

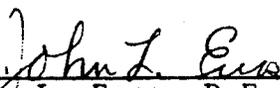
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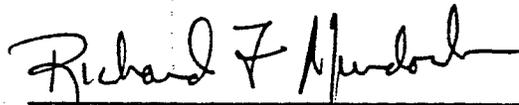
21E ASSESSMENT OF  
J.J. RILEY PROPERTY  
228 SALEM STREET  
WOBURN, MASSACHUSETTS  
October 23, 1984

Submitted to  
J.J. Riley Tanning Co.

Submitted by  
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Project 84442

  
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## 1. INTRODUCTION

### 1.1 Background

The J.J. Riley Tanning Co., located at 228 Salem Street, Woburn, Massachusetts, is a leather tannery which produces leather for shoe making. The company has been a family owned business since 1910 except between December, 1978 and January, 1982 when it was owned by Beatrice Foods Inc. Mr. John J. Riley, president of the company, purchased the operation from Beatrice Foods in January of 1983.

The facility is located in an area of Woburn which has been the subject of several groundwater contamination investigations (Ref. 1 through 6). In May 1979, two Woburn water supply wells (Woburn City Wells G and H) were found to be contaminated with several organic chemicals and were closed. The wells are located approximately 2,000 ft north-northeast of the John J. Riley property. Starting in 1980 the US EPA undertook an investigation into the extent of groundwater contamination in North and East Woburn. The investigations were performed by Ecology and Environment, Inc. (E & E) The EPA investigation found that there was widespread contamination of the groundwater in North and East Woburn by organic solvents, primarily chlorinated volatile organics. A few of the chlorinated volatile organics had maximum monitored contaminant levels located near the J.J. Riley Tanning Co. property, on a parcel of property, owned by Wildwood Conservation Trust, northeast of the J.J. Riley property. A production well for the J.J. Riley Tanning Co. is located on the Wildwood Conservation Trust property about 400 ft northeast of the Riley property.

In 1983 the J.J. Riley Tanning Co., commissioned a study (Ref. 7) by Yankee Environmental Engineering and Research Services (YE<sup>2</sup>ARS) to determine the direction of groundwater flow on the J.J. Riley property and to determine if groundwater contamination, if present, on the Riley property is contributing to contamination of production wells #1 (Riley Property) and #2 (Wildwood Conservation Trust). The report did not address the question of whether the Riley site is the source of contamination of the Woburn water supply wells.

### 1.2 Purpose

The purpose of this 21E assessment is to evaluate the presence or absence of hazardous materials or oil on the pro-

perty owned by the J.J. Riley Tanning Co. The results of the assessment could be used by lending institutions to evaluate the potential risks in regard to MGL 21E. It is not the purpose of this investigation to determine whether or not the J.J. Riley Tanning Co. is or was the source of contamination of the Woburn water supply wells. This report should be used only to evaluate the potential need for MGL 21E action at the J.J. Riley Tanning Co., 228 Salem Street, Woburn, Massachusetts.

### 1.3 Project Personnel

The following personnel at Geotechnical Engineers Inc. are responsible for the field work, analysis, and preparation of this report:

Principal in charge  
Engineer  
Chemist/Toxicologist  
Chemist/Toxicologist

Richard F. Murdock  
John L. Enos  
Angela Boggs  
James Sullivan

## 2. SITE DESCRIPTION AND TANNING OPERATION

### 2.1 Site Description

The J.J. Riley Tanning Co. is located at 228 Salem Street, Woburn, Massachusetts. The site location is shown in Fig. 1 and a plan of the site is shown in Fig. 2. The property is approximately 15.8 acres and is bounded by the following:

- Property owned by Bio Assay Inc. to the north.
- The Boston and Maine Railroad right of way to the east.
- Salem Street to the south.
- Wildwood Avenue to the west.

The base plan for Fig. 2 is from City of Woburn topographic maps. The topographic maps were prepared in 1966 and may therefore be incorrect where excavation and/or filling has been performed. Wildwood Street was added to the map by GEI.

The tannery has been in operation at this location since 1910.

The tanning operation takes place in two large gray, wood framed buildings (Buildings 1 and 2). Two wood frame office buildings abut Salem Street south of the tannery buildings. There are several areas and structures which are associated with the tanning operation as follows (refer to Fig. 2):

- A hide storage area approximately 170 ft by 300 ft. Hides are stacked on pallets in this area after arriving at the site by truck. The hides have not been treated before storage in this area. This area is paved.
- A drum storage area where empty drums which contained chemicals used in the tanning process are stored awaiting pick-up by a barrel recovery firm. This area is paved.
- A bag house north of Building No. 1 where dust from the buffing of hides is collected. This dust is transferred to a small lagoon just north of the bag house.
- A Catch Basin north of Building 2. Effluent from the tanning operation, containing solid and liquid wastes,

enters the Catch Basin. Solids settle out and the liquid effluent enters the City of Woburn sewer which connects with the MDC Wilmington Trunk Sewer Main. The sewer runs north from Salem Street, between the hide storage area and the Catch Basin and then northeast under the B & M Railroad.

- An area north of the hide storage area and adjacent to Wildwood Avenue which has been used in the past to land-fill sludge from the Catch Basin. Sludge was land-filled in this area up until 1975 and was recently excavated and stockpiled nearby awaiting removal from the site. Sludge from the catch basin is now disposed of on the slope between the Catch Basin and the pump house for PW #1.
- An oil fired power plant north of Building 1. Three 15,000 gallon underground storage tanks are located adjacent to the power plant.
- A pump house for Production Well #1 (PW #1) is approximately 300 ft northeast of the catch basin adjacent to the B & M Railroad tracks. PW #1 is operational but is seldom used. A second well, currently used for production water, is located on property owned by Wildwood Conservation Trust approximately 400 ft northeast of PW #1. The second well is called PW #2.

## 2.2 Tanning Operation

### 2.2.1 General Description

The tanning operation takes place in Buildings 1 and 2. In Building 1 the hides are washed, dehaired and buffed. In Building 2 the hides are split, colored and finished. Materials used in the tanning process are stored in Building 2 and in two above ground tanks at the northeast corner of Building 2.

The tanning process used by the J.J. Riley Tanning Co. was described in a 1980 EPA report (Ref. 1) as follows:

"Riley Tannery takes in 20% fleshy and 80% prefleshed hides. The hides are stacked in wooden crates and left outside on the back paved lot area. The turnover rate is approximately 17 days. Also stored in this back paved lot area are bales of chrome shavings which formerly were deposited in the Woburn Landfill. Approximately every 24

days, sufficient shavings accumulate to warrant removal by truck to an individual in New Jersey who in return sells them to an orange grower in Florida for fertilizer. Stacks of split chromed hides are stored outside on the back paved lot area prior to being trucked from site.

"Inside the process plant, located on the east side of the property are 24 vats (22 paddle tubs and 2 revolving drums). The hides are brought into the plant and loaded into tubs and drums for washing, disinfecting and dehairing. The hides that require fleshing are sent to the fleshing machines where the flesh is stripped off and transported as a slurry to the grease tank. The rendered grease is sold to a soap manufacturer. The waste which was formerly sold to Stouffer Chemical, is now disposed of in the sewer.

"After the hides are loaded into the vats, they are washed in water. To the water is added Dizene, a disinfectant manufactured by Allied Chemical, and Triton N101, a surfactant. Dizene is identified as Orthodichlorobenzene, which is on the EPA list of priority pollutants. (Note: Dizene was used only over the weekend or during plant shutdowns according to Mr. Richard Jones of J.J. Riley Tanning Co.)

"The hides are left to soak in the disinfecting solution overnight and drained the next day. They are then rinsed with water.

"The third step in the tanning process is dehairing which requires the use of sodium sulfhydrate. The hides are left in vats overnight and drained the next day. After the hides are rinsed with water, liming takes place with the addition of lime to each vat. The hides are left to soak overnight in the lime solution and drained the next day.

"Deliming takes place in 12 vats. The deliming solution consists of ammonium sulfate, five gallons of Triton, and 106 fl. oz of Oropon supplied by Rohm & Haas. The vats are drained and the wastewater enters the sewer system.

"The twelve revolving drums located beside the laboratory are utilized in the pickling and chrome tanning steps. Pickling solution consists of

sodium formate, brine, Triton (2 1/2 gallons), and sulfuric acid.

"The tanning procedure combines 2,500 gallons of water and 150 gallons of chrome liquor (sodium dichromate) with 15 fl. oz. of Busan, a mold inhibitor composed of 12-(thiocyanomethylthio) benzothiazole (from Buchman Labs). Sodium bicarbonate is used to neutralize the solution. Three gallons of Tamol 5D, a naphthalene-based syntan are added.

"Hexavalent chromium is used at Riley Tannery. It is pumped to a tank by a closed system, where it is oxidized and then pumped to the tanning drums as trivalent chromium.

"The dyes used at Riley Tannery are bought from Sandoz, North Carolina. Mr. Riley informed E & E that he stopped using benzidine dyes approximately ten years ago.

"All wastes from the Riley Tannery process enter the floor drains and are collected in a sedimentation tank. This is solely for solids removal. There is no pH change, and therefore, the chromium does not settle out. The oil or grease from the process also do not filter out. The sludge from the settling tank is disposed of on the company's property. After 1928, a sewer discharge permit was obtained by Riley for the tannery waste water. Prior to 1928 all wastes were discharged into the Aberjona River."

The effluent which is discharged to the City of Woburn and MDC sewers has been found to contain unacceptable levels of total chrome, oil and grease. The J.J. Riley Tanning Co. is under orders from the MDC to provide treatment of the effluent to conform to MDC limits.

#### 2.2.2 Chemical Useage at the J.J. Riley Tanning Co.

As described in Sec. 2.2.1, the tannery uses the chrome tanning process. This involves taking hexavalent chromium (Cr +6), which is considered a hazardous substance by EPA, and converting it to trivalent chromium (Cr +3). Only the trivalent chromium (non-hazardous) is introduced into the actual tanning process. By converting the chro-

mium in a closed system the effluent and waste from the tanning process does not contain hexavalent chromium and is not considered a hazardous waste by US EPA.

The J.J. Riley Tanning Co. currently uses or has used in the past several solvents in its process. These solvents are listed in Table 1.

According to Mr. Richard Jones, a chemist for the tannery, the four solvents currently being used are used in the application of laquers and finish coatings to the tanned hides. Any runoff from overspray during the application of finish coatings is collected. In the "water wash booth" volatilized solvents may combine with water vapor and precipitate onto the floor, draining into a floor drain. Water collected in the floor drain is temporarily stored in a tank. Mr. Jones, estimates that about 100 to 200 gallons of water is collected per day. The tank is emptied into the City of Woburn sewer. Only one of the four solvents, butyl acetate, is considered to be a hazardous substance by EPA. In addition to the solvents listed in Table 1, Mr. Jones reports that the tannery uses about 5 gallons of 1,1,1 trichloroethane over a 5 year period. The solvent is used to clean metal and is not used in the tanning or finishing processes.

Two substances used in the past at the J.J. Riley Tanning Co., Orthodichlorobenzene and Benzidine (as a dye base) are considered hazardous by EPA. According to Mr. Jones, the commercial product Dizene, which contains orthodichlorobenzene, was used as a disinfectant in the hide wash water from about 1972 to 1982. Dizene was used on weekends and during plant shutdowns when the hides would be soaking longer than the usual one day period. Between 1979 and 1982 the amount of Dizene used ranged from 1100 to 2200 lbs per year. Dizene diluted with water was also used as a disinfectant and deodorizer in the floor drains. The exact quantity used for this purpose is not known, however, it is included in the per year usage quantities described above.

Benzidine based dyes were used by J.J. Riley Tanning Co. until 1972. Excess dye was carried from the plant with the effluent. According to

John J. Riley, prior to about 1974 the effluent was piped to lagoons in the northwest portion of the site where the solid portion settled out. Some of the liquid fraction of the effluent was retained in the sludge. Excess liquid was discharged into the sewer.

### 3. ENVIRONMENTAL SETTING

#### 3.1 Topography

The topography of the Riley site is generally level over the southern half but slopes gradually to the north to a drainage swale. In the northern half of the site the topography varies. There is a small hill adjacent to the northerly property line which rises to El. 113 ft (NGVD). From the vicinity of the Catch Basin ground surface drops from about El. 80 down to about El. 55 at PW #1. East of Building 2 ground surface drops from about El. 80 adjacent to the building down to El. 50 along the B & M Railroad right of way. In general the topography of the site decreases from west to east.

#### 3.2 Hydrology

Surface runoff on the site generally drains to the east. Runoff from the north and south halves of the site drains to the swale which cuts across the site from west to east. It is reported by Mr. John Riley that a stream flows intermittently in the swale.

The Riley site is located approximately one mile west of the Aberjona River in the Aberjona River valley which is part of the Mystic River Drainage Basin. A USGS study (Ref. 8) reports expected well yields of 300 gpm in the area of the site. The aquifer consists of sands and gravels overlying bedrock. Borings performed during YE<sup>2</sup>ARS investigation in 1983 (Ref. 7) indicate that the subsoils consist of coarse sand, gravel and boulders overlying bedrock. Based on water levels measured in observation wells installed on the site during YE<sup>2</sup>ARS investigation it appears that groundwater flows from west to east over the site. The groundwater level measurements were taken while only Well PW #2 was operating. YE<sup>2</sup>ARS concluded, however, that based on the results of measurements of drawdown in PW #1 while pumping PW #2 the direction of groundwater flow is not significantly affected by pumping at PW #2. We agree with this conclusion.

4. SITE HISTORY

4.1 J.J. Riley Property

As mentioned previously the site has been used by a tannery since 1910. Prior to 1910 there was a mixed use of the property. The company offices on the south end of the property and part of the tannery were residential. Parts of the existing tannery buildings were used by glass and soap manufacturers. There was a gravel pit and small farm located in the northwest portion of the site at the present location of the sludge lagoons.

4.2 Abutting Lands

The land east and north of the J.J. Riley Tanning Co. property is zoned for industrial use and there are numerous small businesses in this area. The properties abutting or close to the Riley property are described below. Previous use of the property is noted where information was available.

Murphy's Waste Oil Service

This property is located east of the Riley property and the B & M Railroad and fronts on Salem Street (No. 252). The primary activity on this property is the collection and storage of waste oil before being disposed of.

Whitney Barrel Company

This property is located east of Murphy's Waste Oil Service along Salem Street (No. 256). The primary activity on this property is the reclamation of chemical storage drums.

Beatrice Foods Co. (now Wildwood Conservation Land)

This property is located north of Murphy's Waste Oil Service and Whitney Barrel Co., beside B & M Railroad right-of-way. This land is unused except for a water supply well used by the J.J. Riley Tanning Co.

Bio Assay, Inc.

This property is located north of the Riley property along Wildwood Street. The primary activity on this property is research and testing concerning animal toxicology.

Lechmere Warehouse

This property is located north of the Bio Assay property, between Wildwood Street and the B & M Railroad right-of-way. The primary activity on this property is the storage of merchandise prior to distribution.

Johnson's Roses

This property is located west of the Riley property and Wildwood Street. The primary activity on this property is the growing of roses.

215 Salem Street

This property is located at the intersection of Wildwood and Salem Streets, south of Salem Street. An office building is located at the rear of the property. This property is the former site of the Murray Leather Co., a leather tannery.

219 Salem Street

This property is located directly across Salem Street from the Riley property. The primary site activity is the storage and sale of concrete forming supplies.

235 Salem Street

This property is located directly across Salem Street from the Riley property. The primary site activity is the sale of banding saws and knives.

The area west of Johnson's Roses is zoned for residential use over to the border with the Town of Burlington.

## 5. RESULTS OF PREVIOUS CHEMICAL ANALYSES

### 5.1 Groundwater Samples

As part of the US EPA investigation of groundwater contamination in Woburn, samples of groundwater from Production Well No. 1 were obtained and tested for priority pollutants which included volatile organics and benzidine (base/neutral). In addition, groundwater samples were obtained from four monitoring wells and PW #1 during YE<sup>2</sup>ARS investigation in October, 1983. These samples were analyzed only for the presence of volatile organics according to EPA Method 601. The results of all previous analyses of groundwater samples obtained on the Riley property are summarized in Table 2. The results are also summarized on Fig. 3 at the locations where the samples were obtained.

Groundwater samples from the monitoring wells on the J.J. Riley Tanning Co., property were not tested for the presence of benzidine or butyl acetate, two chemicals which reportedly are or have been used by the J.J. Riley Tanning Co. and which are considered hazardous substances. In addition, the groundwater samples were not tested for the presence of hexavalent chromium.

### 5.2 Sludge Samples

Sampling and EP Toxicity Analyses of the sludge which has been landfilled on the Riley property were performed during YE<sup>2</sup>ARS investigation in July, 1983. The results of the EP Toxicity tests are summarized in Table 3. In May, 1982, samples of the landfilled sludge were obtained by personnel from the John J. Riley Tanning Co. and analysed for volatile organics chemicals. The results are summarized in Table 4. The concentrations of all of the organics analysed for in the sludge were below the detection levels. This does not mean that the actual concentrations, below the detection levels, are not of concern. For example the detection level for chloroform was 50 ppb. Concentrations of chloroform below 50 ppb could not be detected by the testing method used, however, concentrations as low as 2 ppb in water could be of concern.

## 6. CONCLUSIONS

Based on our review of the available information and data presented in this report, we make the following conclusions regarding the 21E assessment of the J.J. Riley Tanning Co. property:

1. The results of groundwater analyses suggests that there is contamination of the groundwater at the J.J. Riley property by three compounds: chlorobenzene, chloroform and trans 1, 2 dichloroethene. A review of the J.J. Riley Tanning Co. operation indicates that the tannery could be a potential source of only the chlorobenzene. The tannery has used a product (Dizene) which contains orthodichlorobenzene. Under certain conditions the orthodichlorobenzene could degrade into chlorobenzene, however, it does not appear that the conditions on the tannery property would favor this degradation. In industrial conditions, (i.e. direct mixing) orthodichlorobenzene could react with benzidine, an azo derivative, to form chlorobenzene. Benzidine based dyes have been used by J.J. Riley Tanning Co. in the past. This reaction is highly unlikely to occur in landfilled sludge. There is no indication that the two other groundwater contaminants found on the property, chloroform and trans 1, 2 dichloroethene, are from the tannery operation. Chloroform is a very common solvent and can result from the use of pesticides and insecticides. Trans 1,2 dichloroethene is a general purpose solvent.
2. Groundwater at the site flows from west to east based on water levels measured in monitoring wells installed by YE<sup>2</sup>ARS. The source or sources of contamination found in groundwater samples from monitoring wells would be either at the well location or upgradient (west) of the well.
3. The results of EP Toxicity analyses on samples of the landfilled sludge indicate that the concentration of total chromium in the sludge is below the acceptable limit. The analyses also indicate that the concentration of hexavalent chromium is at or below the detection level (0.1 ppm). Hexavalent chromium is unstable in the environment and we would not expect that sludge containing concentrations of hexavalent chromium near the detection level (0.1 ppm) would result in contamination of the groundwater.

Analyses of groundwater samples from the site could be used to confirm this.

4. There is insufficient data to determine whether there are organics present in the landfilled sludge which correspond to organics found contaminating the groundwater. Previous analyses indicated concentrations of certain organic compounds below the detection levels used in the analyses. This does not mean that the actual concentrations, below the detection levels, are not of concern. For example the detection level for chloroform was 50 ppb. Concentrations of chloroform below 50 ppb could not be detected by the testing method used, however, concentrations as low as 2 ppb in water could be of concern.
5. The J.J. Riley Tanning Co. used benzidine based dyes up until 1972 and the landfilled sludge may have contained benzidine. Benzidine has not been tested for in groundwater samples from the monitoring wells on the J.J. Riley Tanning Co. property or in the landfilled sludge. Benzidine was analyzed for in samples from PW #1 and none was detected.
6. The four solvents used by the tannery, Butyl Acetate, Butoxyethanol, Diisobutyl Ketone and Methoxyethanol are not introduced into the effluent. It is possible that very trace quantities from the "water wash room" are combined with the effluent entering the City of Woburn sewer. Only one of the solvents, Butyl Acetate, is considered a hazardous substance by EPA. Neither groundwater nor sludge samples from the site have been analyzed for the presence of Butyl Acetate.
7. The City of Woburn sewer which runs north through the J.J. Riley Tanninc Co. property may be leaky. This would result in the exfiltration of effluent from the tannery operation combined with the sewage entering the sewer upgradient of the site. Contaminants from the tannery operation and any businesses using the sewer upgradient of the site could enter the ground from the sewer and travel down to the groundwater.
8. The Riley property is upgradient of a wetlands area, the Aberjona River Valley.
9. The Riley property is not known to be upgradient of a current drinking water source. However, it is upgradient of a groundwater resource - the Aberjona River Valley.

## 7. RECOMMENDATIONS

Based on the results of our analysis and on the information presented in this report we recommend the following:

1. Obtain groundwater samples from monitoring wells B-1, B-2, B-4, and B-5 and production well PW #1. The groundwater samples should be analysed for the presence of the following:

- chlorinated volatile organics
- butyl acetate
- benzidine
- hexavalent chromium

The purposes of these analyses are to confirm the presence or absence of previously identified chlorinated volatile organics and to determine the presence or absence of butyl acetate, benzidine and hexavalent chromium in the groundwater.

2. Obtain a sample of sludge from the old sludge land-fill area in the north-west portion of the site. The sludge sample should be analyzed for the presence or absence of the following:

- chlorinated volatile organics
- butyl acetate
- benzidine
- hexavalent chromium

The purposes of these analyses are to determine the presence or absence of these compounds in the sludge. Previous analyses for chlorinated volatile organics had high detection levels (See Sec. 6). Butyl acetate and Benzidine were not tested for in the sludge before. The reported concentration of hexavalent chromium at or below the detection level should be confirmed.

## 8. LIMITATIONS

The conclusions contained in this report are based on the information described in this report. Information concerning chemicals used by the J.J. Riley Co. was provided by personnel at the J.J. Riley Tanning Co. No chemical laboratory testing was performed as part of this study. Should additional chemical testing information become available, GEI should review it to confirm or modify conclusions presented in this report.

This environmental assessment and report was prepared by GEI for the use of the J.J. Riley Tanning Co., exclusively. However, GEI acknowledges and agrees that this report may be conveyed to Lenders and Title Insurers for the purpose of remortgaging of the site.

The report has been prepared in accordance with generally accepted engineering practices as stated in our "Standard Conditions for Engagement" dated July 1, 1984 contained in Appendix A. No other warranty, expressed or implied, is made.

GEI did not assess the regulatory compliance history of present or previous owners or operators of the site regarding state, local, or federal environmental regulations. The conclusions provided by GEI in this report, therefore, are based solely on the information reported in this document.

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7. Hydrogeologic Investigation of the John J. Riley Tanning Co., Inc., 1983, Yankee Environmental Engineering and Research Services, Inc.
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TABLE 1 - ORGANIC CHEMICALS USED BY J.J. RILEY TANNING CO.  
21E EVALUATION  
J.J. RILEY TANNING CO.

| <u>Solvent</u>            | <u>EPA Hazardous Substance ?</u> | <u>Estimated Quantity Used in 1981, gal.</u> |
|---------------------------|----------------------------------|--|
| Butyl Acetate             | Yes                              | 1210   |
| Butoxyethanol             | No                               | 495  |
| Diisobutyl Ketone         | No                               | 2585   |
| Methoxyethanol            | No                               | 1265   |
| Orthodichlorobenzene      | Yes                              | (1)  |
| Benzidine (base for dyes) | Yes                              | (2)  |

Notes:

1. The use of Orthodichlorobenzene (Dizene) as a disinfectant was discontinued in 1982.
2. The use of Benzidine based dye was discontinued at about 1972.

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TABLE 2 - CONTAMINANTS FOUND IN GROUNDWATER  
SAMPLES FROM J.J. RILEY TANNING CO. PROPERTY  
21E ASSESSMENT  
J.J. RILEY TANNING CO.

| <u>Compound</u>          | <u>Concentration, ppb</u> |          |            |            |            |            |
|--------------------------|---------------------------|----------|------------|------------|------------|------------|
|                          | <u>PW #1</u>              |          | <u>B-1</u> | <u>B-2</u> | <u>B-4</u> | <u>B-5</u> |
|                          | <u>A</u>                  | <u>D</u> | <u>D</u>   | <u>D</u>   | <u>D</u>   | <u>D</u>   |
| 1,1,1 trichloroethane    | 28                        | ND       | ND         | ND         | ND         | ND         |
| 1,2 trans dichloroethene | 12                        | 0.4      | ND         | 0.7        | ND         | ND         |
| trichloroethene          | 53                        | 0.4      | ND         | ND         | ND         | ND         |
| chlorobenzene            | 10                        | ND       | ND         | 2.3        | 20         | ND         |
| chloroform               | ND                        | ND       | ND         | ND         | 1.7        | 0.8        |

Notes:

1. ND means compound not detected
2. Key to sampling:
  - A. Samples collected by Ecology and Environment, Inc. between November 12, 1980 and March 2, 1981
  - D. Samples collected by YE<sup>2</sup>ARS on October 12, 1984.

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**TABLE 3 - RESULTS OF EP TOXICITY ANALYSES ON  
SAMPLES OF LANDFILLED SLUDGE  
21E ASSESSMENT  
J.J. RILEY TANNING CO.**

| <u>Constituent</u>        | <u>Concentration in ppm</u> |                    |         |                 |
|---------------------------|-----------------------------|--------------------|---------|-----------------|
|                           | <u>Sample 0</u>             | <u>Sample N(2)</u> |         | <u>Sample B</u> |
| <b>METALS</b>             |                             |                    |         |                 |
| As                        | <0.005                      | <0.005             | <0.005  | <0.005          |
| Ba                        | <0.1                        | <0.1               | <0.1    | <0.1            |
| Cd                        | <0.005                      | 0.008              | <0.005  | <0.005          |
| Cr (total)                | 0.35                        | <0.1               | <0.1    | 0.27            |
| Cr (hexavalent)           | 0.17                        | <0.1               |         | <0.1            |
| Pb                        | 0.10                        | 0.11               | 0.11    | 1.2             |
| Hg                        | <0.0002                     | <0.0002            | <0.0002 | <0.0002         |
| Se                        | <0.005                      | <0.005             | <0.005  | <0.005          |
| Ag                        | <0.01                       | <0.01              | <0.01   | <0.01           |
| Cyanide (ppm, wet weight) | 0.66                        | 6.5                |         | --              |
| Sulfide (ppm, wet weight) | <5                          | <5                 |         | --              |

**NOTES:**

- 1) Results reported in YE<sup>2</sup>ARS Report (Ref. 7)
- 2) Duplicate analyses
- 3) Sample locations as follows:
  - O Old lagoons
  - N Slope northeast of Catch Basin
  - B Buft Dust lagoon

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**TABLE 4 - RESULTS OF ORGANIC ANALYSES OF**  
LANDFILLED SLUDGE  
21E ASSESSMENT  
J.J. RILEY TANNING CO.

| <u>Organic Chemical</u> | <u>Concentration (ppm)</u> |   |
|-------------------------|----------------------------|---|
|                         | <u>Old Lagoons</u>         | <u>Sample from Slope North of Catch Basin</u> |
| Chloroform              | <0.05                      | <0.05   |
| Trichloroethane         | <0.005                     | <0.005  |
| Dichloroethylene        | <0.5                       | <0.5  |
| Trichloroethylene       | <0.01                      | <0.01   |
| Tetrachloroethylene     | <0.005                     | <0.005  |
| Benzene                 | <0.1                       | <0.1  |

NOTES:

1. Samples obtained May 27, 1982, by J.J. Riley Tanning Co. personnel.

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