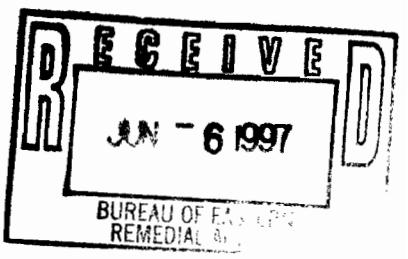
Interim Remedial Measures Letter Report
Tishcon Corporation
125 State Street
Wsetbury, New York

6197

June 1997

Prepared for:

Tishcon Corporation
30 New York Avenue
Westbury, New York 11590



Prepared by:

CA RICH CONSULTANTS, INC.
404 Glen Cove Avenue
Sea Cliff, New York 11579

CA RICH CONSULTANTS, INC.
CERTIFIED GROUND-WATER AND
ENVIRONMENTAL SPECIALISTS

June 2, 1997

NYSDEC
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, New York 10591-5805

Attention: Jeffery Trad, P.E.

Re: **Interim Remedial Measures Letter Report**
Tishcon Corporation, Site No.: 130043C
125 State Street
Agreement Index No.: W1-0757-95-05

Dear Mr. Trad:

In accordance with the above-referenced Agreement, CA RICH is pleased to provide you with the following Interim Remedial Measures (IRM) Letter Report. This Letter Report includes the following items outlined in Section IV (3) of the Agreement.

- IRM Work Plan
- Health & Safety Plan
- Schedule

Interim Remedial Measures Work Plan

An IRM Scope of Work was included in the Remedial Investigation Work Plan dated December 1995. The scope of this IRM was based on a subsurface investigation performed for the NCDH during February 1995. The samples collected and analyzed during the Remedial Investigation do not indicate the need to alter the approach developed for NCDH. As such, the storm drain cleanup procedures presented to NCDH are proposed as the IRM for this site. These procedures are listed below. The Quality Assurance Project Plan (QAPP) developed for the Remedial Investigation will be used during the IRM.

Based on the information available at this time, two phases of storm drain remediation are proposed as shown below.

Phase 1 - Clean out of Pools 2, 4, distribution box 5 and the backfilled sewer line (as required)

A current waste characterization sample will be collected for the purposes of selecting a waste disposal facility. One composite soil sample will be collected from storm drains 2, 4 distribution box 5 and the backfill around the sewer pipe. These results will be used to obtain approval for disposal prior to beginning the excavations.

The bottom of storm drains 2, 4 distribution box 5 and the backfill around the sewer pipe will be excavated. As indicated in the NCDH's March 25, 1994 letter (attached), no action is required at pool 3 at this time. A super sucker will be mobilized to the site to clean out the pools. Soil removed from the pools will be placed directly into either 20 cubic yard roll-off containers or 30 cubic yard dump trailers. Based on the borings performed during February, 1995, we estimate that approximately 5 feet of soil will have to be removed from each of these locations. Samples of the excavation bottom will be screened on-site during the excavation process using a portable organic vapor meter. One end-point sample and associated QA/QC samples will be collected from the bottom of each excavation and analyzed for volatile organics and eight RCRA metals as described on Table 2 of the R.I. Work Plan. The drains will be backfilled with clean fill upon completion of the excavation and the excavated material will be transported to a permitted disposal facility with appropriate manifests.

It is necessary to complete Phase 1 before beginning Phase 2, the removal of storm drain 1. Storm drains 2 and 4 are located in the driveway of the facility between pool 1 and State Street. We will need to stage either 20 cubic yard roll-off containers or 30 cubic yard dump trailers over these pools before proceeding with the removal of storm drain 1.

Phase 2 - Removal of Storm Drain 1

A current waste characterization sample will be collected for the purposes of selecting a waste disposal facility. One soil sample will be collected from storm drains 1. These results will be used to obtain approval for disposal prior to beginning the excavations.

Previous efforts to clean out pool 1 indicate that soils in the bottom of this drain are chemically cemented and that the depth of contamination probably exceeds the capacity of a super sucker. The chemical cementation is presumed to be resultant to residues from the tableting process which entered the drain as a result of equipment washing performed in proximity to the drain. To clean out this drain we propose to remove or "pull" the existing concrete rings and excavate the underlying soils. Based on the borings performed during February, 1995, we estimate that the soil below this storm drain will have to be excavated to a depth of approximately 30 feet below grade. A crane will need to be utilized to perform this excavation. This will require the use of 10 foot diameter concrete rings to shore the excavation during the removal process.

Similar to the description outlined in Phase 1, one end-point sample will be collected from the bottom of the excavation and analyzed for volatile organics and eight RCRA metals. The storm drains will be backfilled with clean fill upon completion of the excavation and the excavated material will be transported to a permitted disposal facility with appropriate manifests.

Interim Remedial Measures Report

Once the sampling is completed and the results are received from the laboratory, a report will be prepared. The report will include the following.

- A description of the work performed;
- The results of the soil boring samples;
- The results of the waste characterization samples;
- A record of the volumes of wastes removed and the disposal facilities; and,
- Copies of the waste disposal manifests.

Health & Safety Plan

As part of the R. I. Work Plan, a Health & Safety Plan was developed for this site. We propose to continue work at this site using the existing Health & Safety Plan.

Schedule

The following schedule is proposed for this project.

Clean out of Pools 2, 4, distribution box 5 and the backfilled sewer line (as required)

Soil sampling for waste characterization	June 1997
Receipt of laboratory analysis	August 1997
Selection and approval of disposal facility	October 1997
Clean out of Pools 2, 4, distribution box 5 and the backfilled sewer line (as required)	December 1997

Removal of Storm Drain 1

Soil sampling for waste characterization	February 1998
Receipt of laboratory analysis	April 1998
Selection and approval of disposal facility	June 1998
Clean out of storm drain 1	August 1998
I.R.M. Report	November 1998

Groundwater Monitoring - Once the storm drain cleanup program is completed, we will provide the NYSDEC with a proposal for post-remediation groundwater monitoring of halogenated volatile organic coupounds using the existing monitoring well number UN-11.

If there are any questions regarding this Letter Report, please do not hesitate to call our office.

Sincerely,

CA RICH CONSULTANTS, INC.

Eric A. Weinstock
Associate

Stephen J. Osmundsen, P.E.
Project Engineer

cc: Joe Elbaz
Kamal Chopra
G. Anders Carlson, Ph.D.
Jeanna Hussey, Esq.
Andrew Simons, Esq.
Chittibabu Vasudevan, P.E.

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Focused Remedial Investigation Work Plan, Sampling & Analysis Plan and Health & Safety Plan 125 State Street Westbury, New York

December 1995

Prepared for:

TISHCON CORPORATION
30 New York Avenue
Westbury, New York 11590

Prepared by:

CA RICH CONSULTANTS, INC.
404 Glen Cove Avenue
Sea Cliff, New York 11579

CA RICH CONSULTANTS, INC.
CERTIFIED GROUND-WATER AND
ENVIRONMENTAL SPECIALISTS

May 13, 1996

NYSDEC
Division Of Hazardous Waste Remediation
50 Wolf Road
Albany, NY 12233-7010

Attention: Jeffrey E. Trad, P.E.

Re: **Remedial Investigation Work Plan Addendum No. Two**
Tishcon Corp.
125 State Street, Westbury, New York
NYSDEC Site No.: 130043C

Dear Mr. Trad:

We are pleased to provide you with Work Plan Addendum No. Two for the above-referenced site. It is our understanding that this Addendum along with the Remedial Investigation (R.I.) Work Plan prepared for this site dated December, 1995 and Addendum No. One dated February 29, 1996 satisfy the requirements of the NYSDEC for the performance of a remedial investigation at this property. The Health & Safety Plan (H&SP) and the Quality Assurance Project Plan (QAPP) for this project are included with the December, 1995 Work Plan.

Schedule

The following schedule is proposed for this project.

Project set-up	1 month
• Schedule Laboratory and Contractors	
• Call for utility mark-outs	
Field Sampling	1 week
Laboratory Analysis	1 month
Remedial Investigation Report	2 months (after reciept of validated laboratory data)
Clean out of Pools 2, 4, distribution box 5 and the backfilled sewer line (as required)	1 month
Removal of Leaching Pool 1	1 month

I.R.M. Report	1 month
Focused Feasiblilty Study Report	1 month (after approval of R.I. and I.R.M. Reports)

We trust this Addendum meets with your approval and look forward to working with you on this most important project.

Sincerely,

CA RICH CONSULTANTS, INC.

Eric A. Weinstock
Associate

cc: Joe Elbaz, Tishcon Corp.
Andrew Simons, Esq., F, F, C, C, B & A
John Soderberg, Esq., F, F, C, C, B & A

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CA RICH CONSULTANTS, INC.
CERTIFIED GROUND-WATER AND
ENVIRONMENTAL SPECIALISTS

February 29, 1996

NYSDEC
Division Of Hazardous Waste Remediation
50 Wolf Road
Albany, NY 12233-7010

Attention: Jeffrey E. Trad, P.E.

Re: **Remedial Investigation Work Plan Addendum**
Tishcon Corp.
125 State Street, Westbury, New York
NYSDEC Site No.: 130043C

Dear Mr. Trad:

We are pleased to provide you with the attached Work Plan Addendum for the above-referenced site. It is our understanding that this Addendum along with the Remedial Investigation (R.I.) Work Plan prepared for this site dated December, 1995 satisfy the requirements of the NYSDEC for the performance of a remedial investigation at this property. The Health & Safety Plan (H&SP) and the Quality Assurance Project Plan (QAPP) for this project are included with the December, 1995 Work Plan.

Introduction

The goal of this Addendum is to include provisions for additional sampling and analysis as part of the R.I. effort. To that end, the following field tasks are presented. All health & safety issues and quality assurance issues are addressed in the previously submitted H&SP and QAPP. The NYSDEC will be provided 10 days notice of all planned field activities and will be provided the opportunity to collect "splits" of the samples.

Groundwater Sampling

A total of 4 groundwater samples will be collected and analyzed as part of the R.I. Two groundwater samples will be collected using the Geoprobe (TM) sampling system. One sample will be located at the upgradient property line and 1 sample will be located at the downgradient property line as shown on Figure 1. At this site, the downgradient property line sample is also the location of the potential source area in question, storm drain No. 1.

Sampling rods will be advanced to a depth of approximately 5 feet below the water table. A screened sample probe will then be extended from the bottom of the rods. Water samples will be collected by lowering plastic tubing equipped with a foot valve into the probes and pumping the water by raising and lowering the tubing.

Two downgradient groundwater samples will be collected using existing off-site monitoring wells. At this time, we anticipate sampling wells UN-11 and N-11842. The wells will be purged of at least 3 casing volumes of water using a 1-3/4 inch diameter sampling pump. The groundwater samples will then be collected directly from the pump discharge. Pumped groundwater will be containerized and discharged to the NCDPW sewer pending permission from the County. The NYSDEC will assist in arranging access to all off-site monitoring wells and agree to have a representative present during the sampling activity.

Soil Sampling

Two additional shallow soil samples will be collected from a depth of approximately 1 to 2 feet below grade along the western portion of the property for analysis of volatile organic compounds. The locations of these samples will be determined in the field based on observations and accessibility.

All samples will be collected in laboratory-issued glass vials for analysis of volatile organic compounds (VOCs) using NYSDOH 91-1. The samples will be placed in an ice filled cooler and delivered to Nytest Environmental, Inc. (NEI) under chain-of-custody documentation.

Procedures for equipment decontamination and quality control will be the same as those developed in the QAPP. The results of the field analyses will be included in the R.I. Report described in the December 1995 Work Plan.

We trust this Addendum meets with you approval and look forward to working with you on this most important project.

Sincerely,

CA RICH CONSULTANTS, INC.

Eric A. Weinstock
Associate

cc: Joe Elbaz, Tishcon Corp.
Andrew Simons, Esq., F, F, C, C, B & A
John Soderberg, Esq. F, F, C, C, B & A

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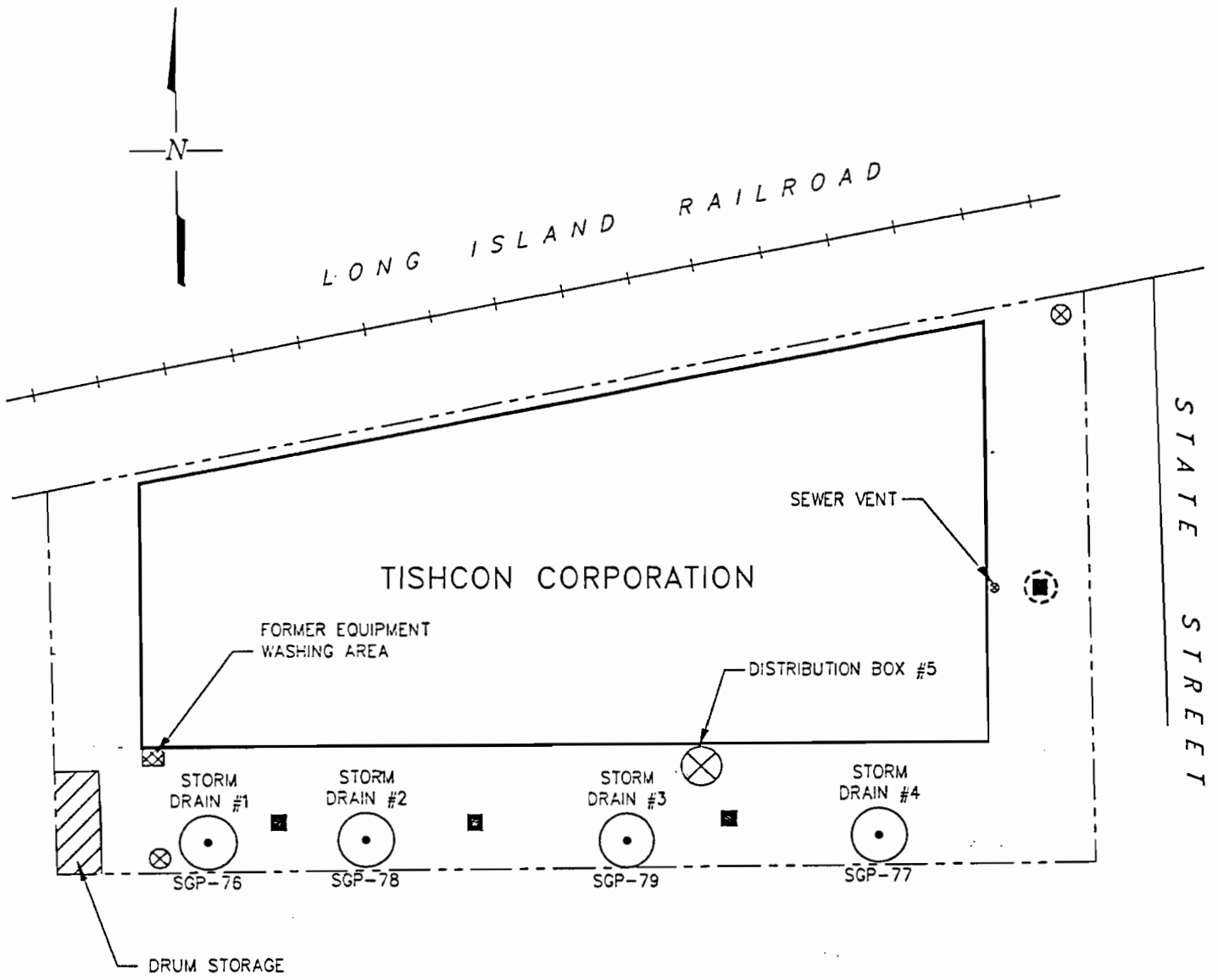

LEGEND

- ⊗ APPROXIMATE LOCATION OF PROPOSED GROUNDWATER SAMPLE
- ■ APPROXIMATE LOCATION OF PROPOSED SOIL BORING
- ○ APPROXIMATE LOCATION OF STORM DRAIN
- ◌ FORMER CESSPOOL
- SGP-75 • APPROXIMATE LOCATION OF NYSDEC SAMPLES

0 20 40 60 80

Scale in Feet

CA RICH CONSULTANTS, INC.

Certified Ground-Water and Environmental Specialists
404 Glen Cove Avenue, Sea Cliff, NY 11579

TITLE: SITE PLAN		DATE: 2/29/96
		SCALE: AS SHOWN
FIGURE: 1	TISHCON CORPORATION 125 STATE STREET WESTBURY, NEW YORK	DRAWN BY: J.J.S.
DRAWING NO: 3237-01A		APPR. BY: E.A.W.

CA RICH CONSULTANTS, INC.
CERTIFIED GROUND-WATER AND
ENVIRONMENTAL SPECIALISTS

December 20, 1995

NYSDEC
50 Wolf Road
Albany, New York 12233-7010

Attention: Jeffrey Trad - Eastern Projects Section
Bureau of Eastern Remedial Action

Re: **Final Focused Remedial Investigation Work Plan**
Tishcon Corporation
125 State Street
Westbury, New York
NYSDEC Site No.: 130043C

Dear Mr. Trad:

Attached are four copies of our revised Remedial Investigation Work Plan for the above referenced site. We have also delivered a copy of this Work Plan to Jeanna Hussey, Esq. in the Tarrytown offices of the NYSDEC.

If there are any questions regarding this Work Plan, please do not hesitate to call our office.

Sincerely,

CA RICH CONSULTANTS, INC.

Eric A. Weinstock
Associate

cc: Kamal Chopra
Joe Elbaz
Jeanna Hussey, Esq.
John Soderberg, Esq.

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Table of Contents

Focused Remedial Investigation Work Plan, Sampling & Analysis Plan and Health & Safety Plan Tishcon Corporation 125 State Street Westbury, New York

1.0 Introduction

The following Focused Remedial Investigation Work Plan has been prepared on behalf of the Tishcon Corporation (Tishcon) to address sources of halogenated volatile organics and areas of soil contamination at the above-referenced properties. The term "Focused" has been added since the purpose of these Plans are limited to the investigation of contaminant sources and areas of contaminated soil.

Several previous subsurface investigations have been performed in the New Cassel Industrial Area -- the area within Westbury where the Tishcon site is located -- by both the Nassau County Department of Health (NCDH) and the NYSDEC. The most recent of these investigations, performed by a NYSDEC contractor, is summarized in a report dated February 1995 (ref. 1). This study identified the contaminants 1,1,1 Trichloroethane (1,1,1-TCA), Perchloroethene (PCE) and their degradation products as contaminants of concern in the groundwater south of 125 State Street -- the area where the above-referenced Tishcon facility is located.

The goal of this Work Plan is described below.

- Incorporate the existing NCDH-approved Remediation Plan for this site into a NYSDEC-approved Work Plan;
- Identify areas of potential sources of the contaminants of concern based on building construction plans (such as cesspools and storm drains), previous subsurface sample results, company records, employee interviews, engineering knowledge, site inspections and chemical analyses.
- Propose and conduct any interim remedial measures deemed necessary;
- Identify potential remedial technologies that could be applied to remedy any source areas and zones of contaminated soil; and
- Develop a program of subsurface investigation to determine the extent of any contaminants of concern at the subject properties that will assist in the evaluation of the selected potential remedial technologies.

2.0 Site History

Tishcon has leased the space at 125 State Street from 1984 to the present. The tenant at this building prior to Tishcon was a manufacturer of aluminum furniture. Presently, the Tishcon facility at 125 State Street produces two basic supplement and vitamin products - powders and tablets. The powders are produced in a dry blending process and are shipped off-site to customers for packaging and distribution. The tablets begin similarly but the blended powders are compressed into tablets. The finished tablets are boxed and shipped to other locations for distribution.

The preparation of the powders begins with the weighing of ingredients according to a master formula. Once all the ingredients are weighed they are placed in a ribbon blender where they are mixed until a uniform blend is obtained. The materials are then discharged directly to plastic lined drums for shipping. All the ingredients used in the powder preparations are purchased from outside vendors. -- none are synthesized, extracted, or manufactured on-site.

Tablet production begins with weighing and blending of the ingredients described for the powder preparation. Again, all the ingredients are purchased -- none are synthesized, extracted, or manufactured on-site. The only additional step taken before the batches are prepared is the granulating of purchased powders that are unsuitable for compression into tablets. Granulating is accomplished by wetting the powders with a suitable agent (water, ethyl alcohol-based, food grade shellac, or PPVA) and then drying the material in a steam heated fluid bed dryer. The granulated powders are then weighed and mixed with the other ingredients. After all the ingredients are blended in the ribbon mill, the powder is placed in the feed hopper of the tablet press. The tablets are formed when the dry ingredients are compressed between the moveable and stationary dies of the press. Once the tablets are formed they can be shipped or processed further by adding a shellac, sugar, or enteric coating. After the tablets are coated some of them receive a final color coating. The water based coating is applied by a spray nozzle inside an enclosed heated drying pan. The finished tablets are boxed and transferred to the New York Avenue facility.

During the years 1985 through 1993, the chemicals methylene chloride, 1,1,1-trichloroethane and methanol were also used at this facility in the tablet coating process. They were used in the process of applying coatings to the tablets and then discharged either through vents to the atmosphere as an air discharge or as fugitive emissions. As of 1993, these chemicals were no longer used at the State Street Facility.

2.1 Physical Layout of Buildings

The Tishcon Corporation facility at 125 State Street consists of a two-story building built in 1966. The property includes a driveway that is underlain by four storm drains. An illustration of these pools is included as Figure 1. Plans on file at the Town of North Hempstead Building Department indicate that the original construction included on-site cesspool(s) for wastewater disposal. The number and location of the cesspools were not recorded in the file, however, available records indicate the presence of one cesspool located on the east side of the building (see Figure 1). According to the Nassau County Department of Public Works (NCDPW), the building was connected to municipal sewers in 1985, shortly after Tishcon occupied the building. The NCDH conducted dye test of the floor drains in the Facility during the summer of 1995 and determined that all of the floor drains tested discharge to the municipal sewer.

Roof drains were not included on any of the reviewed building plans, although a building survey dated June, 1967, states that roof leaders and gutters are connected to drywells.

A drum storage area is located in the southwest corner of the property (see Figure 1) for storage of the ethyl alcohol-based shellac. The drums are stored on spill pallets in a masonry shed.

2.2 Previous Sampling and Removals at this Site

In the past, equipment used in the process of blending raw materials and forming vitamin tablets was rinsed out in the driveway where the storm drains are located (see Figure 1). Rinse water used during this process subsequently entered storm drain 1. During 1993, the Nassau County Department of Health (NCDH) requested that sediment contaminated with volatile organics &

metals be removed from the four storm drains and one sanitary distribution box in the driveway and that the material removed be properly disposed.

During August of 1993, a partial removal of the leaching pool sediments was performed. The removal of contaminated sediments from Pool 3 was completed and the results of the end-point samples were acceptable to NCDH. Soil was also removed from Pool 1, however, the end-point samples indicate that the compounds chloroform, ethyl benzene, methylene chloride and xylene remained at concentrations above the NCDH action levels. Soil removal from pools 2 and 4 has not been completed as of this date. Copies of the sample results are attached to this plan.

CA RICH was retained by Tishcon in October, 1994 to prepare a storm drain remediation plan for the NCDH and to complete the clean out of these drains in response to the NCDH's letter of March 25, 1994. A copy of the NCDH letter and the NCDH-approved Plan are attached. During February, 1995, CA RICH performed soil borings in storm drains 1,2,4 and sanitary distribution box 5 using a Geoprobe(TM) soil sampling device. An initial soil core was collected at two feet below the bottom of the pool. A soil sample was retrieved and analyzed in the field using a portable organic vapor meter. This procedure was continued until no detections were recorded with the field meter. At least one sample from each boring was placed in a sample bottle and analyzed by a NYS-certified laboratory for VOC's using EPA methods 8010/8020 and for the eight RCRA metals. The results of these samples were used to determine the depths and volumes of soil for removal. Waste characterization samples were collected of the storm water and the underlying sediments in the pools. This information is included in our March, 1995 report and attached to this Plan.

During June and July, 1994 a NYSDEC contractor collected soil samples at the 17-19, 27-29 and 47-49 foot depth horizons from several locations on the 125 State Street property. These borings were designated as SGP-76, 77, 78 and 79 in the NYSDEC report (Ref. 1). The results of these sample analyses are included in this Work Plan as Table 5-20 in Attachment 5.

2.3 Identification of Potential Source Areas

Based on our review of file at the NCDH, previous sample results collected from this property, company records, employee interviews, engineering knowledge, site inspections and chemical analyses, the following are potential source areas and should be investigated and/or remediated, if necessary.

- storm drains 1, 2 and 4;
- the sanitary distribution box in the driveway, (location 5 on the site Plan); and,
- one former sanitary cesspool located on the east side of the building along State Street.

The former cesspool and distribution system were disconnected in 1985 when the building was connected to the municipal sewer system.

2.4 Identification of Potential Remedial Technologies

The focused remedial investigation report will include recommended remedial technologies. All recommendations will be based upon analysis of the investigatory findings. Any recommendations regarding site specific remedial technology must necessarily await the results of investigations performed pursuant to this Work Plan.

Recommendations for an Interim Remedial Measure (IRM) are included as Section 5.0 of this Plan. These include excavation of the previously identified contaminated storm drains and off-site disposal.

3.0 Project Plans

3.1 Citizen Participation Plan

The Generic Work Plan guidance document provided by the NYSDEC requires that a citizen participation activity be included as part of the Remedial Investigation process. To achieve this objective, copies of this Work Plan and other relevant documents will be provided to the NYSDEC. These copies will be placed in local libraries, the DEC's Stony Brook office and/or at local document repositories for view by the public. At the end of the focused Remedial Investigation, one fact sheet summarizing these activities will be prepared for the NYSDEC for use at a public meeting.

3.2 Sampling and Analysis Plan

A site specific Sampling and Analysis Plan has been prepared for this site. This consists of a Field Sampling (FSP) and a Quality Assurance Project Plan (QAPjP).

3.2.1 Field Sampling Plan

3.2.1.1 Introduction - Source area delineation will be investigated by employing the following techniques. The NYSDEC will be provided with 10 days notice prior to any sampling activity. Figure 1 illustrates the proposed sampling locations discussed below. All of the borings will be performed in the sand and gravel sediments of the Upper Glacial formation. The expected depth to groundwater is approximately 50 feet.

3.2.1.2 Field Confirmation - The locations of all cesspool, storm drain and proposed borings will be marked out at the site. A mark out of underground utilities will be requested before performing any subsurface borings.

3.2.1.3 Soil Borings - Using a Geoprobe (TM) soil sampling device the following borings will be performed. Figure 1 illustrates the proposed sampling locations of four additional Geoprobe(TM) soil boring to be situated between the existing storm drains and in the vicinity of the abandoned on-site cesspool. All of the borings will be performed in the sand and gravel sediments of the Upper Glacial formation. Soil samples will be collected every ten feet from ground level to the top of the water table. The expected depth to groundwater is approximately 50 feet.

To collect soil samples, a clean drive point sampler with a sample tube measuring approximately 1 1/8-inches in diameter by 24-inches long will be used. A drive point sampler is first driven to the desired sampling depth. The sampler remains completely closed while it is being driven to depth and is opened by releasing a stop pin from the surface. Releasing a stop pin allows a piston to retract inside of the sample tube as it is being displaced by the soil core. The sampler will then be driven an additional two feet. Each of the samplers used will be fitted with a new acetate liner prior to use. The remaining soil will be placed in laboratory issued sample bottles with Teflon septa as descrided on Table 1. The soil will be handled with properly cleaned stainless steel utensils and the bottles will be completely filled. The acetate liner assists in the removal of the soil sample from the tube and helps ensure sample integrity. PID readings will be collected cutting a small slit in the acetate liner and then inserting a HNU probe into the slit to measure the VOCs in the soil.

All sampling tools will be washed in a tap water and an Alconox(TM) wash followed by a deionized water rinse, an isopropyl alcohol rinse and a final deionized water rinse. Since metals are not included in the analysis, a Nitric Acid rinse is not required.

Boring Locations

Driveway Between Existing Storm Drains - Figure 1 illustrates the proposed sampling locations of three additional Geoprobe(TM) soil boring to be situated between the existing storm drains. All of the borings will be performed in the sand and gravel sediments of the Upper Glacial formation. Soil samples will be collected every ten feet from ground level to the top of the water table. The expected depth to groundwater is approximately 50 feet.

Abandoned Cesspool - One additional soil boring will be installed along side the abandoned on-site cesspool located on the east side of the building along State Street. Soil samples will be collected at 10 feet, 15 feet, 20 feet and 30 feet below the bottom.

Pools 1, 2, 3, 4, and distribution box 5 were previously sampled as mentioned above in Section 2.2. Our March, 1995 report describing this work is attached to this Plan.

3.2.2 Quality Assurance Project Plan

3.2.2.1 Introduction - The following Quality Assurance Project Plan (QAPjP) has been prepared specifically for the focused Remedial Investigation at the Tishcon Corp. Facility located on State Street, New Cassel, New York. This Plan was prepared and approved as stated below.

Prepared by: Eric Weinstock — Date: 12/21/95
Eric A. Weinstock, Project Manager

Approved by: _____ — Date: 12/21/95
Steven T. Sobstyl, Q.A. Officer

3.2.2.2 QAPjP - Table of Contents

The following elements are included in this QAPjP:

3.2.2.1 Title Page and Introduction

3.2.2.2 Table of Contents

3.2.2.3 Project Description

3.2.2.4 Project Organization

3.2.2.5 Quality Assurance Objectives for Data Measurements

3.2.2.6 Sampling Procedure

3.2.2.7 Sample and Document Custody Procedures

3.2.2.8 Calibration Procedures and Frequency

3.2.2.9 Analytical Procedures

3.2.2.10 Data Reduction, Validation and Reporting

3.2.2.11 Internal Quality Control Checks

3.2.2.12 Performance and System Audits

3.2.2.13 Preventive Maintenance

3.2.2.14 Data Measurement Assessment Procedures

3.2.2.15 Corrective Action

3.2.2.16 Quality Assurance Reports and Management

3.2.2.3 Project Description - The R.I. subject to this QAPjP has been prepared to address the following issues:

- Identify areas of potential sources of the contaminants of concern stated in Section 1;
- Determine the nature and extent of any sources of these contaminants at the subject property; and,
- Assist in the evaluation of potential remedial technologies.

The investigative methods that will be used include Geoprobe(TM) soil sampling and soil gas screening and are described in detail in Field Sampling Plan.

3.2.2.4 Project Organization - The Project Organization is summarized on the attached Figure 2. Mr. Eric Weinstock will serve as the Project Manager (PM) and will be responsible for the overall scheduling and performance of all the R.I. activities.

Mr. Steven Sobstyl will serve as the Quality Assurance Officer (QAO) for this project. His duties will include:

- Review of laboratory data packages
- Interface with data validator and laboratory
- Performance of Field Audits
- Preparation of a Data Usability Report

3.2.2.5 Quality Assurance Objectives and Data Measurement - Two types of data will be collected during this R.I.

1. Field Screening - Organic vapor readings will be recorded from the head space of soil samples, from one soil gas boring and as required in the Health & Safety Plan. This data is intended to be used only as a screening tool. To meet these goals clean sample probe acetates will be used for each head space measurement and the HNU will be calibrated at the beginning of each day.

2. Laboratory Analysis - All soil samples will be properly labeled and placed in an ice-filled cooler for delivery to Nytest Environmental, Inc. a NYSDOH-ELAP certified laboratory (NYS Lab ID #10195). This data is intended to be used to determine the nature and extent of soil contamination and for use in the development of remedial measures such as those discussed in Section 2.4. To meet these goals the laboratory will follow the NYSDEC - Analytical Services

Protocol dated Dec. 1991. All samples will be analyzed for volatile organic compounds using NYSDEC Method 91-1 dated Dec. 1991 which includes the contaminants of concern listed in Section 1.0 of this Plan. All samples will be placed in iced filled coolers and delivered to the laboratory by CA Rich within 48 hours.

One field blank will be performed for the entire field program. One matrix spike (MS) and one matrix spike duplicate (MSD) will be performed for the entire field program. One duplicate sample will also be collected and analyzed.

Quality assurance objectives are generally defined in terms of five parameters:

- **Representativeness** - Representativeness is the degree to which sampling data accurately and precisely represent site conditions, and is dependent on sampling and analytical variability. The RI has been designed to assess the presence of the constituents at the time of sampling. The RI Work Plan presents the rationale for sample quantities and location. The FSP and the QAPjP present field sampling methodologies and laboratory analytical methodologies, respectively. The use of the prescribed field and laboratory analytical methods with associated holding times and preservation requirements are intended to provide representative data. Further discussion of QC checks is presented in Section 3.2.2.11.

- **Comparability** - Comparability is the degree of confidence with which one data set can be compared to another. Comparability between the investigations of the RI, and to the extent possible, with existing data will be maintained through consistent sampling and analytical methodology set forth in the QAPjP, the RI Work Plan, the NYSDEC ASP analytical methods (Dec. 1991) with NYSDEC ASP QA/QC requirements (Dec. 1991) and Superfund Category reporting deliverables; and through use of QA/QC procedures and appropriately trained personnel.

- **Completeness** - Completeness is defined as a measure of the amount of valid data obtained from an event and/or investigation compared to the amount that was expected to be obtained under normal conditions. This will be determined upon assessment of the analytical results, as discussed in Section 3.2.2.12.

- **Precision** - Precision is the measure of reproducibility of sample results. The goal is to maintain a level of analytical precision consistent with the objectives of the RI. To maximize precision, sampling and analytical procedures will be followed. All work for this RI will adhere to established protocols presented in the QAPjP and FSP. Checks for analytical precision will include the analysis of matrix spike duplicates, laboratory duplicates, and field duplicates. Checks for field measurement precision will include obtaining duplicate field measurements. Further discussion of precision QC checks is provided in Section 3.2.2.11.

- **Accuracy** - Accuracy is the deviation of a measurement from the true value of a known standard. Both field and analytical accuracy will be monitored through initial and continuing calibration of instruments. In addition, internal standards, matrix spikes, blank spikes, and surrogates (system monitoring compounds) will be used to assess the accuracy of the laboratory analytical data. Further discussion of these QC samples is provided in Section 3.2.2.11.

3.2.2.6 Sampling Procedures - The sampling procedures that will be employed are discussed in detail in Section 3.2.1 - the Field Sampling Plan.

3.2.2.7 Sample and Document Custody Procedures

- **General** - The Chain-of-Custody program allows for the tracing of possession and handling of the sample from the time of collection through laboratory analysis. The chain-of-custody program at this site will include:

  - Sample labels
  - Chain-of-Custody records
  - Field records

- **Sample Labels** - To prevent misidentification of samples, a label will be affixed to the sample container and will contain the following information:

  -Site Name
  -Sample identification number
  -Date and time of collection
  -Name of Sampler
  -Preservation (if any)
  -Type of analysis to be conducted.

- **Chain-of-Custody Records** - To establish the documentation that is necessary to trace sample possession from the time of collection, a chain-of-custody record (sample attached) will be filled out and will accompany samples at all times. The record will contain the following information:

  -Project name:
  -Printed name and signature of samplers
  -Sample number
  -Date and time of collection
  -Sampling location
  -Number of containers for each sample
  -Signature of individuals involved in sample transfer
  (when relinquishing and accepting samples)
  -Inclusive dates and times of possession.

- **Field Records** - Field records will be maintained during each sampling effort in a logbook. All aspects of sample collection, handling and visual observations will be recorded. All sample collection equipment, field analytical equipment and equipment utilized to make physical measurements will be identified in the field logbook.

  All calculations, results and calibration data for field sampling, field analytical and field physical measurement equipment will also be recorded in the field logbook. Entries will be dated and initialed. Entries will be made in ink, and will be legible. The bottom of each page will be signed.

3.2.2.8 Calibration Procedures and Frequency - The contracted laboratory will follow the NYSDEC ASP protocols (Dec. 1991) for equipment calibration procedures and frequency.

The QA Officer will be responsible for ensuring that the HNU is calibrated at the beginning of each day of field sampling using calibration gas supplied by the manufacturer. A log of the meter calibration will be kept in the filed log book.

3.2.2.9 Analytical Procedures - All laboratory analysis will be performed using NYSDEC Method 91-1 (Dec. 1991) and will follow NYSDEC ASP (Dec. 1991) protocols with category B

deliverables. The parameters list will include the TCL Volatile Organics format with a quantitation limit of 10 ug/kg.

3.2.2.10 Data Reduction, Validation and Reporting

- **Field Data** - All field data recorded in logbooks or on log sheets will be evaluated in the office and transferred to word processor text by field personnel or clerical staff. HNU readings will be included on the logs. The QAO and/or PM will review this data for accuracy and completeness. Typed boring logs will be prepared for each boring.

- **Laboratory Data** - The laboratory will transfer the instrument readings to laboratory report forms. Mr. Rock Vitale of Environmental Standards, Inc. will perform independent data validation of all analytical data using NYSDEC ASP (Dec. 1991) protocols.

  The data validator will provide CA Rich with a Data Validation Summary Report. The QAO will review the summary report as well as other field data and prepare a Data Usability Report. Both the Data Validation Summary Report and the Data Usability Report will be provided to NYSDEC.

  CA Rich will prepare summary tables of the validated analytical data using computer spread sheet software. The data entries will be reviewed using the red check-green check method. All entries will be reviewed and entry errors will be marked in red ink. Once these entries are corrected, the printouts will be marked with green ink and placed in the project file.

3.2.2.11 Internal Quality Control Checks

Both field and laboratory quality control checks are proposed for this RI. In the event that there are any deviations from these checks, the Project Manager and Quality Assurance Officer will be notified. The proposed field and laboratory control checks are discussed below.

Field Quality Control Checks

- **Field Measurements** - To verify the quality of data collected using field instrumentation, at least one duplicate measurement will be obtained per day and reported for all field analytical measurements.

- **Sample Containers** - Certified-clean sample containers in accordance with Exhibit I of the NYSDEC ASP (Dec. 1991) will be supplied by the NEI.

- **Field Duplicates** - Field duplicates will be collected to check reproducibility of the sampling methods. Field duplicates will be prepared as discussed in the FSP. In general, field duplicates will be analyzed at a five percent frequency (every 20 samples). Table 2 provides an estimated number of field duplicates for each applicable parameter and matrix.

- **Field Rinse Blanks** - Field rinse blanks are used to monitor the cleanliness of the sampling equipment and the effectiveness of the cleaning procedures. Field rinse blanks will be prepared and submitted for analysis at a frequency of once for this sampling program. Field rinse blanks will be prepared by filling sample containers with analyte-free water (supplied by the laboratory) which has been routed through a cleaned sampling device. Table 2 provides an estimated number of rinse blanks collected during the RI.

- **Trip Blanks** - Trip blanks will be used to assess whether site samples have been exposed to non-site-related volatile constituents during storage and transport. Trip blanks will be analyzed at a frequency of once per day, and will be analyzed for volatile organic

constituents. A trip blank will consist of a container filled with analyte-free water (supplied by the laboratory) which remains unopened with field samples throughout the sampling event. Trip blanks will only be analyzed for volatile organic constituents. Table 2 provides an estimated number of trip blanks collected for each matrix and parameter during the RI.

3.2.2.12 Performance and Systems Audits

Performance and systems audits will be completed in the field and the laboratory during the RI as described below.

- **Field Audits** - The Project Manager and Quality Assurance Officer will monitor field performance. Field performance audit summaries will contain an evaluation of field measurements and field meter calibrations to verify that measurements are taken according to established protocols. The Project Manager will review all field logs. In addition, the Project Manager and the Quality Assurance Officer will review the field rinse and trip blank data to identify potential deficiencies in field sampling and cleaning procedures.

- **Laboratory Audits** - NEI will perform internal audits consistent with NYSDEC ASP (Dec. 1991).

3.2.2.13 Preventive Maintenance

Preventive maintenance schedules have been developed for both field and laboratory instruments. A summary of the maintenance activities to be performed is presented below.

- **Field Instruments and Equipment** - Prior to any field sampling, each piece of field equipment will be inspected to assure it is operational. If the equipment is not operational, it must be serviced prior to use. All meters which require charging or batteries will be fully charged or have fresh batteries. If instrument servicing is required, it is the responsibility of the field personnel to follow the maintenance schedule and arrange for prompt service.

- **Laboratory Instruments and Equipment** - Laboratory instrument and equipment procedures will be documented by the laboratory. Documentation includes details of any observed problems, corrective measure(s), routine maintenance, and instrument repair (which will include information regarding the repair and the individual who performed the repair).

  Preventive maintenance of laboratory equipment generally will follow the guidelines recommended by the manufacturer. A malfunctioning instrument will be repaired immediately by in-house staff or through a service call from the manufacturer.

3.2.2.14 Data Assessment Procedures

The analytical data generated during the RI will be evaluated with respect to precision, accuracy, and completeness and compared to the Project DQOs. The procedures utilized when assessing data precision, accuracy, and completeness are presented below.

- **Data Precision Assessment Procedures** - Field precision is difficult to measure because of temporal variations in field parameters. However, precision will be controlled through the use of experienced field personnel, properly calibrated meters, and duplicate field measurements. Field duplicates will be used to assess precision for the entire measurement system including sampling, handling, shipping, storage, preparation and analysis.

Laboratory data precision for organic analyses will be monitored through the use of matrix spike duplicate sample analyses. For other parameters, laboratory data precision will be monitored through the use of field duplicates and/or laboratory duplicates.

The precision of data will be measured by calculation of the standard deviation (SD) and the coefficient of variation (CV) of duplicate sample sets. The SD an CV are calculated for duplicate sample sets by:

$$SD = (A-B)/1.414$$
$$CV = SD/((A+B)/2) = 1.414(A-B)/(A+B)$$

Where:

A = Analytical result from one of two duplicate measurements
B = Analytical result from the second measurement.

Where appropriate, A and B may be either the raw measurement or an appropriate mathematical transformation of the raw measurement (e.g., the logarithm of the concentration of a substance).

Alternately, the relative percent difference (RPD) can be calculated by the following equation:

$$RPD = \frac{(A-B)}{(A+B)/2} \times 100$$

$$RPD = 1.414\ (CV)(100)$$

- **Data Accuracy Assessment Procedures** - The accuracy of field measurements will be controlled by experienced field personnel, properly calibrated field meters, and adherence to established protocols. The accuracy of field meters will be assessed by review of calibration and maintenance logs.

  Laboratory accuracy will be assessed via the use of matrix spikes, surrogate spikes, and internal standards. Where available and appropriate, QA performance standards will be analyzed periodically to assess laboratory accuracy. Accuracy will be calculated as a percent recovery as follows:

$$Accuracy = \frac{A-X}{B} \times 100$$

  Where:

  A = Value measured in spiked sample or standard
  X = Value measured in original sample
  B = True value of amount added to sample or true value of standard

  This formula is derived under the assumption of constant accuracy over the original and spiked measurements. If any accuracy calculated by this formula is outside of the acceptable levels, data will be evaluated to determine whether the deviation represents unacceptable accuracy, or variable, but acceptable accuracy. Accuracy objectives for matrix spike recoveries and surrogate recovery objectives are identified in the NYSDEC, ASP (Dec. 1991).

- **Data Completeness Assessment Procedures** - Completeness of a field or laboratory data set will be calculated by comparing the number of samples collected or analyzed to the proposed number.

$$\text{Completeness} = \frac{\text{No. Valid Samples Collected or Analyzed}}{\text{No. Proposed Samples Collected or Analyzed}} \times 100$$

As general guidelines, overall project completeness is expected to be at least 90 percent. The assessment of completeness will require professional judgment to determine data useability for intended purposes.

3.2.2.15 Corrective Action

Corrective actions are required when field or analytical data are not within the objectives specified in this QAPjP, the FSP, or the RI Work Plan. Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. Field and laboratory corrective action procedures for this project are described below.

- **Field Procedures** - When conducting the RI field work, if a condition is noted that would have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause and corrective action implemented will be documented as a memo to the project file and reported to the Project Manager.

  Examples of situations which would require corrective actions are provided below:

  - Protocols as defined by the QAPjP, FSP, and RI Work Plan have not been followed;
  - Equipment is not in proper working order or properly calibrated;
  - QC requirements have not been met; and
  - Issues resulting from performance or systems audits.

  Project field personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

- **Laboratory Procedures** - In the laboratory, when a condition is noted to have an adverse effect on data quality, corrective action will be taken as not to repeat this condition. Condition identification, cause and corrective action to be taken will be documented, and reported to the Quality Assurance Officer.

  Corrective action may be initiated, at a minimum, under the following conditions:

  - Specific laboratory analytical protocols have not been followed;
  - Predetermined data acceptance standards are not obtained;
  - Equipment is not in proper working order or calibrated;
  - Sample and test results are not completely traceable;
  - QC requirements have not been met; and
  - Issues resulting from performance or systems audits.

  Laboratory personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

3.2.2.16 Quality Assurance Reports to Management

- **Internal Reporting** -The analytical laboratory will submit analytical reports using NYSDEC ASP (Dec. 1991), Category B requirements. The analytical reports will be submitted to the data validator for review. Supporting data (i.e., historic data, related field or laboratory data) will also be reviewed to evaluate data quality, as appropriate. The Quality Assurance Officer will incorporate results of data validation reports (if any) and assessments of data useability into a summary report. This report will be filed in the project file and will include the following:

    - Assessment of data accuracy, precision, and completeness for field & laboratory data;
    - Results of the performance and systems audits;
    - Significant QA/AC problems, solutions, corrections, and potential consequences;
    - Analytical data validation report; and
    - Data useability report.

- **RI Reporting** - The RI Report will contain a separate QA/QC section summarizing the quality of data collected and/or used as appropriate to the project DQOs. Additional details of data quality objectives are provided in the RI Work Plan and FSP. The Quality Assurance Officer will prepare the QA/QC summaries using reports and memoranda documenting the data assessment and validation.

3.2.3 Health and Safety Plan

A site-specific Health and Safety Plan is attached at the end of this document.

4.0 Focused Remedial Investigation Report Format

Upon receipt of the laboratory analysis, a Focused Remedial Investigation Report will be prepared. This report will include the following information.

- A description of the work performed;
- The results of all soil analysis;
- All QA/QC reporting as outlined in these Plans;
- A revised estimation of the amount of soil that will require remediation; and
- Recommendations for remediation of the identified source areas, where necessary.

5.0 Interim Remedial Measures Scope of Work

Based on the information available at this time, two phases of storm drain remediation are proposed as shown below.

Phase 1 - Clean out of Pools 2,4, distribution box 5 and the backfilled sewer line (as required)

The bottom of storm drains 2, 4 distribution box 5 and the backfill around the sewer pipe will be excavated. As indicated in the NCDH's March 25, 1994 letter (attached), no action is required at pool 3 at this time. A super sucker will be mobilized to the site to clean out the pools. Soil removed from the pools will be placed directly into either 20 cubic yard roll-off containers or 30 cubic yard dump trailers. Based on the borings performed during February, 1995, we estimate that approximately 5 feet of soil will have to be removed from each of these locations. Samples of the excavation bottom will be screened on-site during the excavation process using a portable organic vapor meter. One end-point sample and associated QA/QC samples will be collected from the bottom of each excavation and analyzed for volatile organics and eight RCRA metals as described on Table 2. The drains will be backfilled with clean fill upon completion of the excavation and the excavated material will be transported to a permitted disposal facility with appropriate manifest.

It is necessary to complete Phase 1 before beginning Phase 2, the removal of leaching pool 1. Leaching pools 2 and 4 are located in the driveway of the facility between pool 1 and State Street. We will need to stage either 20 cubic yard roll-off containers or 30 cubic yard dump trailers over these pools before proceeding with the removal of storm drain 1.

Phase 2 - Removal of Leaching Pool

Previous efforts to clean out pool 1 indicate that soils in the bottom of this drain are chemically cemented and that the depth of contamination probably exceeds the capacity of a super sucker. The chemical cementation is presumed to be resultant to residues from the tableting process which entered the drain as a result of equipment washing performed in proximity to the drain. To clean out this drain we propose to remove or "pull" the existing concrete rings and excavate the underlying soils. Based on the borings performed during February, 1995, we estimate that the soil below this storm drain will have to be excavated to a depth of approximately 30 feet below grade. A crane will need to be utilized to perform this excavation. This will require the use of 10 foot diameter concrete rings to shore the excavation during the removal process.

Similar to the description outlined in Phase 1, one end-point sample will be collected from the bottom of the excavation and analyzed for volatile organics and eight RCRA metals. The storm drains will be backfilled with clean fill upon completion of the excavation and the excavated material will be transported to a permitted disposal facility with appropriate manifests.

6.0 Interim Remedial Measure Report

Once the sampling is completed and the results are received from the laboratory, a report will be prepared. The report will include the following.

- A description of the work performed;
- The results of the soil boring samples;
- The results of the waste characterization samples;
- A record of the volumes of wastes removed and the disposal facilities; and,
- Copies of the waste disposal manifests.

7.0 Schedule

The following schedule is proposed for this project.

Remedial Investigation

Project set-up	2 to 3 weeks
• Schedule laboratory and boring contractor	
• Call for utility mark outs	
Field sampling	2 to 3 days
Laboratory analysis	4 weeks
R.I. Report	4 weeks

Interim Remedial Measures

Clean out of Pools 2, 4, distribution box 5 and the backfilled sewer line (as required)	4 weeks
Removal of Leaching Pool 1	4 weeks
I.R.M. Report	4 weeks

8.0 References

1. NYSDEC, February 1995, Site Investigation Report, New Cassel Industrial Area Site, Site No. 13043, North Hempstead, Nassau County.

Tables

Table 1

Tishcon Corp. Remedial Investigation
125 State Street
Westbury, New York

Parameter	Matrix	Estimated Number Of Samples	Container	Preservation	Maximum Holding Time
Volatile Organics	Soil	19	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
Volatile Organics	Duplicates (Soil)	1	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
Volatile Organics	Matrix Spike (Soil)	1	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
Volatile Organics	Matrix Spike Duplicate (Soil)	1	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
Volatile Organics	Trip Blank (Water)	1 per day	2 - 40 mil vials w/ Teflon Septa	Cool to 4 deg. C	7 days
Volatile Organics	Field Rinse Blank (Water)	1	2 - 40 mil vials w/ Teflon Septa	Cool to 4 deg. C	7 days

Notes:

1 - NYSDOH Method 91-1 will be used for all analyses.
2 - All analyses will be performed in accordance with NYSDEC-ASP (Dec. 1991).
3 - All sample bottles will be provided by the laboratory and will be purchased to comply with the required QA/QC protocol.
4 - All samples will be delivered to the laboratory within 48 hours of collection.

Gateway C:\123r4\eric\tis-samp.wk4

Table 2

Tishcon Corp. Interim Remdeial Measures
125 State Street
Westbury, New York

Parameter	Matrix	Estimated Number Of Samples	Container	Preservation	Maximum Holding Time
Volatile Organics	Soil	4	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
RCRA Metals	Soil	4	1- 8 oz. bottle	Cool to 4 deg. C	6 months
Volatile Organics	Duplicates (Soil)	1	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
RCRA Metals	Duplicates (Soil)	1	1- 8 oz. bottle	Cool to 4 deg. C	6 months
Volatile Organics	Matrix Spike (Soil)	1	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
RCRA Metals	Matrix Spike (Soil)	1	1- 8 oz. bottle	Cool to 4 deg. C	6 months
Volatile Organics	Matrix Spike Duplicate (Soil)	1	1 - 100 mil vial w/ Teflon Septa	Cool to 4 deg. C	7 days
RCRA Metals	Matrix Spike Duplicate (Soil)	1	1- 8 oz. bottle	Cool to 4 deg. C	6 months
Volatile Organics	Trip Blank (Water)	1 per day	2 - 40 mil vials w/ Teflon Septa	Cool to 4 deg. C	7 days
Volatile Organics	Field Rinse Blank (Water)	1	2 - 40 mil vials w/ Teflon Septa	Cool to 4 deg. C	7 days
RCRA Metals	Field Rinse Blank (Water)	1	1- 32 oz. bottle	Cool to 4 deg. C	6 months

Notes:
1 - NYSDOH Method 91-1 will be used for all volatile organic analyses.
2 - All analyses will be performed in accordance with NYSDEC-ASP (Dec. 1991).
3 - All sample bottles will be provided by the laboratory and will be purchased to comply with the required QA/QC protocol.
4 - All samples will be delivered to the laboratory within 48 hours of collection.

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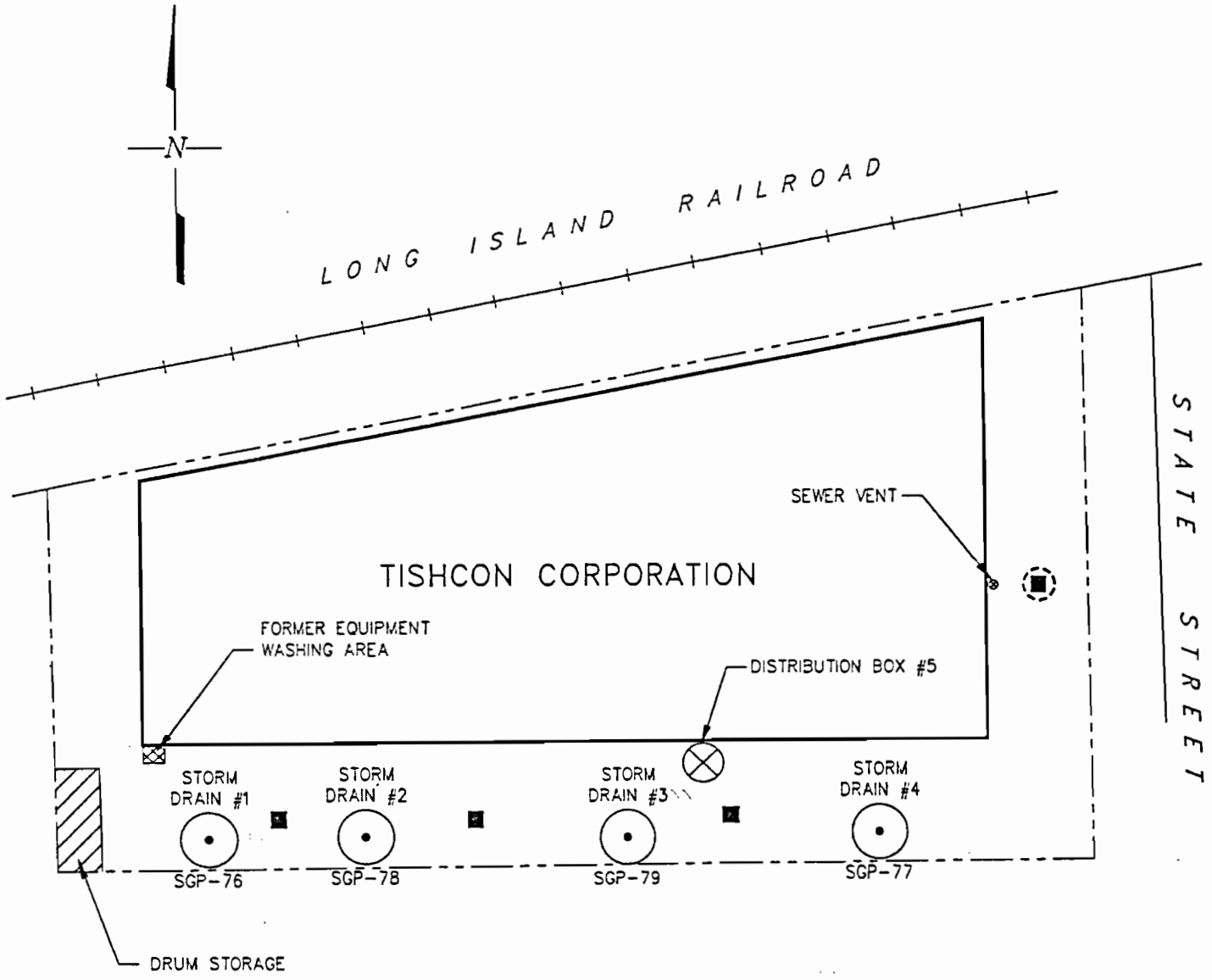
Figures



LEGEND

- PROPOSED SOIL BORING
- APPROXIMATE LOCATION OF STORM DRAIN
- FORMER CESSPOOL
- SGP-76 • APPROXIMATE LOCATION OF NYSDEC SAMPLES

0 20 40 60 80

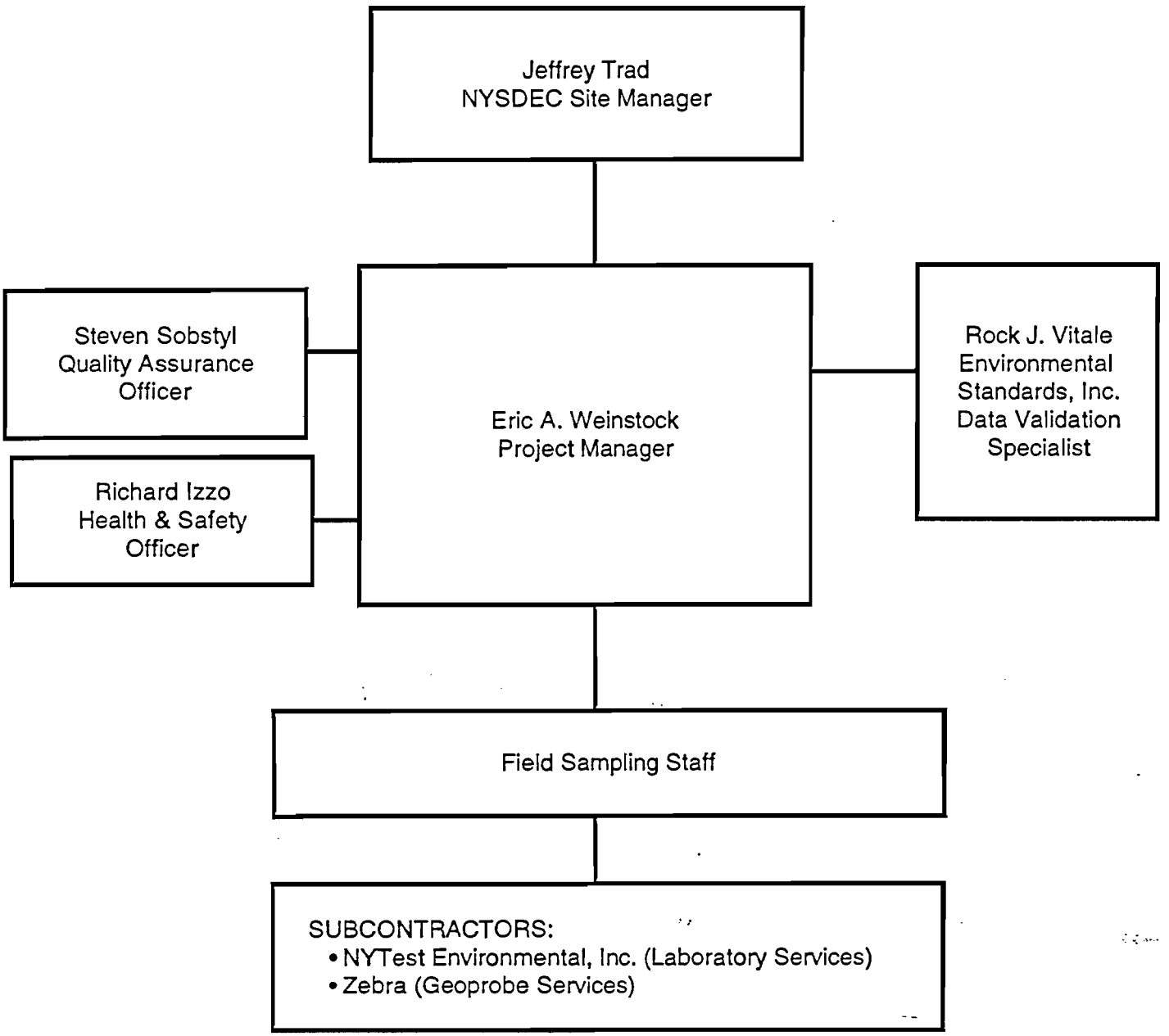
Scale in Feet

CA RICH CONSULTANTS, INC.

Certified Ground-Water and Environmental Specialists
404 Glen Cove Avenue, Sea Cliff, NY 11579

TITLE: SITE PLAN	DATE: 12/14/95
	SCALE: AS SHOWN
FIGURE: 1	DRAWN BY: J.J.S.
DRAWING NO: 3237-01A	APPR. BY: E.A.W.

TISHCON CORPORATION
125 STATE STREET
WESTBURY, NEW YORK



Users/Edith/templates/org. flow chart

ORGANIZATION CHART

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Tishcon Corporation 125 State Street Westbury, New York
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Prepared By: GAT Date: December, 1995
	Reviewed By: EAW Figure: 2

Health and Safety Plan

HEALTH AND SAFETY PLAN

FOR

REMEDIAL INVESTIGATION ACTIVITIES
TISHCON CORPORATION
125 STATE STREET
WESTBURY, NEW YORK
DECEMBER 1995

1.0 INTRODUCTION

This Health and Safety Plan (HASP) is developed for implementation during the planned remedial investigation activities at the Tishcon Corporation Site, 125 State Street, Westbury, NY (the Site). The HASP is to be enforced by the Project Health and Safety Manager and on-site Health & Safety Coordinator. Information and protocol in the HASP is applicable to all on-site personnel who will be entering the work zone.

2.0 POTENTIAL HAZARDS

2.1 Chemical Hazards

Historical usage records indicate the primary class of compounds used at the Site to be chlorinated volatile organic compounds (VOCs) and alcohols. Specifically, the compounds 1,1,1 trichloroethane (TCA), methylene chloride, methanol and ethyl alcohol have been identified, and represent the on-site chemicals of concern.

These chemicals are described as "sweet" smelling and are narcotic in high concentrations. Acute exposure to significant concentrations of these chemicals can cause irritation of the skin, eyes and mucus membrane, dizziness, nausea, and in high enough concentrations, loss of consciousness and death *(Sax, 1984)*. These compounds are suspected to be carcinogenic with chronic exposure. Physical properties and additional toxicological information is included in Appendix A.

2.2 Other Health and Safety Risks

The HASP addresses the environmentally-related chemical hazards identified on the Site. Physical hazards also exist and represent a certain degree of risk to be assumed by on-site personnel.

Certain provisions in this Plan, specifically the use of personnel protective equipment, may tend to increase the risk of physical injury, as well as susceptibility to cold or heat stress. This is primarily due to restrictions in dexterity, hearing, sight, and normal body heat transfer inherent in the use of protective gear.

3.0 RISK MANAGEMENT

3.1 Work/Exclusion Zones

For each proposed remedial investigation activity (e.g. soil borings, sampling locations), a work/exclusion zone will be established within a radius of approximately 25 feet surrounding the activity. Access to this area will be limited to properly trained, properly protected personnel directly involved with the investigation. Enforcement of the work/exclusion zone boundaries is the responsibility of the on-site Health & Safety Coordinator.

3.2 Personnel Protection

Health & Safety regulatory personnel have developed different levels of personnel protection to deal with differing degrees of potential risks of exposure to chemical constituents. The levels are designated as **A, B, C,** and **D** and ranked according to the amount of personnel protection afforded by each level. Level **A** is the highest level of protection and Level **D** is the lowest level of protection.

The different levels are primarily dependent upon the degree of respiratory protection necessary, in conjunction with appropriate protective clothing. Levels of protection mandate a degree of respiratory protection. However, flexibility exists within the lower levels (B, C, and D) concerning proper protective clothing.

The four levels of protection were developed for utilization in situations which involve suspected or known atmospheric and/or environmental hazards including airborne contamination and skin-affecting substances.

It is anticipated that all of the remedial work will be performed using Level D protection (no respiratory protection with protective clothing requirements limited to long sleeved shirts, long pants or coveralls, work gloves and steel-toe leather work boots).

Level D may be modified by the HSC to include protective clothing or equipment (Saran-coated disposable coveralls or PVC splash suits, safety glasses, hard hat with face shield, and chemically resistant boots) based upon physical hazards, skin contact concerns, and real-time monitoring.

Real-time air monitoring for total airborne organics using either an OVA or an HNU will determine if and when an upgrade from Level D to a higher level of respiratory protection is warranted. Decisions for an upgrade from Level D to higher levels of protection, mitigative actions, and/or suspension of work are the responsibility of the Project Manager and/or the designated on-site Health & Safety Coordinator.

3.3 Air Monitoring

"Real Time" air monitoring will be conducted for total organic vapor and total particulate by the Health & Safety Coordinator or his properly trained assignee. 'Real-time' monitoring refers to the utilization of instrumentation which yields immediate measurements. The utilization of real time monitoring helps determine immediate or long-term risks to on-site personnel and the general public, the appropriate level of personnel respiratory protection necessary, and actions to mitigate the recognized hazard. Air monitoring will be conducted in accordance with NYSDOH's Community Air Monitoring Program (Appendix B).

3.3.1. Particulate Monitoring

a. Instrumentation

Dust particulate in air will be monitored using a light scattering technique MINIRAM Model PDM-3 Miniature Real-time Aerosol Monitor (MINIRAM). The MINIRAM is capable of measuring airborne dust particles within the range of 10 to 100,000 micrograms per cubic meter ($\mu g/m^3$).

b. Application

Dust monitoring will occur at regular intervals during work activities. Monitoring will be conducted in upgradient and downgradient locations, relative to prevailing wind direction) along the perimeter of the work zone. Monitoring will be performed by the Site Safety Coordinator or his designee. As outlined in the NYSDOH Community Air Monitoring Plan, if particulate levels in the downwind location are 150 Mg/m^3 greater than those measured in the upwind location, dust suppression techniques shall be employed.

3.3.2 Organic Vapor

a. Instrumentation

Real-time monitoring for total organic vapor (TOV) utilizes either a photo-ionization detector (PID) or flame ionization detector (FID). The appropriate PID is an intrinsically safe HNU Systems Model PI-101 Photoionization detector (HNU) which is factory calibrated to benzene. The appropriate FID is a Foxboro model 128 Organic vapor Analyzer (OVA) which is factory calibrated to methane.

b. Application

Organic vapor monitoring is performed as outlined in the NYSDOH Community Air Monitoring Plan. Specifically, monitoring shall be conducted at the downwind perimeter of the work zone periodically during work activities. If TOV levels exceed 5 parts per million (ppm) above established pre-work background levels, work activities will be halted and monitoring will be continued under the provision of a Vapor Emission Response Plan (outlined in Appendix B).

3.4 Worker Training

Personnel working in the contamination area must be trained, fit-tested, and medically certified (OSHA 29 CFR 1910. 134).

All personnel working within the work/exclusion area must confirm their participation in an ongoing health surveillance program. The program must consist of an initial "baseline" examination stipulated by OSHA (29 CFR 1910. 134). The examination is designed to screen for evidence of adverse effects of occupational exposure (particularly to toxic substances) and determine personnel fitness with respect to the use of respiratory protection.

Each worker enlisted in the medical surveillance program receives an annual examination similar to the baseline exam to evaluate irregularities or trends in his/her health with respect to potential exposure. Upon termination of employment, contract/subcontract or job completion, each worker/employee must take an 'exit examination' identical to the annual exam. All physicals will be performed by licensed physicians with medical histories to be confidentially maintained by their employer.

Prior to work, all workers involved with The Remedial Program should be aware of the potential chemical, physical and biological hazards discussed in this document, as well as the general safety practices outlined below. A safety briefing by the on-site HSC and/or assistant designee shall take place at the outset of work activities.

3.5 General Safety Practices

The following safety practices shall be followed by all project personnel.

1. Avoid unnecessary skin exposure to subsurface materials. Long-sleeved shirts tucked into long pants (or coveralls), work gloves, and steel-toe leather work boots are required unless modified gear is approved by the HSC. Remove any excess residual soil from clothes prior to leaving the site.

2. No eating, drinking, gum or tobacco chewing,, or smoking allowed in designated work areas. Thoroughly wash hands prior to these activities outside the work area. Avoid sitting on the ground during breaks or while eating and drinking. Thoroughly wash all exposed body areas at the end of the work day.

3. Some symptoms of acute exposure include: nausea, dizziness, light-headedness, impaired coordination, headache, blurred vision, and nose/throat/eye irritation. If these symptoms are experienced or strong odor is detected, leave the work area and immediately report the incident to the on-site HSC.

3.6 Enforcement

Enforcement of the Site Safety Plan will be the responsibility of the HSC. The Coordinator should be on-site on a full-time basis and perform or directly oversee all aspects of Project Health & Safety operations including: air monitoring; environmental mitigation; personnel respiratory and skin protection; general safety practices; documentation; emergency procedures and protocol; and reporting and record keeping as described below.

3.7 Reporting and Record Keeping

Incidents involving injury, symptoms of exposure, discovery of contained (potentially hazardous) materials, or unsafe work practices and/or conditions should be immediately reported to the HSC.

A log book must be maintained on-site to document all aspects of HASP enforcement. The log is paginated and dated with entries made on a daily basis in waterproof ink, initialed by the HSC or designee. Log entries should include date and time of instrument monitoring, instrument type, measurement method, test results, calibration and maintenance information, as well as appropriate mitigative actions responding to detections. Miscellaneous information to be logged may include weather conditions, reported complaints or symptoms, regulatory inspections, and reasons to upgrade personnel protection above the normal specification (Level D).

4.0 EMERGENCIES

4.1 EMERGENCY RESPONSE SERVICES

(1)	**HOSPITAL** Nassau County Medical Center East Meadow, NY (See Figure 1 for Map Route)	(516) 542-0123
(2)	**AMBULANCE** Long Island	(516) 924-5252 or (911)
(3)	**FIRE DEPARTMENT** **HAZARDOUS MATERIALS** Carle Place F.D.	(516) 742-3300 or (911)
(4)	**POLICE DEPARTMENT** Nassau County Police (Westbury)	(516) 573-5350 or (911)
(5)	**POISON CONTROL CENTER** Long Island	(516) 542-2323

The preceding list and associated attached map (Figure 1) illustrating the fastest route to the nearest hospital, must be conspicuously posted in areas of worker congregation and adjacent to all on-site telephones (if any).

4.2 EMERGENCY PROCEDURES

4.2.1 Contact or Exposure to Suspected Hazardous Materials

In the event of a fire, chemical discharge, medical emergency, workers are instructed to immediately notify the HSC and proper emergency services (posted). Should physical contact with unknown or questionable materials occur, immediately wash the affected body areas with clean water and notify the HSC. Anyone experiencing symptoms of exposure should exit the work area, notify the HSC, and seek medical attention.

4.2.2 Personnel Decon., First Aid, and Fire Protection

The first step in the treatment of skin exposure to most chemicals is to rinse the affected area with water. For this reason, adequate amounts of potable water and soap are maintained on-site in a clearly designated and readily-accessible location. Portable emergency eyewash stations and a first aid kit must be made available and maintained in the same locations as the potable water. Fire extinguishers are also to be maintained on-site in designated locations. All on-site personnel are to be made aware of the locations of the above-mentioned on-site Health & Safety accommodations during the initial Health and Safety briefing.

4.2.3 Ingress/egress

Clear paths of ingress/egress to work zones and site entrances/exits must be maintained at all times. Unauthorized personnel are restricted from accessing the site.

REFERENCES

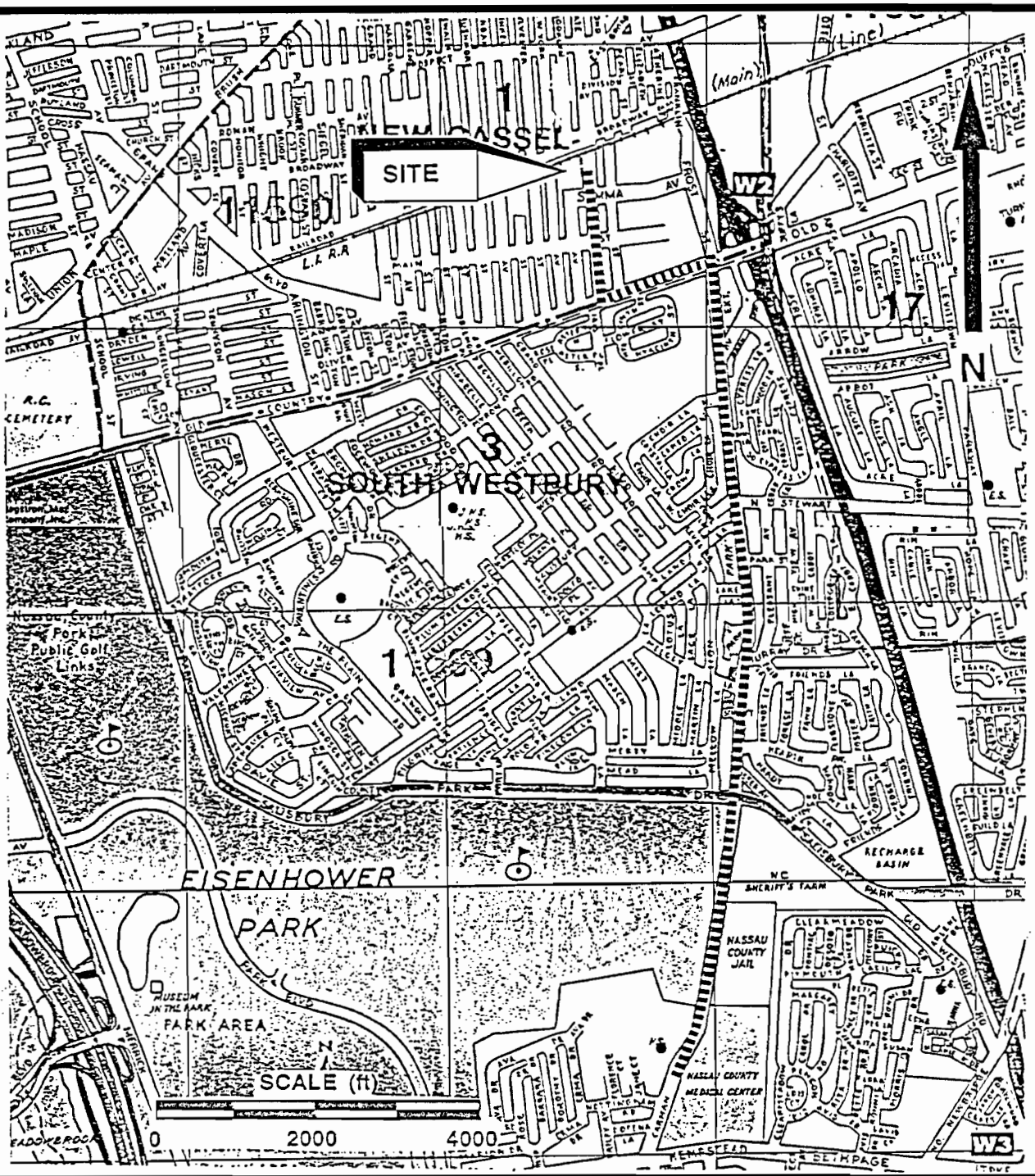
AMERICAN CONFERENCE GOVERNMENTAL INDUSTRIAL HYGIENISTS, 1989; THRESHOLD LIMIT VALUES AND BIOLOGICAL EXPOSURE INDICES, 111 pp.

GEOENVIRONMENTAL CONSULTANTS, INC.; 1987; SAFETY & OPERATIONS AT HAZARDOUS MATERIALS SITES

NIOSH GUIDE TO CHEMICAL HAZARDS, 1985, US DEPARTMENT OF HEALTH AND HUMAN SERVICES, CENTERS FOR DISEASE CONTROL

US DEPARTMENT OF LABOR OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION, 1989; HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE INTERIM FINAL RULE, 29 CFR PART 1910

SAX, N. I. DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS; © 1984



Route from Tishcon to Nassau County Medical Center

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Tishcon Corporation Westbury, New York
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Prepared By: RJI — Date: November1995 Reviewed By: EAW — Figure: 1

1,1,1-TRICHLOROETHANE

CAS RN: 71556 NIOSH #: KJ 2975000
mf: $C_2H_3Cl_3$; 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
METHYLTRICHLOROMETHANE
NCI-C04626
1,1,1-TRICHLOORETHAAN (DUTCH)
1,1,1-TRICHLORAETHAN (GERMAN)
TRICHLORO-1,1,1-ETHANE (FRENCH)
ALPHA-TRICHLOROETHANE
1,1,1-TRICLOROETANO (ITALIAN)

TOXICITY DATA: 2-1	CODEN:
ihl-rat TCLo:2100 ppm/24H (14D pre/1-20D preg)	TOXID9 1,28,80
eye-man 450 ppm/8H	BJIMAG 28,286,71
skn-rbt 5 gm/12D-I MLD	AIHAAP 19,353,58
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 N_2O_4, O_2, O_2 liquid, Na, NaOH, Na-K alloy.

Disaster Hazard: Dangerous; see chlorides.

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

1,1-DICHLOROETHYLENE

CAS RN: 75354 NIOSH #: KV 9275000
mf: $C_2H_2Cl_2$; mw: 96.94

Colorless volatile liquid. bp: 31.6°, lel = 7.3%, uel = 16.0%, fp: −122°, flash p: 0°F (OC), d: 1.213 @ 20°/4°, autoign. temp.: 1058°F.

SYNS:

CHLORURE DE VINYLIDENE (FRENCH)
1,1-DICHLOROETHENE
1-1-DCE
NCI-C54262
VINYLIDENE DICHLORIDE

TOXICITY DATA: 3	CODEN:
orl-rat TDLo:200 mg/kg (6-15D preg)	TXAPA9 49,189,79
ihl-rat TCLo:80 ppm/7H (6-15D preg)	TXAPA9 49,189,79
ihl-rbt TCLo:160 ppm/7H (6-15D preg)	TXAPA9 49,189,79
mmo-sat 5 pph	MUREAV 57,141,78
mma-sat 3 pph/2H	MUREAV 58,183,78
ihl-rat TCLo:55 ppm/52W-I:ETA	JTEHD6 4,15,78
ihl-mus TCLo:55 ppm/6H/1Y-I:ETA	EVHPAZ 21,25,77
skn-mus TDLo:4840 mg/kg:NEO	JJIND8 63,1433,79
ihl-rat TC:55 ppm/1Y-I:ETA	EVHPAZ 21,25,77
ihl-mus TC:55 ppm/43W-I:ETA	JTEHD6 4,15,78
ihl-hmn TCLo:25 ppm:SYS	CHINAG 11,463,76
orl-rat LD50:200 mg/kg	DCTODJ 1,63,77
ihl-rat LCLo:10000 ppm/24H	EXMPA6 20,187,74
ihl-mus LC50:98 ppm/22H	JTEHD6 3(5-6),913,77
orl-dog LDLo:5750 mg/kg	QJPPAL 7,205,34
ivn-dog LDLo:225 mg/kg	QJPPAL 7,205,34
scu-rbt LDLo:3700 mg/kg	QJPPAL 7,205,34

Aquatic Toxicity Rating: TLm96:1000-100 ppm WQCHM* 3,-,74. Carcinogenic Determination: Animal Positive IARC** 19,439,79.

TLV: Air: 10 ppm DTLVS* 4,432,80. *Toxicology Review:* CTOXAO 8,633,75; CMTVAS 10(3),49,73; NTIS** ORNL/TIRC-77/3. Occupational Exposure to Vinyl Halides recm std: Air: TWA 1 ppm; CL 5 ppm/15M NTIS**. NTP Carcinogenesis Bioassay Completed as of December 1980. "NIOSH Manual of Analytical Methods" VOL 4 266*. NIOSH Current Intelligence Bulletin 28, 1978. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: An exper MUT, ETA, NEO, CARC. HIGH acute orl, ihl. See also vinyl chloride.

Fire Hazard: Highly dangerous, when exposed to heat or flame.

Explosion Hazard: Mod, in the form of gas, when exposed to heat or flame. Also can explode spontaneously; reacts violently with chlorosulfonic acid, HNO_3, oleum.

Disaster Hazard: Highly dangerous; see chlorides; can react vigorously with oxidizing materials.

To Fight Fire: Alcohol foam, CO_2, dry chemical.

Incomp: Air; chlorotri-fluoroethylene; ozone; perchloryl fluoride.

METHANE DICHLORIDE

CAS RN: 75092 NIOSH #: PA 8050000
mf: CH_2Cl_2; mw: 84.93

Colorless volatile liquid. bp: 39.8°, lel = 15.5% in O_2, uel = 66.4% in O_2, fp: −96.7°, d: 1.326 @ 20°/4°, autoign. temp.: 1139°F, vap. press: 380 mm @ 22°, vap. d: 2.93.

SYNS:

CHLORURE DE METHYLENE (FRENCH)
DICHLOROMETHANE (DOT)
FREON 30
METHYLENE BICHLORIDE
METHYLENE CHLORIDE (DOT)
METHYLENE DICHLORIDE
METYLENU CHLOREK (POLISH)
NCI-c50102

TOXICITY DATA: 3	CODEN:
skn-rbt 810 mg/24H SEV	JETOAS 9,171,76
eye-rbt 162 mg MOD	JETOAS 9,171,76
eye-rbt 10 mg MLD	TXCYAC 6,173,76
eye-rbt 17500 mg/m3/10M	TXCYAC 6,173,76
mmo-sat 5700 ppm	MUREAV 56,245,78
mma-sat 5700 ppm	MUREAV 56,245,78
dni-hmn:fbr 5000 ppm/1H-C	MUREAV 81,203,81
dni-ham:lng 5000 ppm/1H-C	MUREAV 81,203,81
sce-ham:lng 5000 ppm/1H-C	MUREAV 81,203,81
ihl-rat TCLo:4500 ppm/24H (1-17D preg)	TXAPA9 52,29,80
ihl-rat TCLo:1250 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-mus TCLo:1250 ppm/7H (6-15D preg)	TXAPA9 32,84,75
ihl-rat TCLo:500 ppm/6H/2Y:ETA	TXAPA9 48,A185,79
ihl-hmn TCLo:500 ppm/1Y-I:CNS	ABHYAE 43,1123,68
ihl-hmn TCLo:500 ppm/8H:BLD	SCIEAS 176,295,72
orl-rat LD50:167 mg/kg	DOWSD* 1/26/76
ihl-rat LC50:88000 mg/m3/30M	FAVUAI 7,35,75
ihl-mus LC50:14400 ppm/7H	NIHBAZ 191,1,49
ipr-mus LD50:1500 mg/kg	TXAPA9 9,139,66
scu-mus LD50:6460 mg/kg	TXAPA9 4,354,62
orl-dog LDLo:3000 mg/kg	QJPPAL 7,205,34
ihl-dog LCLo:14108 ppm/7H	NIHBAZ 191,1,49
ipr-dog LDLo:950 mg/kg	TXAPA9 10,119,67
scu-dog LDLo:2700 mg/kg	QJPPAL 7,205,34
ivn-dog LDLo:200 mg/kg	QJPPAL 7,205,34
ihl-cat LCLo:43400 mg/m3/4.5H	AHBAAM 116,131,36
orl-rab LDLo:1900 mg/kg	HBTXAC 1,94,56
scu-rbt LDLo:2700 mg/kg	QJPPAL 7,205,34
ihl-gpg LCLo:5000 ppm/2H	FLCRAP 1,197,67

Aquatic Toxicity Rating: TLm96:1000-100 ppm WQCHM* 3,-,74. Carcinogenic Determination: Indefinite IARC** 20,449,79.

TLV: Air: 100 ppm DTLVS* 4,275,80. *Toxicology Review:* FAZMAE 18,365,74; 27ZTAP 3,94,69. OSHA Standard: Air: TWA 500 ppm; CL 1000; Pk 2000/5M/2H (SCP-J) FEREAC 39,23540,74. DOT-ORM-A, Label: None FEREAC 41,57018,76. Occupational Exposure to Methylene Chloride recm std: Air: TWA 75 ppm; Pk 500 ppm/15M NTIS**. Currently tested by NTP for Carcinogenesis by Standard Bioassay Protocol as of December 1980. "NIOSH Manual of Analytical Methods" Vol 1 127, Vol 3 S329. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.

THR: MUT data. A skn, eye irr. An exper ETA, ± CARC. A hmn CNS, BLD. HIGH orl, ivn; MOD ipr, orl, scu, ihl; LOW ihl, scu. See also chlorinated aliphatic hydrocarbons. Very dangerous to the eyes. Except for its property of inducing narcosis, it has very few other acute toxicity effects. Its narcotic powers are quite strong, and in view of its great volatility, care should be taken in its use. It will not form explosive mixtures with air at ordinary temp. However, it can be decomp by contact with hot surfaces and open flame, and it can then yield toxic fumes, which are irr and will thus give warning of their presence. It has been used as an anesthetic in Europe and is still used there for local anesthesia. Exper have shown that 25,000 ppm conc for 2 hr exposures were not lethal. Conc of 7,200 ppm after 8 min caused paresthesia of the extremities; after 16 min, acceleration of the pulse to 100; during the first 20 min, congestion in the head, a sense of heat and slight irr of the eyes. At a level of 2,300 ppm, there was no feeling of dizziness during 1-hr exposures, but nausea did occur after 30 min of exposure. The limit of perception by smell is set at 25-50 ppm conc. Can cause a dermatitis upon prolonged skin contact. A respirator for organic vapors and fumes should be worn to avoid excessive inhal. Used as a food additive permitted in food for human consumption.

Fire Hazard: Reacts violently with Li, NaK, potassium-*tert*-butoxide, (KOH + *n*-methyl-*n*-nitrosourea).

Explosion Hazard: None under ordinary conditions, but will form explosive mixtures in atmosphere having high oxygen content, in liquid O_2, N_2O_4, K, Na, NaK.

Disaster Hazard: Dangerous; when heated to decomp, emits highly tox fumes of phosgene.

METHANOL

CAS RN: 67561 NIOSH #: PC 1400000
mf: CH_4O; mw: 32.05

Clear, colorless, very mobile liquid; bp: 64.8° lel = 6.0%; uel = 36.5%; ulc: 70; mp: −97.8° flash p: 54°; d: 0.7915 @ 20°/4°; autoign temp: 878°F; vap press: 100 mm @ 21.2°; vap. d: 1.11. Flammable, poisonous. Slight alcoholic odor when pure; crude material may have a repulsive pungent odor; misc in water, ethanol, ether, benzene, ketones and most other organic solvents.

SYNS:

ALCOOL METHYLIQUE (FRENCH)
ALCOOL METILICO (ITALIAN)
CARBINOL
COLONIAL SPIRIT
COLUMBIAN SPIRITS (DOT)
METHANOL (DOT)
METANOLO (ITALIAN)
METHYL ALCOHOL (DOT)
METHYLALKOHOL (GERMAN)
METHYL HYDROXIDE
METYLOWY ALKOHOL (POLISH)
MONOHYDROXYMETHANE
PYROXYLIC SPIRIT
WOOD ALCOHOL
WOOD NAPHTHA
WOOD SPIRIT
COLUMBIAN SPIRIT
METHYL ALCOHOL

TOXICITY DATA: 3-2-1	CODEN:
orl-rat TDLo:7500 mg/kg (17-19D preg)	TOXID9 1,32,81
orl-rat LD50:5628 mg/kg	GTPZAB 19(11),27,75
eye-hmn 5 ppm	JOCMA7 2,383,60
skn-rbt 500 mg/24H MOD	28ZPAK -,33,72
eye-rbt 40 mg MOD	UCDS** 3/24/70
orl-hmn LDLo:340 mg/kg	12VXA5 8,671,68
ihl-hmn TCLo:86000 mg/m3:IRR	AGGHAR 5,1,33
unk-man LDLo:868 mg/kg	85DCAI 2,73,70
orl-rat LD50:13 gm/kg	JIHTAB 23,259,41
ihl-rat LC50:64000 ppm/4H	NPIRI* 1,74,74
ipr-rat LD50:9540 mg/kg	TXAPA9 21,454,72
orl-mus LDLo:420 mg/kg	AEPPAE 135,118,28
ipr-mus LDLo:120 mg/kg	PSEBAA 35,98,36
scu-mus LD50:9800 mg/kg	TXAPA9 18,185,71
orl-dog LDLo:7500 mg/kg	HBAMAK 4,1365,35
orl-mky LDLo:7000 mg/kg	TXAPA9 3,202,61
ihl-mky LCLo:1000 ppm	IECHAD 23,931,31
skn-mky LDLo:500 mg/kg	IECHAD 23,931,31
ihl-cat LCLo:44000 mg/m3/6H	AGGHAR 5,1,33
ivn-cat LDLo:118 mg/kg	JPETAB 16,1,20
orl-rbt LDLo:7500 mg/kg	HBAMAK 4,1365,35
skn-rbt LD50:20 gm/kg	UCDS** 3/24/70

Aquatic Toxicity Rating: TLm96:over 1000 ppm WQCHM* 3,-,74.

TLV: Air: 200 ppm (skin) DTLVS* 4,263,80. *Toxicology Review:* MEDIAV 32,431,53; CLCHAU 19,361,73; FNSCA6 2,67,73; JTEHD6 1,153,75; MJAUAJ 2, 483,78. OSHA Standard: Air: TWA 200 ppm (SCP-E) FEREAC 39,23540,74. DOT: Flammable Liquid, Label: Flammable Liquid FEREAC 41,57018,76. Occupational Exposure to Methyl Alcohol recm std: Air: TWA 200 ppm; CL 800 ppm/15M NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 274, VOL 2 S59. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8E NO:03780108—Followup Sent as of April, 1979.

THR: A skn, eye irr. A hmn ihl IRR. A hmn eye irr. HIGH hmn orl; HIGH ipr, ivn; MOD ihl, orl, skn; LOW skn, orl, ihl, ipr, scu. Methyl alcohol possesses distinct narcotic properties. It is also a slight irr to the mu mem. Its main toxic effect is exerted upon the nervous system, particularly the optic nerves and possibly the retinae. The effect upon the eyes has been attributed to optic neuritis, which subsides but is followed by atrophy of the optic nerve. Once absorbed, methyl alcohol is only very slowly eliminated. Coma resulting from massive exposures may last as long as 2-4 days. In the body, the products formed by its oxidation are formaldehyde and formic acid, both of which are toxic. Because of the slowness with which it is eliminated, methyl alcohol should be regarded as a cumulative poison. Though single exposures to fumes may cause no harmful effect, daily exposure may result in the accumulation of sufficient methyl alcohol in the body to cause illness.

Severe exposures may cause dizziness, unconsciousness, sighing respiration, cardiac depression, and eventually death. Where the exposure is less severe, the first symptoms may be blurring of vision, photophobia and conjunctivitis, followed by the development of definite eye lesions. There may be headache, gastrointestinal disturbances, dizziness and a feeling of intoxication. The visual symptoms may clear temporarily, only to recur later and progress to actual blindness. Irr of the mu mem of the throat and respiratory tract, peripheral neuritis, and occasionally, symptoms referable to other lesions of the nervous system have been reported. The skn may become dry and cracked due to the solvent action of methyl alcohol.

Death from ingestion of less than 30 ml has been reported. Usual fatal dose if 100-250° ml.

Chronic effect: Visual impairment.

Methyl alcohol is a common air contaminant. It is used as a food additive permitted in foods for hmn consumption.

Fire Hazard: Dangerous, when exposed to heat, flame or oxidizers.

Spontaneous Heating: No.

Explosion Hazard: Mod, when exposed to flame. Violent reaction with CrO_3, (I + ethanol + HgO), $Pb(ClO_4)_2$, $HClO_4$, P_2O_3, (KOH + $CHCl_3$), (NaOH + $CHCl_3$).

Disaster Hazard: Dangerous, upon exposure to heat or

ETHYL ALCOHOL

CAS RN: 64175 NIOSH #: KQ 6300000

mf: C_2H_6O; mw: 46.08

Clear, colorless, fragrant liquid, burning taste. bp: 78.32°, dlc: 70, lel = 3.3%, uel = 19% @ 60°, fp: <−130°, flash p: 55.6°F, d: 0.7893 @ 20°/4°, autoign. temp.: 793°F, vap. press: 40 mm @ 19°, vap. d: 1.59. Misc in water, alc, chl and eth.

SYNS:

ABSOLUTE ETHANOL
AETHANOL (GERMAN)
AETHYLALKOHOL (GERMAN)
ALCOHOL
ALCOHOL, ANHYDROUS
ALCOHOL DEHYDRATED
ALCOOL ETHYLIQUE (FRENCH)
ALCOOL ETILICO (ITALIAN)
ALKOHOL (GERMAN)
ANHYDROL
COLOGNE SPIRIT
COLOGNE SPIRITS (DOT)
ETHANOL
ETANOLO (ITALIAN)
ETHANOL 200 PROOF
ETHYLALCOHOL (DUTCH)
ETHYL ALCOHOL ANHYDROUS
ETHYL HYDRATE
ETHYL HYDROXIDE
ETYLOWY ALKOHOL (POLISH)
FERMENTATION ALCOHOL
GRAIN ALCOHOL
METHYLCARBINOL
MOLASSES ALCOHOL
NCI-C03134
POTATO ALCOHOL
SPIRITS OF WINE

TOXICITY DATA: 3

	CODEN:
eye-hmn 20 ppm	JOCMA7 2,383,60
skn-rbt 400 mg open MLD	UCDS** 7/22/70
skn-rbt 500 mg/24H SEV	28ZPAK -,34,72
eye-rbt 79 mg	AJOPAA 29,1363,46
eye-rbt 100 mg/24H SEV	28ZPAK -,34,72
mmo-asn 20 pph	MUREAV 48,51,77
cyt-hmn:lym 1160 gm/L	AEMBAP 85A,25,77
cyt-hmn:fbr 12000 ppm	ACYTAN 16,41,72
mnt-mus-ipr 1240 mg/kg/2D	AEMBAP 85A,25,77
sce-mus-orl 420 mg/kg/3W	MUREAV 68,291,79
dlt-mus-orl 3720 mg/kg/3D	AEMBAP 85A,25,77
spm-mus-orl 1500 mg/kg/50D	MUREAV 65,229,79
mnt-dog:lym 400 umol/L	NTIS** AD-A075-605
orl-rat TDLo:440 gm/kg (17W pre/1-20D preg)	RCOCB8 16,15,77
orl-rat TDLo:132 gm/kg (1-22D preg)	TJADAB 23,217,81
orl-rat TDLo:24 gm/kg (14-16D preg)	TJADAB 23,41A,81
orl-mus TDLo:332 gm/kg (1-19D preg)	AMBPBZ 88,285,80
orl-mus TDLo:452 gm/kg (1-19D preg)	AMBPBZ 88,285,80
ipr-mus TDLo:5622 ug/kg (10D preg)	AJOGAH 124,676,76
ipr-mus TDLo:4 gm/kg (10D preg)	TOLED5 6,257,80
orl-dog TDLo:21600 mg/kg (1-60D preg)	FEPRA7 36,285,77
orl-rat LD50:7060 mg/kg	TXAPA9 16,718,70
ipr-rat LD50:4070 mg/kg	TXAPA9 16,718,70
ipr-mam LD50:4300 mg/kg	TXAPA9 13,358,68
orl-mus TDLo:214 gm/kg/(1-18D preg):TER	TJADAB 15,223,77
ipr-mus TDLo:7500 mg/kg (9D preg)	AJOGAH 124,676,76
ipr-mus TDLo:7500 mg/kg (10D preg)	AJOGAH 124,676,76
orl-mus TDLo:400 gm/kg/57W-I:ETA	ZIETA2 59,203,28
rec-mus TDLo:120 gm/kg/18W-I:ETA	ZIETA2 59,203,28
orl-chd LDLo:2000 mg/kg	ATXKA8 17,183,58
orl-man TDLo:50 mg/kg:GIT	JPETAB 56,117,36
orl-man TDLo:1430 ug/kg:CNS	JPETAB 197,488,76
orl-wmn TDLo:256 gm/kg/12W:GLN	JAMAAP 238,2143,77
orl-rat LD50:14 gm/kg	JIHTAB 23,259,41
ihl-rat LC50:20000 ppm/10H	NPIRI* 1,44,74
ipr-rat LD50:6060 mg/kg	TXAPA9 21,454,72
ivn-rat LD50:1440 mg/kg	TXAPA9 18,60,71
orl-mus LD50:7800 ug/kg	TXAPA9 37,185,76
ivn-mus LD50:1973 mg/kg	HBTXAC 1,128,56
orl-dog LDLo:5500 mg/kg	HBTXAC 1,130,56
ipr-dog LDLo:3000 mg/kg	EJIMAG 1,207,44
scu-dog LDLo:6000 mg/kg	HBTXAC 1,130,56
ivn-dog LDLo:1600 mg/kg	TXAPA9 18,60,71
orl-cat LDLo:6000 mg/kg	JPETAB 56,117,36
ivn-cat LDLo:3945 mg/kg	HBTXAC 1,130,56
orl-rbt LD50:6300 mg/kg	HBTXAC 1,130,56
skn-rbt LDLo:20 gm/kg	31ZTAS -,75,68
ivn-rbt LDLo:5000 mg/kg	JPETAB 56,117,36
orl-gpg LD50:5560 mg/kg	JIHTAB 23,259,41
ipr-gpg LDLo:4000 mg/kg	AIHAAP 35,21,74
ivn-ckn LDLo:8216 mg/kg	JPETAB 60,312,37
scu-frg LDLo:7100 mg/kg	HBTXAC 1,128,56

Aquatic Toxicity Rating: TLm96:over 1000 ppm WQCHM* 3,-,74.

TLV: Air: 1000 ppm DTLVS* 4,174,80. *Toxicology Review:* IRXPAT 11,177,72; AEMBAP 56,291,75; AICMA2 44(6),874,74; MAEPBU 6,81,72; FCTXAV 8,433,70; CLCHAU 19,361,73; PAREAQ 4,1,52; FNSCA6 2,67,73; SCIEAS 209,353,80; 27ZTAP 3, 66,69. OSHA Standard: Air: TWA 1000 ppm (SCP-E) FEREAC 39,23540,74. DOT: Flammable Liquid, Label: Flammable Liquid FEREAC 41,57018,76. "NIOSH Manual of Analytical Methods" VOL 2 S56. Reported in EPA TSCA Inventory, 1980.

THR: MOD-LOW via oral, ivn and dermal routes. Probably also via inhal route. MUT data. The systemic effect of ethyl alcohol differs from that of methyl alcohol. Ethyl alcohol is rapidly oxidized in the body to carbon dioxide and water, and in contrast to methyl alcohol, no cumulative effect occurs. Though ethyl alcohol possesses narcotic properties, conc sufficient to produce this effect are not reached in industry. Exposure to conc of 5,000-10,000 ppm results in irr of the eyes and mu mem of the upper respiratory tract. If continued for an hour, stupor and drowsiness may result. Conc below 1,000 ppm usually produce no signs of intoxication. There is no concrete evidence that repeated exposure to ethyl alcohol vapor results in cirrhosis of the liver. Large doses can cause alcohol poisoning. Repeated ingestions can lead to alcoholism. It is a CNS depressant, causes TER, ETA, GIT, GLN in hmn.

Exposure to conc of over 1,000 ppm may cause headache, irr of the eyes, nose and throat, and, if long continued, drowsiness and lassitude, loss of appetite and inability to concentrate.

Fire Hazard: Dangerous, when exposed to heat or flame.

Incomp: Acetyl chloride, (Ag_2O + NH_4OH), BrF_5, $Ca(OCl)_2$, ClO_3, CrO_3, $Cr(OCl)_2$, (cyanuric acid + H_2O), H_2O_2, HNO_3, (H_2O_2 + H_2SO_4), (I + CH_3OH + HgO), disulfuryl difluoride, oxidants, platinum, potassium, potassium-tert-butoxide, silver nitrate, silver oxide. [$Mn(ClO_4)_2$ + 2,2-dimethoxy propane], $Hg(NO_3)_2$, $HClO_4$, perchlorates, (H_2SO_4 + permanganates), $HMnO_4$, KO_2, $KOC(CH_3)_3$, (Ag + HNO_3), $AgNO_3$, $AgClO_4$, NaH_3N_2, $UO_2(ClO_4)_2$.

Disaster Hazard: Dangerous, when exposed to heat or flame.

Spontaneous Heating: No.

Explosion Hazard: Mod, when exposed to flame.

To Fight Fire: Alcohol foam, CO_2, dry chemical.

For further information see Vol. 1, No. 7 of *DPIM Report.*