 5,566,52 ihl-man TCLo:600 ppm/10M:CNS AMIHBC 5,566,52 orl-rat LD50:8850 mg/kg NPIRI* 1,96,74 ihl-rat LCLo:4000 ppm/4H JOCMA7 4,262,62 orl-mus LD50:8100 mg/kg NTIS** PB257-185 ihl-mus LCLo:23000 mg/m3/2H AHBAAM 116,131,36 ipr-mus LD50:4700 mg/kg NTIS** PB257-185 orl-dog LDLo:4000 mg/kg AJHYA2 9,430,29 ipr-dog LD50:2100 mg/kg TXAPA9 10,119,67 ivn-dog LDLo:85 mg/kg QJPPAL 7,205,34 orl-cat LDLo:4000 mg/kg AJHYA2 9,430,29 orl-rbt LDLo:5000 mg/kg AJHYA2 9,430,29 scu-rbt LDLo:2200 mg/kg QJPPAL 7,205,34

Aquatic Toxicity Rating: TLm96: 100-10 ppm WQCHM* 3,-,74. Carcinogenic Determination: Animal Positive IARC** 20,491,79.

TLV: Air: 50 ppm (skin) DTLVS* 4,325,80. Toxicology Review: AJMEAZ 38,409,65; 27ZTAP 3,139,69. OSHA Standard: Air: TWA 100 ppm; CL 200; Pk 300/5M/3H (SCP-J) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Tetrachloroethylene recm std: Air: TWA 50 ppm; CL 100 ppm/15M NTIS**. NCI Carcinogenesis Bioassay Completed; Results Positive: Mouse (NCITR* NCI-CG-TR-13,77). NCI Carcinogenesis Bioassay Completed; Results Negative: Rat (NCITR* NCI-CG-TR-13,77). Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980."NIOSH Manual of Analytical Methods" VOL 1 127, VOL 3 S335. NIOSH Current Intelligence Bulletin 20, 1978. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E No: 05780146-Followup Sent as of April, 1979.

THR: MOD via inhal, oral, scu, ipr and dermal routes. HIGH via ivn route. Not corrosive or dangerously acutely reactive, but toxic by inhal, by prolonged or repeated contact with the skin or mu mem, or when ingested by mouth. The liquid can cause injuries to the eyes; however, with proper precautions it can be handled safely. The symptoms of acute intoxication from this material are the result of its effects upon the nervous system.

Exposures to higher cone than 200 ppm cause irr, lachrymation and burning of the eyes and irr of the nose and throat. There may be vomiting, nausea, drowsiness, an attitude of irresponsibility, and even an appearance resembling alcoholic intoxication. This material also acts as an anesthetic, through the inhalation of excessive amounts within a short time. The symptoms of fatal intoxication are irritation of the eyes, nose and throat, then fullness in the head, mental confusion; there may be headache stupefaction, nausea and vomiting, personnel suffering from subacute poisoning

2518 TETRACHLORO HYDROQUINONE

may suffer from such symptoms as headache, fatigue, nausea, vomiting, mental confusion and temporary blurring of the vision. This can occur when inadequate ventilation results in concentrations higher than 200 ppm, or where the vapor conc are intermittently high due to faulty handling of the material, or when an individual fails to take adequate precautionary measures.

This material can cause dermatitis, particularly after repeated or prolonged contact with the skin. The dermatitis is preceded by a reddening and burning and more rarely, a blistering of the skin. In any event, the skin becomes rough and dry, due largely to the removal of skin oils by material. The skin then cracks easily and is readily susceptible to infection. Upon ingestion it causes irr of the gastrointestinal tract, which, in turn, causes nausea, vomiting, diarrhea and bloody stools. However, such effects are usually less severe than the effects of swallowing similar amounts of other chlorinated hydrocarbons. An exper CARC. MUT data.

It may be handled in the presence or absence of air, water, and light with any of the common construction materials at temp. up to 140°C. This material is extremely stable and resists hydrolysis. A common air contaminant. Reacts violently with Ba, Be, Li; N₂O₄; metals; NaOH.

Disaster Hazard: Dangerous; when heated to decomp it emits high tox fumes of chlorides.

For further information see Perchloroethylene Vol. 1, No. 2 of *DPIM Report*.

TETRACHLORO HYDROQUINONE

CAS RN: 87876 NIOSH #: MX 7700000

mf: C₆H₂Cl₄O₂; mw: 247.88

SYN: USAF DO-62

TOXICITY DATA: 3-2 CODEN:
orl-mus LD50:500 mg/kg
ipr-mus LD50:25 mg/kg
NTIS** AD277-689

Reported in EPA TSCA Inventory, 1980. THR: HIGH ipr. MOD orl.

TETRACHLOROISOPHTHALONITRILE

CAS RN: 1897456 NIOSH #: NT 2600000

mf: C₈Cl₄N₂; mw: 265.90

SYNS:

CHLORTHALONIL (GERMAN)
NCI-C00102

M-TETRACHLOROPHTHALONI-TRILE

TOXICITY DATA: 3

orl-rat TDLo:142 gm/kg/80WC:CAR

orl-rat LD50:10000 mg/kg
ipr-mus LD50:2500 mg/kg

CODEN:

NCITR* NCI-CG-TR41,78
85ARAE 4,75,76
INHEAO 4,11,66

NCI Carcinogenesis Bioassay Completed; Results Positive: Rat (NCITR* NCI-CG-TR-41,78); Results Negative: Mouse (NCITR* NCI-CG-TR-41,78). Reported in EPA TSCA Inventory, 1980.

THR: An exper CA orl.

Disaster Hazard: W

TETRACHLORON

tox fumes of Cl⁻,

CAS RN: 1335882 mf: C₁₀H₄Cl₄; mw

Crystals, mp: 182°.

TOXICITY DATA ihl-hmn TCLo:3 mg/m3

TLV: Air: 2 mg/m Standard: Air: FEREAC 39,2354 Methods" VOL 2 tory, 1980. EPA Information Pro

THR: HIGH via inl nated naphthalend Disaster Hazard: D emits highly toxic

TETRACHLORON

CAS RN: 2438882 mf: C₇H₃Cl₄NO₃;

SYNS:

BENZENE, 1,2,4,5-TETRAL 3-METHONY-6-NITRO-ENT 22,335 NCI-C03032

TOXICITY DATA orl-rat LD50:260 mg/kg

NCI Carcinogenesis tive (NCITR* NO THR: HIGH orl. Disaster Hazard: W tox fumes of CI

2,3,4,6-TETRACHI

CAS RN: 3714623 mf: C₆HCl₄NO₂; r

SYN: 1,2,3,5-TETRACH

TOXICITY DATA skn-mus TDLo:576 mg/ 1:NEO

THR: An exper NI Disaster Hazard: W tox fumes of HCl

2,3,5,6-TETRACHI

CAS RN: 117180 mf: C₆HCl₄NO₂; T

slt-mus-ipr 1 mmol/L
dns-mus-orl 2500 mg/L
dns-mus:bmr 1 mmol/L
hma-mus/smc 400 mg/kg

MUREAV 46,202,77 NTIS** AD-A080-636 NTIS** AD-A080-636 JEPTDQ 1,411,78

REPRODUCTIVE EFFECTS

DATA:

ihl-rat TCLo: 1800 ppm/24H (1-2D preg)

ihl-rat TCLo:100 ppm/4H (6-22D preg)

ihl-rat TCLo:1800 ppm/6H (1-20D

TUMORGENIC DATA:

ihl-rat TCLo:500 ppm/6H/77W-I:ETA

orl-mus TDLo:455 g/kg/78W-I:CAR ihl-mus TCLo: 100 ppm/6H/ 77W-I: ETA

ihl-ham TCLo: 100 ppm/6H/ 77W-I: ETA

orl-mus TD:912 g/kg/78W-1:CAR ihl-mus TC:500 ppm/6H/77W-I:ETA

TOXICITY DATA:

orl-hmn LDLo:7 g/kg ihl-hmn TCLo:6900 mg/M3/ 10M:CNS

ihl-hmn TCLo: 160 ppm/83M: CNS ihl-hmn TDLo:812 mg/kg:SYS ihl-man TCLo:110 ppm/8H:IRR ihl-man LCLo: 2900 ppm

orl-rat LD50:4920 mg/kg ihl-rat LCLo:8000 ppm/4H orl-mus LD50:2402 mg/kg ihl-mus LCLo:3000 ppm/2H ipr-mus LD50:3000 mg/kg ivn-mus LD50:34 mg/kg

orl-dog LDLo:5860 mg/kg ipr-dog LD50:1900 mg/kg scu-dog LDLo:150 mg/kg ivn-dog LDLo: 150 mg/kg

orl-cat LDLo:5866 mg/kg ihl-cat LCLo: 32500 mg/M3/2H orl-rbt LDLo:7330 mg/kg

scu-rbt LDLo:1800 mg/kg ihl-gpg LCLo: 37200 ppm/40M CODEN:

APTOD9 19,A22,80

JPHYA7 276,24P,78

TXCYAC 14,153,79

CODEN:

ARTODN 43,237,80

NCITR* NCI-CG-TR-2.76 ARTODN 43,237,80

ARTODN 43,237,80

NCITR* NCI-CG-TR-2.76 ARTODN 43,237,80

CODEN:

ARTODN 35,295,76 AHBAAM 116,131,36

AIHAAP 23,167,62 BMJOAE 2,689,45 BIIMAG 28,293,71 NZMJAX 50,119,51 AIHAAP 30,470,69 AIHAAP 30,470,69 NTIS** AD-A080-636 AEPPAE 141,19,29 JETOAS 7(4),247,74 CBCCT* 6,141,54 12VXA5 8,1069,68 TXAPA9 10,119,67 HBTXAC 5,76,59 QJPPAL 7,205,34 NBTXAC 5,76,59 AMBAAM 116,131,36

HBTXAC 5,76,59 QJPPAL 7,205,34 HBTXAC 5,76,59

Toxicity Rating:TLm96:1000-100 WQCHM* 3,-,74. Carcinogenic Determination: Animal Positive IARC** 20,545,79; IARC** 11,263,

TLV: TWA 50 ppm; STEL 150 ppm DTLVS* 4,406,

Toxicology Review: JTEHD6 2(3),671,77; CLPTAT 8, 91,67; JOCMA7 16(3),194,74; JOCMA7 17(9),603,75; FNSCA6 2,67,73; BNYMAM 54,413,78; 27ZTAP 3,146,69. OSHA Standard: Air: TWA 100 ppm; C1200; Pk 300/5M/2H (SCP-J) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Trichloroethylene recm std: Air: TWA 100 ppm; CL_150 ppm/10M NTIS**. Occupational Exposure to Waste Anesthetic Gases and Vapors recm std: Air: CL 2 ppm/1H NTIS**. NCI Carcinogenesis Bioassay Completed; Results Positive: Mouse (NCITR*NCI-CG-TR-2,76); Results Negative: Rat (NCITR(NCI-CG-TR-2,76). Currently tested by NTP for carcinogenesis by Standard Bioassay Protocol as of April 1982. NTP Carcinogenesis Bioassay Completed as of April 1982. "NIOSH Manual of Analytical Methods" VOL 1 127, Vol 3, S336. NIOSH Current Intelligence Bulletin 2, 1975. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8e NO: 05780146-Followup sent as of April, 1979.

THR: A strong skn, eye irr. MUT data. An exper TER, ETA, CARC. HIGH ivn, scu, ihl; MOD ihl, orl, ipr. LOW orl, ihl. Inhal of high cone causes narcosis and anesthesia. A form of addiction has been observed in exposed workers. Prolonged inhal of mod conc causes headache and drowsiness. Fatalities following severe, acute exposure have been attributed to ventricular fibrillation resulting in cardiac failure. There is damage to liver and other organs from chronic exposure. Cases have been reported but are of questionable validity. Determination of the metabolites trichloracetic acid and trichloroethanol in urine reflects the absorption of trichloroethylene. A food additive permitted in food for human consumption. A common air contaminant.

Fire Hazard: Low, when exposed to heat or flame. High conc of trichloroethylene vapor in high-temp air can be made to burn mildly if plied with a strong flame. Though such a condition is difficult to produce, flames or arcs should not be used in closed equipment which contains any solvent residue or vapor.

Spontaneous Heating: No.

Disaster Hazard: Dangerous. When heated to decomp it emits tox fumes of Cl-. See chlorides.

For further information see Vol. 1, No. 2 and Vol. 3, No. 1 of DPIM Report.

Incomp: Can react violently with Al, Ba, N2O4, Li, Mg. liquid O2, O3, KOH, KNO3, Na, NaOH, Ti.

alpha-TRICHLOROETHYLIDENE GLYCEROL

CAS RN: 4692493

NIOSH #: JI 3380000

mf: C₅H₇Cl₃O₃; mw: 221.47

SYN: ALPHA-2-(TRICHLOROMETHYL)-1,3-DIOXOLANE-4-MITHANOL

TOXICITY DATA: ipr-mus LD50:920 mg/kg ivn-mus LD50:520 mg/kg

CODEN: JPETAB 81.72.44 JPETAB 81,72,44

THR: MOD ipr, ivn.

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

beta-TRICHLOROETHYLIDENE GLYCEROL

CAS RN: 4692493

NIOSH #: JI 3440000

mf: C₅H₇Cl₃O₃; mw: 221.47

SYN: BETA-2-(TRICHLOROMETHYL)-1,3-DIOXOLANE-4-METHANOL

TOXICITY DATA: ipr-mus LD50:959 mg/kg ivn-mus LD50:518 mg/kg

CODEN: JPETAB 81,72,44 JPETAB 81,72,44

THR: MOD ipr, ivn.

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

DETHANOL

5208 NIOSH #: KM 3850000

); mw: 149.40

7.8°, bp: 150° @ 765 mm, d: 1.54 @ 25°/ : 1 mm @ 20°, vap. d: 5.16.

ETHANOL 2,2,2-TRICHLOROETHYL ALCO-ALCOHOL IOH

)ATA: 3-2 CODEN: late/2H CBINA8 30,9,80 mg/kg 12VXA5 8,1069,68) mg/kg JPETAB 63,453,38)1 mg/kg 28ZPAK -,78,72 mg/kg JPETAB 63,453,38

.PA TSCA Inventory, 1980.

via ivn and ipr routes. MOD via oral route. ic. MUT data.

rd: Dangerous; see chlorides.

)ETHENYLSILANE

45 NIOSH #: VV 6125000 ; mw: 161.49

. bp: 90.6°; d: 1.265 @ 25°/25°; flash p:

L)SILANE VINYLSILICON TRICHLORIDE SILICANE VINYL TRICHLOROSILANE JATA: 2 CODEN:

AMIHBC 10,61,54 en SEV UCDS** 1/19/72 AMIHBC 10,61,54 0 mg/kg AMIHBC 10,61,54 ppm/4H UCDS** 1/19/72 60 mg/kg HYSAAV 34,334,69 20 mg/m3/4H HYSAAV 34,334,69) mg/kg AMIHBC 10,61,54

ty Rating: TLm96: 100-10 ppm WQCHM* : Flammable Liquid, Label: Flammable EAC 41,57018,76. Reported in EPA TSCA 980.

rl, ihl, skn. A skn, eye irr. See also chlorosi-

Dangerous; reacts violently with water,

d: When heated to decomp it emits tox Will react with water or steam to produce osive fumes.

ORO-1-ETHOXYETHANOL

:33 NIOSH #: KM 4725000 ; mw: 193,46

ol in water than chloral hydrate, sol in s. d: 1.143, mp: 47.5°, bp: 116°.

LATE COHOLATE

CHLORAL, ETHYL HEMIACETAL TRICHLOROACETALDEHYDE MONOETHYLACETAL

TOXICITY DATA: 2 CODEN: orl-rat LD50:880 mg/kg JPETAB 78,340,43 orl-dog LDLo: 1200 mg/kg JPETAB 78,340,43 orl-cat LDLo:500 mg/kg JPETAB 78,340.43 orl-rbt LDLo:1100 mg/kg JPETAB 78,340,43

Reported in EPA TSCA Inventory, 1980.

THR: MOD via oral route.

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

TRICHLOROETHYLAMINE

NIOSH #: KR 9850000

mf: C₂H₄Cl₃N; mw: 148.41

SYN: TCEA

TOXICITY DATA: CODEN: mmo-asn 1700 umol/L SOGEBZ 6,220,70

THR: MUT data.

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

TRICHLOROETHYL CARBAMATE

CAS RN: 107697 NIOSH #: FD 1750000

mf: C₃H₄Cl₃NO₂; mw: 192.43

SYN: CARBAMIC ACID 2,2,2-TRICHLOROETHYL ESTER

TOXICITY DATA: CODEN: ipr-mus TDLo: 3250 mg/kg/13W-I JNCIAM 8,99,47 TFX:NEO

ipr-mus LD50:500 mg/kg

JNCIAM 8,99,47

THR: An exper NEO. MOD ipr. See also esters, carba-

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

TRICHLORO ETHYLENE

CAS RN: 79-01-6 NIOSH #: KX 4550000 mf: C₂HCl₃; mw: 131.38

Mobile liquid; characteristic odor of chloroform. d: 1.4649 @ 20°/4°; bp: 86.7°; flash p: 89.6°F; lel = 12.5%; uel = 90% @ above 30°; mp: -73°; fp: -86.8°; autoign. temp.: 788°F; vap. press: 100 mm @ 32°; vap. d: 4.53.

SYNS:

ACETYLENE TRICHLORIDE NCI-C04546 1-CHLORO-2,2-DICHLOROETH-TRICHLOORETHEEN (DUTCH) YLENE TRICHLORAETHEN (GERMAN) 1,1-DICHLORO-2-CHLOROETH-TRI-CLENE

YLENE

TRICLORETENE (ITALIAN) VESTROL

DOW-TRI ETHYLENE TRICHLORIDE

SKIN AND EYE IRRITATION

DATA: CODEN: eye-hmn 5 ppm JOCMA7 2,383,60 skn-rbt 500 mg/24H SEV 28ZPAK -,28,72 eye-rbt 20 mg/24HSEV 28ZPAK -,28,72

MUTATION DATA:

CODEN: mmo-sat 100 uL/plate NIOSH* 5AUG77 mma-sat 5 pph/2H ARTODN 41,249,79 mma-smc 10 mL/L MUREAV 48,173,77

,7-TRICHLOROBENZTHIADIAZOLE-2,1,3

S RN: 1982554

NIOSH #: DL 0175000

C₆HCl₃N₂S; mw: 239.50

N: 4,5,7-TRICHLORO-2,1,3-BENZOTHIADIAZOLE

XICITY DATA:

2 CODEN:

at LD50:1620 mg/kg nus LD50:1500 mg/kg WRPCA2 9,119,70 31ZOAD 1,423,68

R: MOD orl.

aster Hazard: When heated to decomp it emits very ox fumes of NO_r and SO_r.

ICHLOROBENZYL CHLORIDE

S RN: 1344327

NIOSH #: XT 8575000

C₇H₄Cl₄; mw: 229.91

N: TCBC

XICITY DATA: at LD50:3075 mg/kg

CODEN: 28ZEAI, 4,359,69

cicology Review: 27ZTAP 3,146,69. Reported in EPA SCA Inventory, 1980.

2

R: MOD orl.

1ster Hazard: When heated to decomp it emits tox imes of CI-.

4'-TRICHLOROCARBANILIDE

S RN: 101202

NIOSH #: FE 1250000

 $C_{13}H_9Cl_3N_2O$; mw: 315.59

1: N-(3,4-DICHLOROPHENYL)-N'-(4-CHLOROPHENYL)UREA

XICITY DATA:

CODEN:

aus LD50:2100 mg/kg

LPPTAK 27,306,79

icology Review: 27ZTAP 3,146,69. Reported in EPA SCA Inventory, 1980. EPA TSCA 8(a) Preliminary ssessment Information Proposed Rule FERREAC 5,13646,80.

R: MOD ipr.

aster Hazard: When heated to decomp it emits very x fumes of Cl- and NO.

6-TRICHLORO-2-(2,4-DICHLOROPHENOXY) HENOL.

NIOSH #: SL 0532000

C₁₂H₅Cl₅O₂; niw: 358.42

V: 2-(2,4-dichlorophenoxy)-4,5,6-trichlorophenol

XICITY DATA:

CODEN:

us-ipr 140 umol/L

MUREAV 46,202,77

R: MUT data.

ister Hazard: When heated to decomp it emits tox imes of Cl-.

2-TRICHLORO-2,2-DIFLUOROETHANE

3 RN: 354212

NIOSH #: KI 1435000

CHCl₃F₂; mw: 157.37

√: UCON FLUOROCARBON 122

TOXICITY DATA:

orl-rat LDLo:7500 mg/kg

ihl-rat LCLo:4000 ppm/4H

CODEN: 16CZAC 20,459,66 UCMH** 11,15,62

THR: MOD orl, ihl.

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

2

TRICHLORODINITROBENZENE

CAS RN: 8003461

NIOSH #: CZ 7960000

mf: C₆HCl₃N₂O₄; mw: 271.44

SYNS:

BRASSISAN (GERMAN)

DINITROTRICHLOROBENZENE

ISOMERIC MIXTURE

TOXICITY DATA: orl-rat LD50:425 mg/kg

CODEN: GUCHAZ 6,516,73

skn-rat LD50:425 mg/kg

GUCHAZ 6,516,73 THR: MOD, via oral and dermal routes. See also benzene

and nitrobenzene. A pesticide. Fire Hazard: Mod, when exposed to heat or flame. See nitrates.

2

Explosion Hazard: See nitrates.

Disaster Hazard: Dangerous; when heated to decomp it emits highly tox fumes of NO_x and Cl⁻; can react vigorously with reducing materials.

TRICHLORO ESTERTIN

NIOSH #: WH 8240000

SYN: ESTERTRICHLOROSTANNANE

TOXICITY DATA: unk-rat LD50:5500 mg/kg

CODEN:

1 TIUSAD 107,1,76

Occupational Exposure to Organotin Compounds recm std: Air: TWA 0.1 mg(Sn)/m3 NTIS**.

THR: LOW unk. See also tin compounds and esters. Disaster Hazard: When heated to decomp it emits tox fumes of CI-.

1,1,1-TRICHLOROETHANE

CAS RN: 71556

NIOSH #: KJ 2975000

mf: C₂H₃Cl₃; mw: 133.40

Colorless liquid. bp: 74.1°, fp: -32.5°, flash p: none, d: 1.3376 @ 20°/4°, vap. press: 100 mm @ 20.0°. Insol in water; sol in acetone, benzene, carbon tetrachloride, methanol, ether.

SYNS:

CHLOROETHENE CHLOROTHANE NU CHLOROTHENE METHYL CHLOROFORM

1,1,1-TRICHLORAETHAN (GER-MAN) TRICHLORO-1,1,1-ETHANE

(FRENCH)

METHYLTRICHLOROMETHANE NCI-C04626

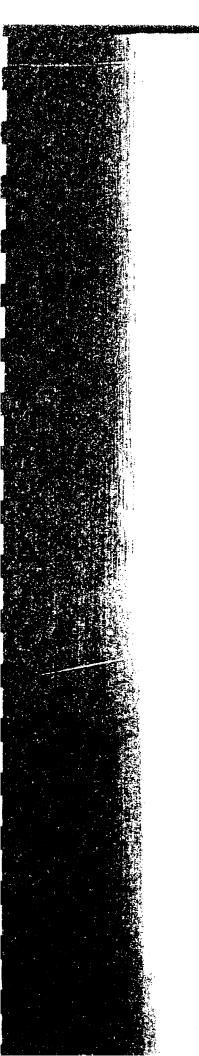
ALPHA-TRICHLOROETHANE 1,1,1-TRICLOROETANO (ITALIAN)

1,1,1-TRICHLOORETHAAN (DUTCH)

TOXICITY DATA: 2-1 ihl-rat TCLo:2100 ppm/24H (14D

pre/1-20D preg) eye-man 450 ppm/8H CODEN: TOXID9 1,28,80

BJIMAG 28,286.71 skn-rbt 5 gm/12D-I MLD AIHAAP 19,353,58



2620 1,1,2-TRICHLOROETHANE

skn-rbt 500 mg/24H MOD 28ZPAK -,28,72 eye-rbt 100 mg MLD AIHAAP 19,353,58 eye-rbt 2 mg/24H SEV 28ZPAK -,28,72 ihl-man LCLo: 27 gm/m3/10M JOCMA7 8,358,66 ihl-man TCLo:350 ppm:PSY WEHSAL 10,82,73 orl-hmn TDLo:670 mg/kg:GIT NTIS** PB257-185 ihl-hmn TCLo:920 ppm/70M:CNS AIHAAP 19,353,58 orl-rat LD50:10300 mg/kg NTIS** PB257-185 ihl-rat LCLo: 1000 ppm FMCHA2 -, D317,80 ipr-rat LD50:5100 mg/kg NTIS** PB257-185 orl-mus LD50:11240 mg/kg NTIS** PB257-185 ihl-mus LCLo:11000 ppm/2H HBTXAC 5,72,59 ipr-mus LD50:4700 mg/kg TXAPA9 13,287,68 orl-dog LD50:750 mg/kg FMCHA2 -, D317,80 ipr-dog LD50:3100 mg/kg TXAPA9 10,119,67 ivn-dog LDLo:95 mg/kg HBTXAC 5,72,59 orl-rbt LD50:5660 mg/kg AIHAAP 19,353,58 scu-rbt LDLo:500 mg/kg HBTXAC 5,72,59 orl-gpg LD50:9470 mg/kg AIHAAP 19,353,58

Aquatic Toxicity Rating: TLm96: 100-10 ppm WQCHM* 3,-,74. Carcinogenic Determination: Indefinite IARC** 20,515,79.

TLV: Air: 350 ppm DTLVS* 4,269,80. Toxicology Review: FAZMAE 18,365,74; EATR** EB-TR-75047; AIHAAP 40,A46,79. OSHA Standard: Air: TWA 350 ppm (SCP-J) FEREAC 39,23540,74. DOT: ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to 1,1,1-Trichloroethane recm std: Air: CL 350 ppm/15M NTIS**. NCI Carcinogenesis Bioassay Completed; Results Negative (NCITR* NCI-CG-TR-3,77). Currently Tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. "NIOSH Manual of Analytical Methods" VOL 1 127, VOL 3 S328. NIOSH Current Intelligence Bulletin 27, 1978. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: In hmn it causes PSY, GIT, CNS effects. A MOD skn irr, a SEV eye irr in rbts. LOW orl, ipr, ihl in rat, mus. MOD orl, ipr dog; Narcotic in high conc. Causes a proarrhythmic activity which sensitizes the heart to epinephrine-induced arrhythmias. This sometimes will cause a cardiac arrest particularly when this material is massively inhaled as in drug abuse for euphoria. Reacts violently with N₂O₄, O₂, O₂ liquid, Na, NaOH, Na-K alloy.

Disaster Hazard: Dangerous; see chlorides.

For further information see Vol. 2, No. 1 of DPIM Report.

1,1,2-TRICHLOROETHANE

CAS RN: 79005 NIOSH #: KJ 3150000 mf: C₂H₃Cl₃; mw: 133.40

Liquid, pleasant odor. bp: 114°, fp: -35°, d: 1.4416 @

20°/4°, vap. press: 40 mm @ 35.2°.

SYNS:

ETHANE TRICHLORIDE NCI-C04579 BETA-TRICHLOROETHANE 1,2,2-TRICHLOROETHANE TROJCHLOROETAN(1,1,2) (POL-ISH) VINYL TRICHLORIDE TOXICITY DA7 skn-rbt 500 mg open skn-rbt 810 mg/24H: eye-rbt 162 mg MLD skn-gpg 1440 mg/15N cyt-gpg-skn 2880 ug/1 orl-mus TD:76 gm 1:CAR orl-mus TD:152 gm/3

orl-rat LD50:1140 mg ihl-rat LCLo:500 ppm ipr-mus LD50:994 mg scu-mus LD50:227 m orl-dog LDLo:500 mg ipr-dog LDLo:95 mg ihl-cat LCLo:13100 m scu-rbt LDLo:500 mg

Aquatic Toxicity I 3,-,74. Carcinog IARC** 20,533 TLV: Air: 1.0 ppn Review: FAZM 27ZTAP 3,146,4 (skin) (SCP-J) genesis Bioassay (NCITR* NCI Bioassay Compl NCI-CG-TR-74. Methods" VOL Intelligence Bull Inventory, 1980. ment Informati 13646,80.

THR: HIGH ivn. MOD skn irr an has narcotic pro eyes, nose and b liver and kidneys data.

Disaster Hazard: Disast

No. 2 of DPIM.

1,1,1-TRICHLOR(TETRACHLOR

SYNS:

TOXICITY DATA orl-rat LD50:15 gm/kg ihl-rat LC50:3700 ppm/orl-mus LD50:10 gm/kg orl-rbt LD50:13 gm/kg orl-gpg LD50:6 gm/kg

THR: LOW orl, ih and orl in gpg.

Disaster Hazard: W tox fumes of Cl⁻.

Upstate Laboratories inc.

17315-437-0255

Shipping: 6034 Corporate Drive • East Syracuse, New York 13057 • (315) 437-0255 ____ Mailing: Box 289 • Syracuse, New York 13206 Southern Region (607) 724-0478 Western Region (716) 436-9070

July 11, 1990

Mr. John K. Hagopian President Hagopian Engineering Associates 28 Alice Street Binghamton, New York 13904

Re: Soil Gas Analysis

Dear Mr. Hagopian:

Please find enclosed the results for your soil gas analysis which was conducted at Dover Electronics on July 6, 1990.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Garrett J. Moll Field Chemist

Gant Moel

Industrial Hygiene Division

GJM/bf

Enclosures: report, invoice

cc/encs: N. Scala, ULI

file

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

UPSTATE LABORATORIES, INC. July 11, 1990 Lab I.D.: 10170

FIELD ANALYSIS

I. INTRODUCTION

Upstate Laboratories, Inc. was contracted to provide a soil gas analysis for Hagopian Engineering, located in Binghamton, NY. The analysis was conducted at Dover Electronics on July 6, 1990.

II. PROJECT DESCRIPTION

The purpose of the soil gas study was to aid Hagopian Engineering in determining the extent of soil/groundwater contamination, which may have been produced by an underground tank (no longer present). Soil and groundwater samples were to be taken in addition to the soil vapor samples. Results of the soil gas study were to aid in the decision as to whether further analysis of the site was necessary.

III. INSTRUMENTATION

- 1. Thermo-Environmental Portable Gas Chromatograph, Model 511A, equipped with a Flame Ionization Detector and a variable temperature oven.
- 2. Column: Stainless Steel 10' x 2mm

Packing: 10% DC-200

Oven Temperature: 120 degrees Celsius

IV. STANDARDIZATION

Standards for Benzene, Toluene, Xylenes, 1,1,1-Trichloroethane and Tetrachloroethylene were run at Upstate Laboratories, Inc. before field analysis occurred. These standards were also run at the beginning, during and at the end of the field analysis to insure proper calibration of the Portable GC. Blanks were run to check for background contamination in the air, and on the field equipment to rule out cross contamination.

Approved by: 7/11/90
Sampled by: Hagopian Engineering/ULI
NOTE: See disclaimer on cover letter.

UPSTATE LABORATORIES, INC. July 11, 1990 Lab I.D.: 10170

V. SAMPLING METHODS/ANALYSIS

Two ml of soil gas were injected into the Portable GC through a two ml loop. This loop insures the consistency of the sample size. Height count (mm) was used as an indicator of concentration levels. The height count is proportional to the concentration.

A total of seven locations were sampled for soil gas (B1C, B3C, B4C, B5C, B8C, B9C, and B10C). The samples were collected by Hagopian Engineering and placed in a headspace vial. After an allotted time, headspace was drawn out and injected directly into the GC to be analyzed.

VI. CONCLUSION

Results of the soil gas study using the Portable GC indicate that all headspace air from locations B1C, E3C, B4C, B5C, B8C, B9C and B10C had trace amounts of a contaminant that was not previously standardized for.

Due to the fact that the soil samples used for the headspace analysis were exposed to the ambient air, it could not definitely be determined in the field whether the contamination was airborne or originating from the soil. Air blanks were run to check background contamination, which proved positive. The same contaminant present in the air blanks was also present at all locations sampled in the field.

Results were brought back to the laboratory and reviewed by the Field Chemist. Determination of the trace contamination was possible by replication of field conditions within the laboratory. The unknown compound proved to be Methane. Standards for Methane, which were run in the laboratory, revealed approximate concentrations of 15-20 ppm for all locations sampled.

As stated previously, it cannot definitely be determined whether the Methane present in the samples originated from the soil or the surrounding air by the methods employed.

No other organic contamination was detected at the locations sampled.

These conclusions are based on the results of blanks and standards that were used in the analysis with respect to the limitations of the field unit, conditions of analysis and the area subjected to analysis.

Approved by: 7/11/90
Sampled by: Hagopian Engineering/ULI
NOTE: See disclaimer on cover letter.

Field analysis: Garrett Moll

Report: Garrett Moll