Hiteman Leather Company Site

Herkimer County
West Winfield, New York
Site Number 6-22-007

New York State
Record of Decision

March 1992

PREPARED BY:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

DECLARATION STATEMENT - RECORD OF DECISION

SITE NAME AND LOCATION:

Hiteman Leather Site
Village of West Winfield
Herkimer County, New York
Site ID #: 6-22-007
Funding Source: 1986 Environmental Quality Bond Act

STATEMENT OF PURPOSE:

This Record of Decision (ROD) sets forth the selected remedial action plan for the Hiteman Leather Site. The remedial action plan, set forth in this ROD, was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the New York State Environmental Conservation law (ECL).

STATEMENT OF BASIS:

This ROD is based upon the Administrative Record for the Hiteman Leather Site and upon public input to the Proposal Remedial Action Plan (PRAP), which was made available during the public comment period of January 23 through February 21, 1992. A copy of the Administrative Record is available at the New York State Department of Environmental Conservation, 50 Wolf Road, Albany, New York and is also available at the Document Repository located in the Village Clerk's Office in West Winfield, New York. A listing of those documents included as part of the Administrative Record is contained in Attachment 1. A Responsiveness Summary that documents the public's expressed concerns and related correspondence from other State and local government agencies has been included as Attachment 4.

DECLARATION:

Due to the findings presented herein, the wastes disposed at the Hiteman Leather Site are exempt under 6 NYCRR Part 371.1 (e)(2)(ix) of the New York State Hazardous Waste Regulations and therefore, do not qualify for New York State Superfund. The NYSDEC has referred the site to the USEPA, recommending that it be considered for placement on the National Priorities List (NPL). Placement on the NPL would qualify the site for remediation using the Federal Superfund subject to CERCLA and SARA.

The final screening of remedial alternatives as presented in the RI/FS included five alternatives, of which the following appear appropriate for site wastes and site conditions:

- Alternative II, Excavation with off-site Stabilization & Disposal
- Alternative III, Excavation, Stabilization and on-site Disposal
- Alternative V, Capping with Containment

The NYSDEC recommends further consideration of these alternatives if the site is placed on the NPL, and funding for Remediation is provided by the USEPA under Federal Superfund.

3-26-92
Date

Edward O. Sullivan
Deputy Commissioner

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I. SITE LOCATION AND DESCRIPTION

The Hiteman Leather Site is an inactive hazardous waste site located on South Street in the Village of West Winfield, Herkimer County, New York (see figure 1). The site study area is approximately 14.5 acres in size which surrounds the former leather tannery buildings and property (approximately 2 acres). The site is within 500 feet from the intersection of Route 20 and Route 51 directly adjacent to the Unadilla River.

From the mid 1940's to 1968, the Hiteman Leather Company discharged tannery process waste to a series of sedimentation lagoons directly west of the plant buildings. These waste contained a high chromium content, due to the use of chromium salts with other inorganics in the process. The discharge of these wastes has resulted in heavily contaminated soils and wetland sediments on and adjacent to the site property.

II. SITE HISTORY

The Hiteman Leather Company was in business from 1820 to 1968. The tannery operation changed significantly in 1946 when a modern factory building was added to the old plant. Around this time, the tanning process, in general, was changing from the traditional use of vegetable based methods (tree barks) to include mineral based methods (ie. chromium salts). These changes significantly reduced the production time required to produce leather from animal hides and were incorporated into the modification of the Hiteman Leather Company.

However, the changes in production at the plant did not include advances in the treatment and disposal of wastewater generated during the tanning process. Wastewater was discharged to sedimentation lagoons directly west of the plant. These lagoons were operated in series with the final effluent then overflowing into the Unadilla River. The solids which settled in these lagoons were periodically excavated and subsequently deposited on the site. This form of treatment did not always provide adequate protection of the Unadilla River.

In 1953, the New York Water Pollution Board began investigating pollution problems in the Unadilla River. Negotiations began in 1958 with the Hiteman Leather Company to submit plans for treatment of plant waste. Over the next several years, negotiations continued between the representatives of the Hiteman Leather Company and officials from the State, County and local governments. The resulting engineering reports indicated a cost of $1,000,000 for design and construction of an adequate wastewater treatment plant. Due to its inability to construct the necessary facilities, the Hiteman Leather Company terminated operations in 1968.

III. CURRENT STATUS

A. Preliminary Sampling Program - October 24, 1983 - NYSDEC

The following summarize the conclusions of this program:

- Surface water and sediment samples from the Unadilla River and soil in disposal areas near the factory were collected.
- Analytical data indicated elevated levels of chromium, lead, mercury, antimony, arsenic and other inorganics in soil and sediment samples.

B. Phase I Inactive Hazardous Waste Site Investigation - August 1985 - Recra Research, Inc. for NYSDEC

The Phase I report generated a Hazardous Ranking System (HRS) Score for the site waste. The HRS-Score provided a method for assessment of site hazards through the computation of a numerical value. The minimum HRS score required for placement on the NPL was 28.5. The score resulting from the Phase I Investigation at Hiteman was 43.98. Based on these results, the NYSDEC recommended the site to the USEPA on September 26, 1986 for the NPL. Placement on the NPL which would qualify the site for Federal Superfund. However, the site was not placed on the NPL at that time. Due to the relatively high HRS score and the presence of significant heavy metal contamination on the site, the NYSDEC Division of Solid and Hazardous Waste began the RI/FS process under the State Superfund Program.

C. Remedial Investigation Report - March 1992 - SAIC Engineering Inc. for NYSDEC

A contract for the RI/FS was signed with GHR Engineering Associates, Inc. of New Bedford, MA in 1988. GHR began the investigation with a field mobilization in June 1988. However, GHR ceased to work on the contract because of financial difficulties and SAIC Engineering, Inc. of Lakeville, MA was assigned the contract in December of 1990.

The RI/FS process is intended to determine the nature and extent of contamination attributed to the site and to gather sufficient information to identify, evaluate, and recommend remedial action alternatives appropriate for this site.

1. Hydrogeology

The site geology is consistent throughout the Hiteman property. A fluvial layer of approximately 2 to 6 feet in thickness covers the surface of the site. This layer is underlain by a sand and gravel outwash layer of approximately 20 to 25 feet in thickness. Below the outwash layer is a low permeability glacio-lacustrine silty clay layer. This geology has significantly retarded the vertical extent of contamination at the site.

Vertical groundwater flow beneath the site indicates an upward gradient. This condition, in combination with the nature of site contamination and the low permeability silty clay below the site waste, will tend to limit the vertical distribution of contamination into the soils and groundwater beneath the site.

Horizontal groundwater flow in the vicinity of the site travels generally in a south-westerly direction toward the Unadilla River. The West Winfield Town Wells (#1 and #2) are approximately 1700 feet northeast and upgradient of the site. Two private groundwater wells are located side-gradient to the site. These wells are located at a residence on South Street and the Village of West Winfield Cemetery, along West Main Street. Groundwater supply well samples results are discussed in the Groundwater Contamination section below.

2. Waste Characteristics

Wastes present at the Hiteman Leather site are characteristic of tannery operations. Samples collected during the RI/FS indicated that the wastes were contaminated with inorganics, primarily lead and chromium (trivalent).

While the waste and on-site soils contained high concentrations of lead and trivalent chromium (ranging from 100's to 1,000's ppm), the waste and contaminated soils did not fail EP-Toxicity testing and are, therefore, not classified as hazardous waste as defined in the regulations. Samples of the waste did not document other on-site materials, which would be considered hazardous waste. EP Toxicity testing is used to determine the mobility of contamination leaching from soils into surface water and groundwater.

However, the investigation did identify potential adverse health risks from the site waste as further described in the Summary of Health Risk Assessment below.

3. Surface Soil and Sediment Contamination

The primary concern and cleanup goal identified by SAIC Engineering, Inc. in the RI/FS is for site soils and wetland sediments due to significant concentrations of lead, antimony, and chromium (trivalent). While other metals were detected in excess of common background soil ranges, lead, antimony and chromium (trivalent) were selected for establishment of target cleanup goals as they represent the most significant levels of soil contamination and risks at the site.

4. Groundwater Contamination

The inorganic results for groundwater samples indicate that groundwater and drinking water standards were exceeded on-site for site related contamination. However, SAIC has attributed many of these results to background soil concentrations or suspended solids in the groundwater which do not represent groundwater conditions. The NYSDEC has reviewed this information and has determined antimony and chromium are, in fact, present in site groundwater. However, as the RI/FS report indicates, the majority of the Village of West Winfield is supplied by the West Winfield wells, which are located upgradient of the site. These wells have been sampled with no detection of contamination. The only two private wells identified are located side-gradient to the site. The Cemetery well has not been sampled. The residential well on South Street has been sampled and does not indicate contamination.

5. Surface Water and River Sediment Contamination

Direct discharges to the river were observed from the Hiteman Leather facility prior to 1968. Unadilla River water samples analyzed during this investigation do not indicate significant surface water contamination. The RI/FS reports do indicate residual contamination in the river sediments which may be associated with past disposal activities and/or contaminant migration from the heavily contaminated soils and sediments west of the Hiteman buildings.

The highest chromium concentrations detected in the river sediment samples were 6,900 ppm and 215 ppm, along the northern bank of the Unadilla. These samples were taken directly adjacent to the contaminated wetland sediments and soils and are not representative of Unadilla river sediments downstream of the site where lower concentrations of chromium (20 - 135 ppm) were observed. These elevated values are above NYSDEC sediment criteria and indicate that some remediation in the Unadilla River is appropriate.

6. Site Building Contamination

The Remedial Investigation of the Hiteman Leather Company Site included some limited sampling in the site structures of the old tannery. Analytical samples were collected from areas commonly in contact with the process waste stream. These areas included: the interior floor drain, the concrete sluiceway out the western side of the building, an underground storage tank, and the concrete settling tank located directly south of the buildings.

Several of the primary site contaminants were also detected in these samples. Chromium was detected in all samples, except for the underground fuel storage tank, with a high concentration of 37,000 ppm. Elevated concentrations of copper (48 ppm) and mercury (0.32 ppm) were detected in the concrete tank samples. Elevated concentrations of lead (762 ppm) were detected in the samples collected in the sluiceway and interior drain.

7. Summary of Health Risk Assessment

A Risk Assessment is an essential component of the RI/FS process at hazardous waste sites. The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP: the regulation that implements CERCLA), require that actions selected to remedy hazardous waste sites be protective of human health and the environment.

The following table summarizes the results of the Risk Assessment. The table examines two health risk scenarios.

RISKS AT AVERAGE CONCENTRATION EXPOSURES

SCENARIO	NON-CARCINOGENIC RISK	CANCER RISK
a1. RESIDENT (No groundwater ingestion)	8	3×10^{-5}
a2. 30 YEAR RESIDENT (Groundwater ingestion)	14	6×10^{-4}
b. WORKER	0.1	9×10^{-6}

A non-carcinogenic risk (Hazard Quotient) is evaluated by dividing the potential dose by the acceptable intake of the chemicals of concern. If the Hazard Quotient exceeds 1, then there may be the potential for adverse non-carcinogenic effects.

Similarly, a cancer risk is calculated using USEPA methods. The resident's cancer risk with groundwater consumption is estimated at 6×10^{-4}, which is slightly above the upper bound of the acceptable cancer risk range of 10^{-6} to 10^{-4}.

a. Residential Scenarios

The first is a hypothetical resident, who lives at or nearby the site for 30 years; six of those years as a child and 24 years as an adolescent and adult. In order to offer a conservative estimate of site risks, this scenario was also calculated assuming ingestion of contaminated groundwater from the site. The results of the risk assessment for this scenario indicate potential non-carcinogenic health risks with the unremediated site for a person that would reside at or near the site. These results also indicate a potential cancer risk above the acceptable range for a resident using the site groundwater as a potable source. It should be noted that the use of site groundwater as a source of drinking water is not likely because municipal water is available in the village.

b. Worker Scenario

The second scenario is for a hypothetical adult worker for the village who spends a full 8-hour shift at the site for 25 years. The risks for a worker at the site falls within the acceptable limits for both non-carcinogenic and carcinogenic risks based on the scenario described above.

c. Ecological Assessment

An ecological risk assessment was also conducted as part of the RI/FS to determine the impacts of site waste on the environment. The vegetative toxicity test results were limited, but the preliminary indication is that there is the potential for uptake of contaminants by the plants growing in the contaminated soils (or sediments).

The risk assessment, particularly the residential scenario, indicates that unacceptable human health risks may exist at the unremediated Hiteman property. In addition, under current conditions, the risk assessment identified potential adverse ecological impacts. The findings suggest the need for remediation of contaminated soils and wetland sediments and preventing the use of the site's groundwater for drinking water purposes.

IV. ENFORCEMENT STATUS

As previously discussed, the Hiteman Leather Company ceased operation in 1968 due to its financial inability to construct an adequate waste treatment system. The site property was sold to Mr. Erle Davis of Clinton, New York at that time. For a short period of time, Mr. Davis leased the property buildings for storage purposes. Mr. Davis held the property until his death in October of 1991. The NYSDEC is investigating the possibilities for cost recovery against the decedent's estate.

V. GOALS AND OBJECTIVES FOR REMEDIAL ACTION

A. Objectives of any remedial actions taken at the site must address the contamination defined previously in this document. Based on the results of the RI/FS and Risk Assessment, the following remedial objectives were identified:

   1. Prevent or mitigate the release of contaminants leaching into the groundwater and potential surface runoff into the Unadilla River;

   2. Reduce risks to human health associated with inhalation, direct contact, and incidental ingestion of contaminants in the surface soils and sediments of the site; and

   3. Reduce the volume, toxicity, or mobility of contaminants of concern in the soil, sediments and site buildings.

B. The final remedial action goals for the Hiteman Leather site require additional sampling activities to define the final cleanup level.

1. A cleanup goal for chromium contamination in the site soils could not be determined without additional sampling. Remedial efforts seek to achieve background soil conditions as cleanup goals when practical. Common background levels for chromium concentration in soils in this region of the United States range from 20-40 ppm. Pre-design samples will be necessary to determine site background levels and further delineate the extent of contamination north of the lagoons (SB-11, MW-12S and W-7).

   Soil cleanup levels for antimony and lead will also be re-evaluated. However, it appears likely that the remediation of chromium contamination, which is wide spread in the site soils, will adequately reduce the levels of lead and antimony at the site. The final remedial cleanup goal is dependent on the feasibility and cost effectiveness of implementing technologies to reach these levels.

2. Wetland sediment contamination will require predesign sampling to determine an appropriate cleanup goal. The extent of remediation detailed in the RI (figure SP-M7-5) shows approximately 80-85 percent of the wetland sediments are contaminated at levels in excess of 1000 ppm of chromium. Cleanup will again target background for chromium remediation, 5 ppm for antimony and 40 ppm for lead for wetland sediments.

3. Excavation along the Unadilla River bank will extend into the river sediments in the area of UR-6 and UR-2, where elevated chromium concentrations (6,900 ppm and 215 ppm respectively) were reported. A pre-design sampling program will be necessary to further delineate the extent of sediment contamination downstream of the UR-6 sampling location for cleanup purposes.

   Antimony was not present at detectable limits in the Unadilla River sediments. Analysis for lead indicated levels within the normal range and below NYSDEC sediment criteria.

VI. DESCRIPTION AND COMPARISON OF REMEDIAL ALTERNATIVES

Remedial alternatives were developed during the RI/FS using the objectives and criteria described above. The following section is provided to summarize the remedial alternatives potentially applicable to the site.

A. Alternative I, No Action

The no action alternative is considered in the RI/FS as a baseline for comparison when evaluating other remedial options and is included in the detailed evaluation in accordance with program requirements. This alternative involves leaving the soil contamination in-place with long-term groundwater monitoring for metals analysis to ensure site integrity.

This alternative has an estimated Total Capital Costs of $74,250 and a present worth cost of $490,000.

B. Alternatives II through V

These alternatives address the source materials located in the site building in the same manner. The sludge contained in the building drains and former waste sluiceway would be removed by conventional drain-cleaning methods, preferably a vacuum truck. The materials removed would then be transported off-site to a RCRA permitted treatment and disposal facility. Following the removal of waste in the subsurface tanks, these structures would be removed or backfilled with an inert material to decommission the tanks.

Alternative II through V also address the Unadilla River sediment hot spots (6900 and 250 ppm) in the same manner by extending the excavation of contaminated soils and wetland sediments into the river in these areas. These sediments would then be consolidated with the wetland sediments under one of the following alternatives.

1. Alternative II, Excavation with off-site Stabilization and Disposal

This alternative would involve the excavation of contaminated soils and sediments for treatment and disposal off-site. These materials would be transported by truck to Stablex of Canada, Inc., in Blainville, Quebec. The contaminated materials would then be converted to an environmentally inert material and disposed at the Stablex facility. Disposal at this facility has been the basis of the cost analysis for this alternative.

The estimated total cost for Alternative II is $18,226,375 and the present worth cost is $17,530,000.

2. Alternative III, Excavation, Stabilization and on-site Disposal

This remedy is similar to Alternative II in that it involves the excavation of the heavily contaminated lagoon soils and wetland/near rivers sediments for treatment by means of solidification/stabilization (S/S) processes. However, this treatment would be done on site with final disposal of S/S soils and sediments deposited in a lined landfill cell constructed in the former lagoon area.

The estimated total capital cost for Alternative III is $11,334,050 and the present worth cost is $18,268,000.

3. Alternative IV, Excavation and Soil Washing

This alternative would excavate the heavily contaminated soils and sediments and treat these materials using soil washing technology to significantly reduce the volume of soil with hazardous characteristics. The treated materials would be backfilled on site while the residual solid component, containing the concentrated metals contamination, would be subjected to off-site solidification/stabilization and disposal off site. This technology allows for reduction in waste requiring transport and disposal off site.

The estimated total capital costs for Alternative IV is $10,564,555 and the present worth cost is $11,296.000.

4. Alternative V, Capping with Containment

This alternative would leave the lagoon wastes in place, with the benefit of a low permeability cap and slurry wall containment system to isolate the waste surface and mitigate contaminant migration through the groundwater. Contaminated soils and sediments would be consolidated under the cap and a slurry wall tied into the low permeability layer would be constructed around the wastes. The proposed cap/containment system design and performance objectives are to (1) minimize liquid infiltration into the waste materials; (2) promote proper drainage; (3) minimize erosion; (4) accommodate settling and subsidence; and (5) ensure contaminant isolation. This alternative would take advantage of the low permeability layer underlying the site to prevent horizontal groundwater flow under the cap and through the contaminated soils.

The estimated total capital costs for Alternative V is $2,000,000 with an estimated present worth cost of $5,291,000.

VII. SUMMARY OF GOVERNMENT DECISION

A review of the findings from the Remedial Investigation resulted in a determination that waste materials, generated during former leather tanning operations, currently present on the Hiteman Property, do not meet the definition of hazardous waste under New York State Hazardous Substance Regulations 6 NYCRR Part 371. All results of tests conducted to determine the toxic characteristics of the contaminated soils and wetland sediments indicate that the soils do not exhibit the characteristics of a toxic hazardous waste. Additionally, the definition of hazardous waste specifically excludes most waste generated by the leather tanning industry if such waste is primarily trivalent chromium, as was found to be the case at the site.

Due to these findings and the fact that the NYSDEC's authority to remediate inactive hazardous waste sites is dependent on the discovery of **hazardous waste** as defined by 6 NYCRR Part 371, it is the NYSDEC's decision that the State is unable to continue expending State Superfund monies on the Hiteman Leather site. However, the USEPA is not subject to such limitations under the Federal Superfund Program as implemented under CERCLA and SARA. The USEPA's authority extends to include **hazardous substances**, of which chromium and other leather tanning chemicals may be eligible for remediation.

Therefore, the NYSDEC has used the information compiled in the RI/FS to rescore the site for consideration on the NPL. The Revised Hazard Ranking System (RHRS) is used to systematically assess the potential risks that a site may pose to human health and the environment. The RHRS resulted in a Preliminary Assessment Score (PA-score) of 88 for the Hiteman Leather site. A minimum PA-Score necessary for NPL consideration under the RHRS is 50. This information was transmitted to the USEPA, requesting their review and placement of the site on the National Priorities List (NPL).

As noted above, the final remedial action is not being selected under State Superfund. However, the NYSDEC does believe that Alternatives II, III, and V should be further considered by the USEPA under NPL action, because they meet the remedial objectives of source removal and mitigation of the contaminant migration. These alternatives would also include monitoring after remediation to verify the reduction in groundwater contaminants as a result of source control.

ATTACHMENT NO. 1

Administrative Records

ADMINISTRATIVE RECORDS
Hiteman Leather Site, West Winfield, New York

1. "Phase I Investigation for Hiteman Leather Site," RECRA Research, Inc., August, 1985.

2. "Technical Proposal for Hiteman Leather Site RI/FS and Design and Construction Oversight," GHR Engineering Associates, Inc., September, 1987.

3. "Contract Documents for Hiteman Leather RI/FS, including Scope of Work and Payment Requirements," GHR Engineering Associates, Inc., February, 1988.

4. "Health and Safety Plan for Hiteman Leather Company Site," GHR Engineering Associates, Inc., GHR Engineering Associates, Inc., May, 1988.

5. "Quality Assurance / Quality Control (QA/QC) Plan for Hiteman Leather Company Site," GHR Engineering Associates, Inc., June, 1988.

6. "Work Plan for First Phase Remedial Investigation at Hiteman Leather Company Site," GHR Engineering Associates, Inc., June, 1988.

7. "Results of Acute and Chronic Toxicity Tests Conducted on soil and Groundwater from the Hiteman Leather Company Site," EA Science and Technology, March 1989.

8. "First Phase RI Data Validation Reports," Nytest Environmental, Inc., July & August, 1989.

9. "Work Plan for Second Phase RI at Hiteman Leather Company Site," GHR Engineering Associates, Inc., February, 1990.

10. "Revisions to Work Plan for Second Phase RI for Hiteman Leather Site," GHR Engineering Associates, Inc., March, 1990.

11. "First Phase Remedial Investigation Summary Report for the Hiteman Leather Company Site, Volumes I-III," SAIC Engineering, Inc., Rewritten December, 1990.

12. "Second Phase RI Analytical Data Report with Data Validation and Useability Analysis," SAIC Engineering, Inc., August, 1991.

13. "Final Remedial Investigation Report for the Hiteman Leather Site, Volumes I-III," SAIC Engineering, Inc., March, 1992.

14. "Final Feasibility Study Report for the Hiteman Leather Site," SAIC Engineering, Inc., March, 1992.

15. "Citizen Participation Plan for Hiteman Leather Company Site," NYSDEC, July 1988.

16. "Hiteman Leather Company Site Information Sheet," NYSDEC, January, 1992.

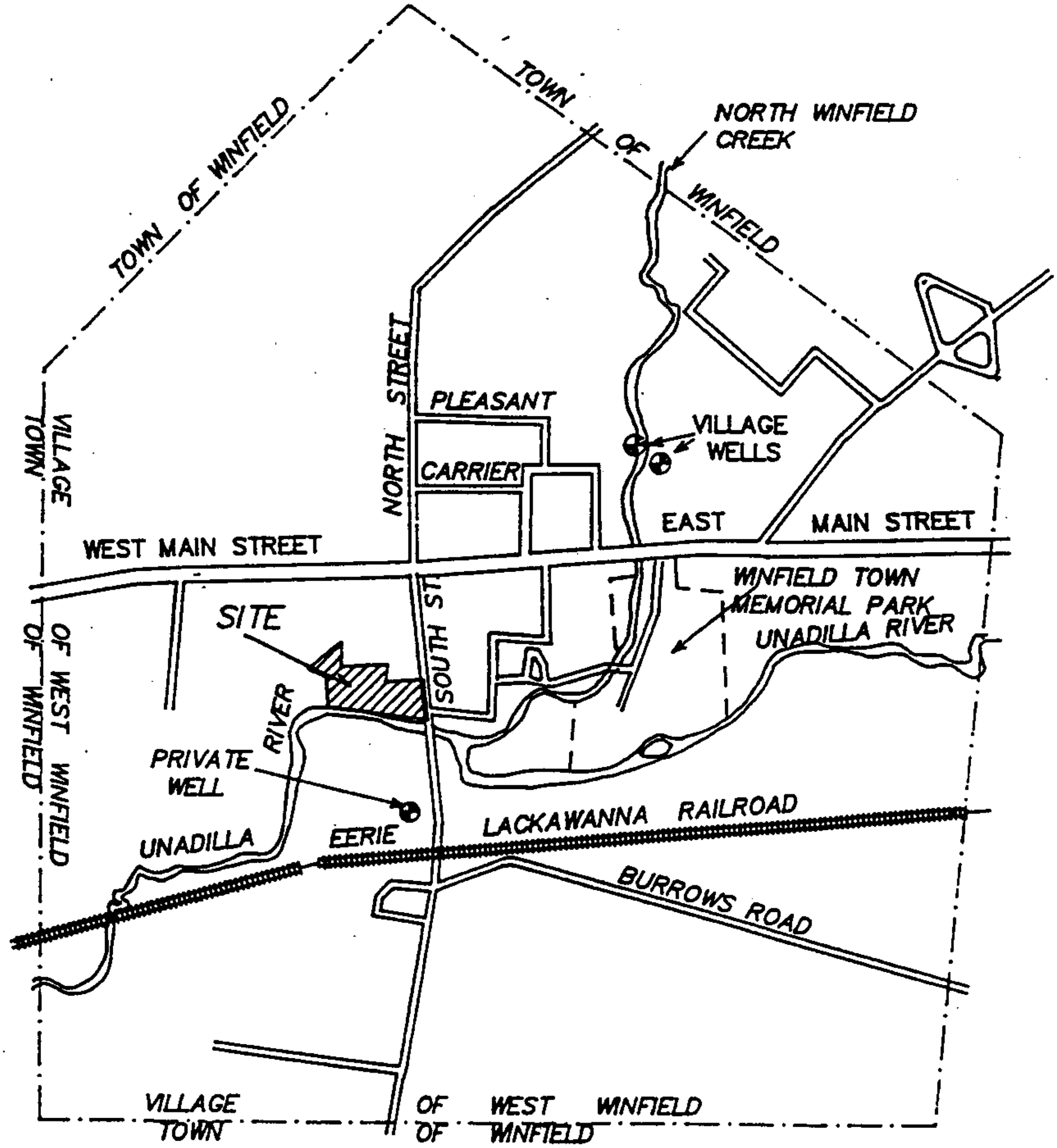
17. "Proposed Remedial Action Plan for Hiteman Leather Site," NYSDEC, January, 1992.

18. Record of Proceedings held on January 30, 1992 at Hiteman Leather Public Meeting, Reporter: Kenneth H. Crewell, Jr., February, 1992.

19. Hiteman Leather Site RI/FS correspondence file

ATTACHMENT NO. 2

Figures



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PROJECT DRAFT FINAL REMEDIAL INVESTIGATION REPORT
HITEMAN LEATHER COMPANY SITE
WEST WINFIELD, NEW YORK

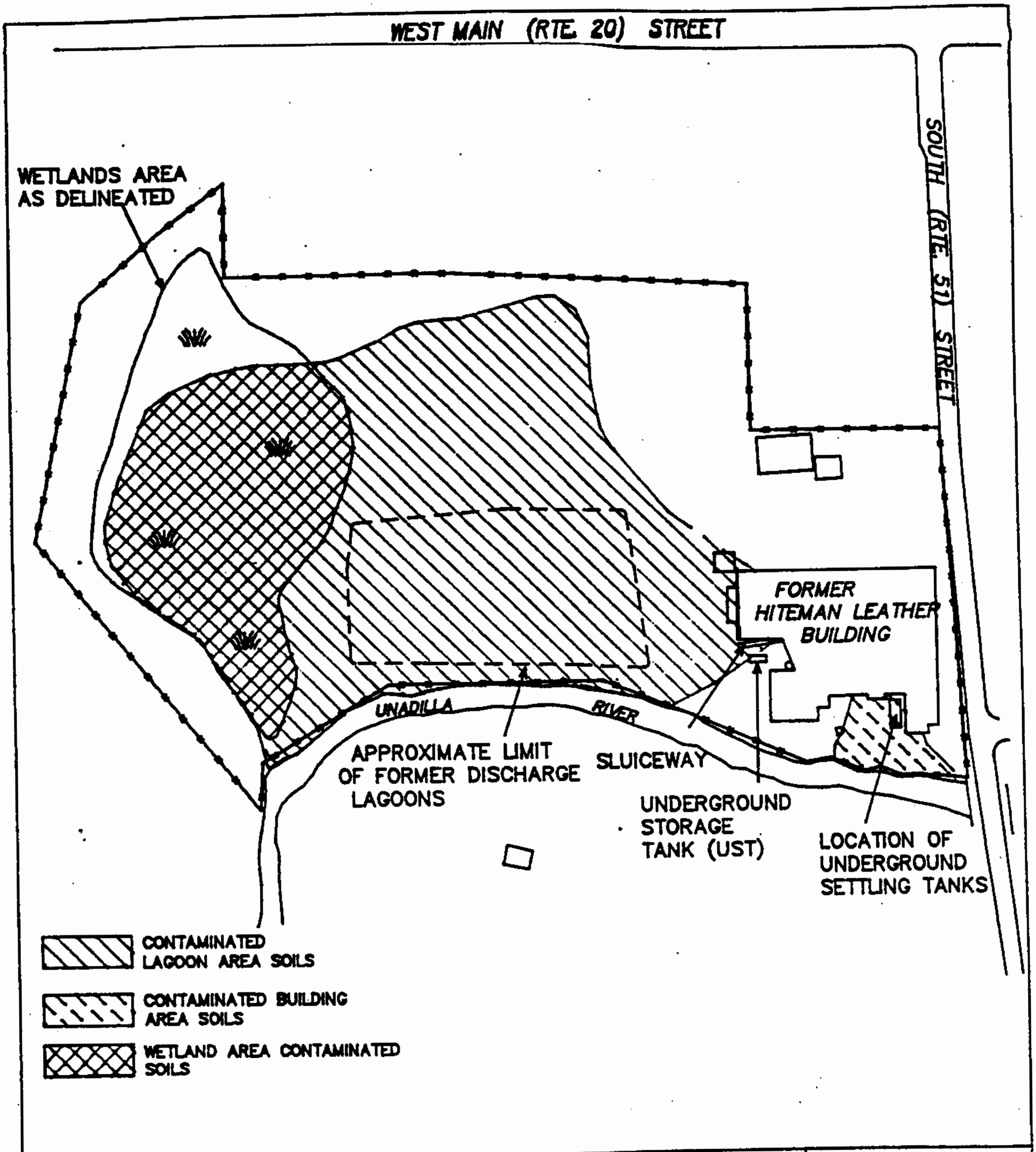
CLIENT: NYSDEC, CONTRACT NO. D001946

TITLE: FIGURE 4-7
LOCATION OF PRIVATE WELL AND VILLAGE WELLS
SECOND PHASE RI

0 450 900 1800 2700

SCALE IN FEET

PROJECT NO.
01-0801-08-0277-000



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PROJECT HITEMAN PROPERTY FEASIBILITY STUDY

CLIENT: NYSDEC

TITLE:

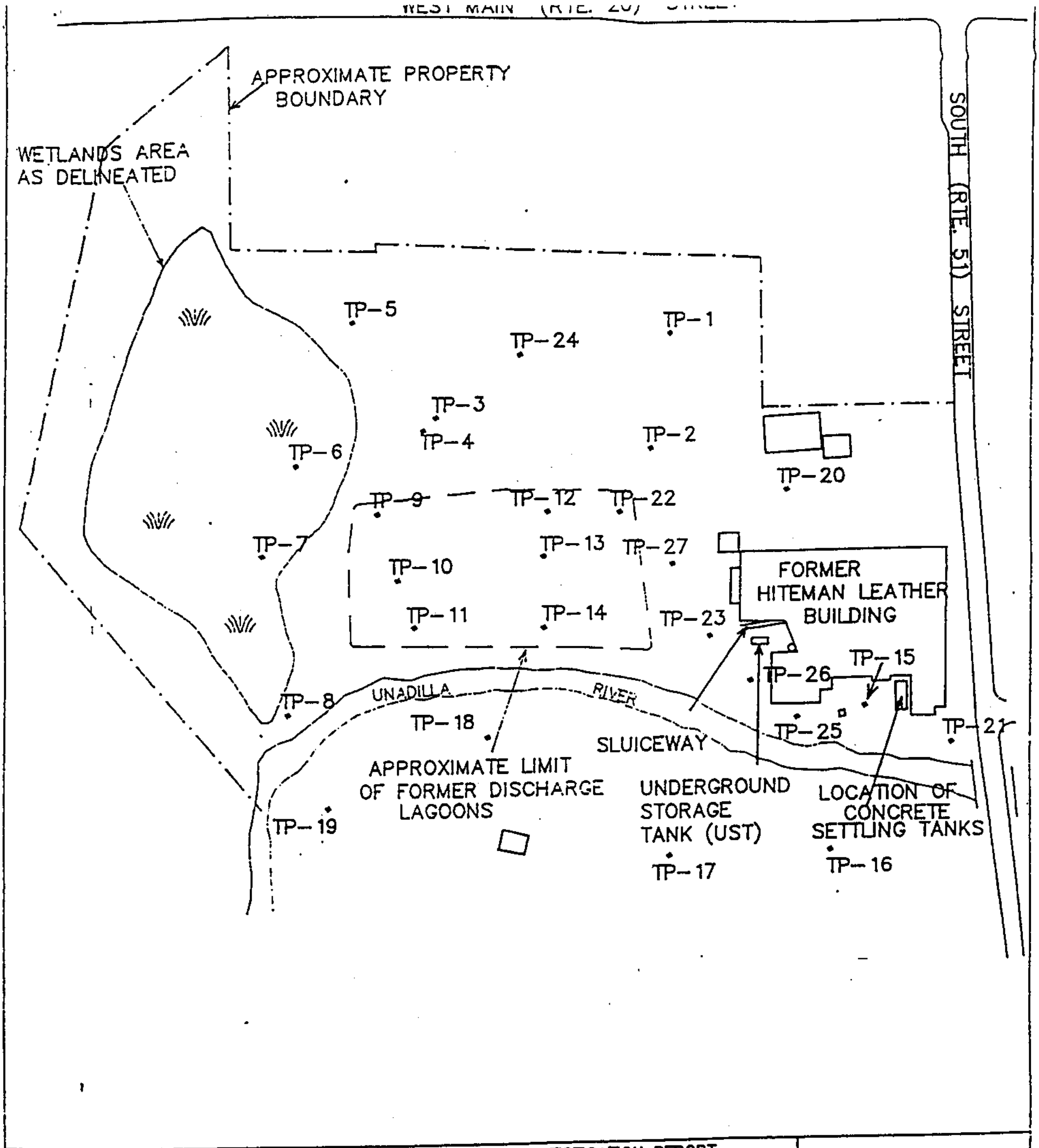
0 75 150 300 450

SCALE IN FEET

SAIC

SAIC Engineering, Inc.
10 Riverside Drive
Lakeville, Massachusetts
02347
Office: (508) 946-3500

PROJECT NO.
01-0801-08-0276-000



PROJECT:	DRAFT FINAL REMEDIAL INVESTIGATION REPORT HITEMAN LEATHER COMPANY SITE WEST WINFIELD, NEW YORK
CLIENT:	NYSDEC, CONTRACT NO. D001946
TITLE:	FIGURE 7-4 TEST PIT SAMPLING LOCATIONS FIRST PHASE RI

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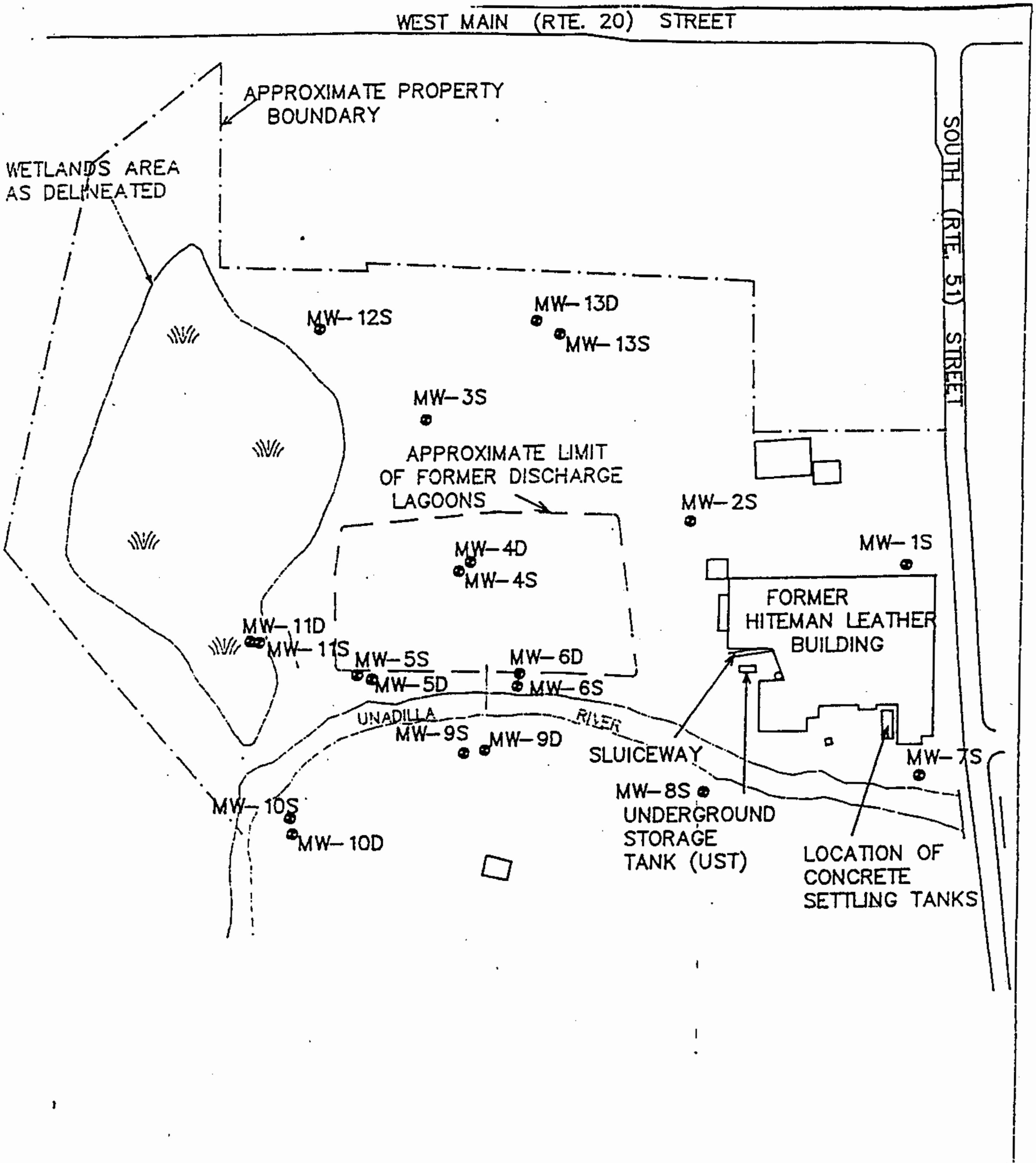
0 75 150 300 450

SCALE IN FEET

PROJECT NO.
01-0801-08-0277-000



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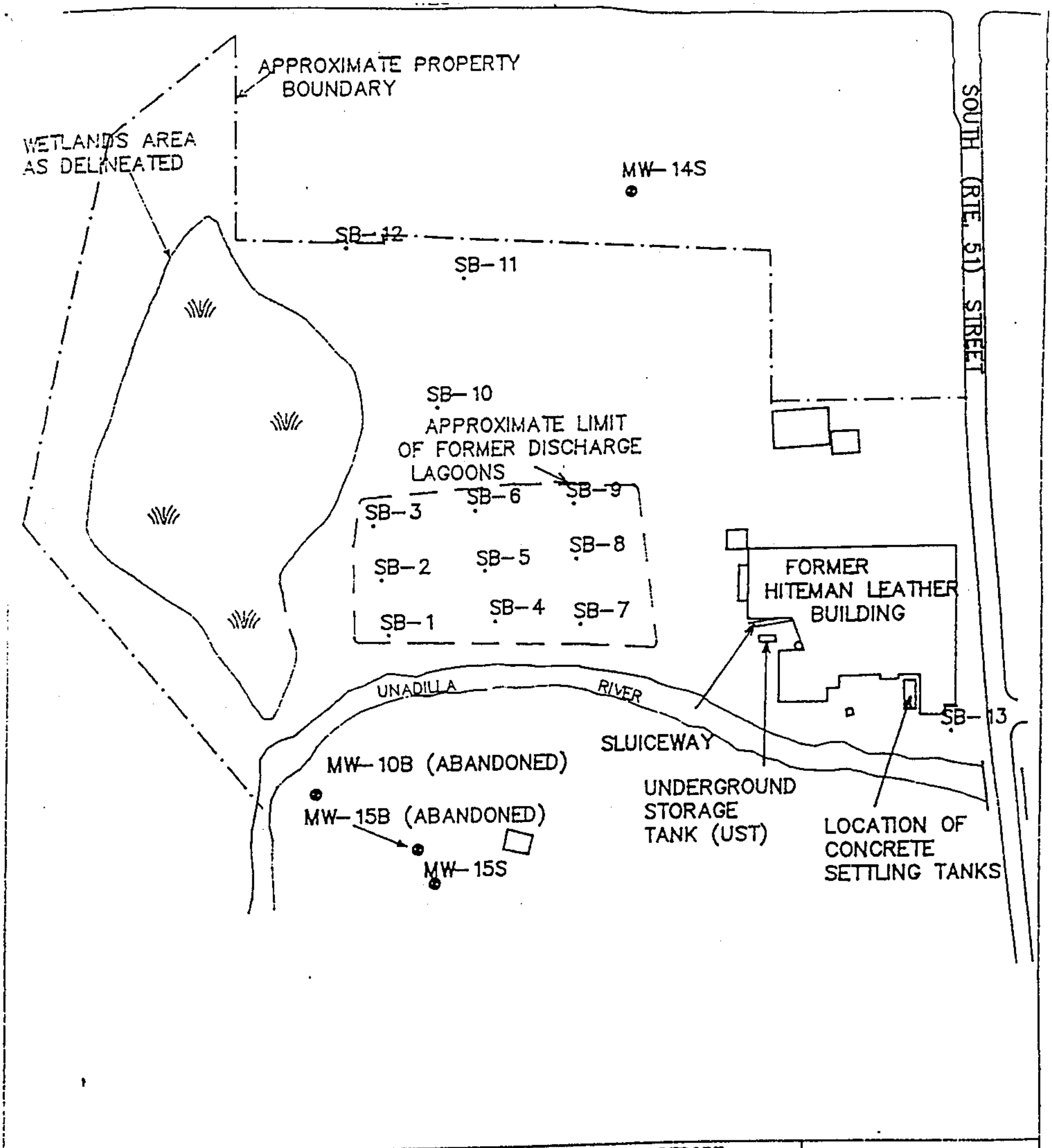
PROJECT DRAFT FINAL REMEDIAL INVESTIGATION REPORT
HITEMAN LEATHER COMPANY SITE
WEST WINFIELD, NEW YORK

CLIENT: NYSDEC, CONTRACT NO. D001946

TITLE: FIGURE 7–5
SOIL BORING/ MONITORING WELL LOCATIONS
FIRST PHASE RI

0 75 150 300 450

PROJECT NO.
01–0801–08–0277–000



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PROJECT DRAFT FINAL REMEDIAL INVESTIGATION REPORT
HITEMAN LEATHER COMPANY SITE
WEST WINFIELD, NEW YORK

CLIENT: NYSDEC, CONTRACT NO. D001946

TITLE: FIGURE 7-6
SOIL BORING/ MONITORING WELL LOCATIONS
SECOND PHASE RI

0 75 150 300 450
SCALE IN FEET

PROJECT NO.
01-0801-08-0277-000

ATTACHMENT NO. 3

Tables

TABLE 2-5
SUMMARY OF ANTIMONY, CHROMIUM AND LEAD RESULTS FOR SOILS IN THE BUILDING AREA
(UNITS: parts per million)

DRAFT FEASABILITY STUDY REPORT7
HITEMAN LEATHER COMPANY SITE
WEST WINFIELD, NEW YORK
NYSDEC CONTRACT NO. D001946

	ANTIMONY	CHROMIUM	LEAD
MW-07 (2-4')	ND	3080	73.5
MW-07 (2-4' DUP)	ND	1420	79
SB-13 (10-12')	ND	706	33.8
SB-13 (24-26')	ND	9.3	12.3
SS-02	17.39	116	23.8
SS-01	59	2780	107
SS-11	ND	38400	8.3
SS-11 DUP	ND	39800	16.9
SS-12	ND	130	33.4
TP-15	55.3	2960	148.7

TABLE 2-6

SUMMARY OF ANTIMONY, CHROMIUM, AND LEAD RESULTS FOR SOILS IN THE LAGOON AREA

(UNITS: parts per million)

DRAFT FEASIBILITY STUDY REPORT
HITEMAN LEATHER COMPANY SITE
WEST WINFIELD, NEW YORK
NYSDEC CONTRACT NO. D001946

	ANTIMONY	CHROMIUM	LEAD
MW-01 (2-4')	ND	65.4	51.3
MW-02 (2-4')	ND	23.8	11.1
MW-03 (2-4')	ND	44800	322
MW-04 (2-4'DUP)	ND	622	16.7
MW-04 (10-12')	ND	227	9
MW-04 (34-35.5')	ND	103	9.9
MW-05 (2-4')	ND	42.6	1.15
MW-05 (9-11')	19.7	1240	20.2
MW-06 (2-4')	ND	93	114
MW-06 (8-10')	ND	144	7.6
MW-12 (10-12.5')	ND	62.1	12.6
MW-12 (15-17')	ND	48.3	11.6
MW-13 (2-4')	17.7	19.7	15.9
MW-13 (14-16')	ND	17.9	11.5
MW-14 (2-4')	ND	19.6	14.6
MW-14 (10.5-12')	ND	15	10.1
MW-14 (10.5-12'DUP	ND	16.7	12
SB-01 (2-4')	ND	8510	62.5
SB-01 (10-11')	ND	105	4.8
SB-01 (20-22')	ND	27.4	11.2
SB-02 (2-4')	ND	17500	173
SB-02 (10-11.5')	ND	30.5	3.1
SB-02 (26-27.5')	ND	28.8	12
SB-03 (2-4')	ND	2170	50.8
SB-03 (2-4'DUP)	ND	5260	49
SB-03 (10-12')	ND	22.5	2.5
SB-03 (25-27')	ND	21.4	12.5
SB-04 (2-4')	ND	2720	70.4
SB-04 (10-12')	ND	437	57.4
SB-04 (20-22')	ND	14.2	13
SB-05 (2-4')	ND	14.5	4.25
SB-05 (2-4'DUP)	5.8	61.7	7.55
SB-05 (8.10')	ND	21.1	9.9
SB-05 (20-22')	ND	12300	92.1
SB-06 (4-6')	ND	233	6.3
SB-06 (9.5-11')	ND	14.1	4
SB-06 (24-25.5')	ND	17.3	10.8
SB-07 (2-4')	ND	5240	72.5

TABLE 2-6 (Continued)
SUMMARY OF ANTIMONY, CHROMIUM, AND LEAD RESULTS FOR SOILS IN THE LAGOON AREA
(UNITS: parts per million)

DRAFT FEASIBILITY STUDY REPORT
HITEMAN LEATHER COMPANY SITE
WEST WINFIELD, NEW YORK
NYSDEC CONTRACT NO. D001946

	ANTIMONY	CHROMIUM	LEAD
SB-07 (12-13.5')	ND	100	4.8
SB-07 (24-26')	ND	14.6	1.1
SB-08 (3.5-4.5')	ND	49700	404
SB-08 (3.5-4.5'DUP)	ND	74200	452
SB-08 (10-11.5')	ND	8.5	2.7
SB-08 (21-22.5')	ND	12.4	9.7
SB-09 (3.5-5')	20.4	69000	217
SB-09 (10-11.5')	ND	ND	4.4
SB-09 (28-30')	ND	18.6	10.7
SB-10 (0-2')	ND	110000	374
SB-10 (0-2'DUP)	ND	114000	364
SB-10 (8.5-10')	ND	308	3.8
SB-10 (20-22')	ND	72.2	11.5
SB-11 (8-9.5')	ND	211	28.9
SB-11 (12-14')	ND	41.6	11.5
SB-12 (11-12')	ND	31.9	53.1
SB-12 (12-13')	ND	12.8	12.4
SS-03	58	33700	121/362
SS-04	46	5980	95.7
SS-06	440	57800	291
SS-07	650	119000	397
SS-07 DUP	NS	98400	390
SS-08	ND	84900	42.1
SS-10	ND	57700	16.1
TP-01	ND	—	235
TP-02	ND	—	41.5
TP-03	36.7	7121.2	59.4
TP-08	ND	939.5	28.5
TP-10	281.3	104583.3	180.8
TP-11	136.2	19000	159.6
TP-12	156.7	27916.7	165.8
TP-13	261.2	—	355.3
TP-14	150.4	35178.6	112.5
TP-14 DUP	56.8	10607.1	150
TP-23	216.3	36166.7	225.8

TABLE 2-7
SUMMARY OF ANTIMONY, CHROMIUM, AND LEAD RESULTS FOR SOILS IN THE WETLAND AREA

(UNITS: parts per million)

DRAFT FEASABILTIY STUDY REPORT
HITEMAN LEATHER COMPANY SITE
WEST WINFIELD, NEW YORK
NYSDEC CONTRACT NO. D001946

	ANTIMONY	CHROMIUM	LEAD
MW-11 (2-4')	22.4	3000	32.1
MW-11 (8-10')	ND	59.8	4.3
SS-05	760	93600	475
SS-09	120	29300	230
SS-09 DUP	110	—	—
TP-06	805.6	140277.8	328.9
TP-07	312.1	—	150.7
W-01	ND	3190	131
W-02	ND	68500	556
W-03	ND	29100	482
W-04 SHALLOW	ND	37400	165
W-04 (SHALLOW DU	ND	89400	361
W-04 DEEP	ND	338	23.7
W-05 SHALLOW	ND	63400	252
W-05 DEEP	ND	103	20.1
W-06 SHALLOW	ND	99300	426
W-06 DEEP	ND	100	31.6
W-07	ND	39	13.5
W-08	16.6	43200	168

TABLE 9-1
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR GROUNDWATER
HITEMAN LEATHER SITE

SUBSTANCE	SITE SAMPLES		ARARs							
			FEDERAL				NEW YORK STATE			
	Average Concentration in Groundwater (ug/L)	Maximum Concentration in Groundwater (ug/L)	MCL (ug/L)	MCLG (ug/L)	PMCL (ug/L)	PMCLG (ug/L)	Groundwater Standards (ug/L)	Surface Water Standards (ug/L)	ARAR Exceeded By Average? (yes/no)	ARAR Exceeded By Maximum? (yes/no)
INORGANICS										
Aluminum	46314	136000						100	yes, exceeded	yes, exceeded
Arsenic	29.22	149	50			50	25	50	yes, exceeded	yes, exceeded
Barium	492.49	1260	1000		2000	2000	1000	1000	no, not exceeded	yes, exceeded
Beryllium	3.46	9.2			1	0	3	3	yes, exceeded	yes, exceeded
Cadmium	3.68	13.3	5	5			10	10	no, not exceeded	yes, exceeded
Calcium	1459113.64	6610000							no ARAR	no ARAR
Chromium (III)	1287.35	14600			100	100	50	50	yes, exceeded	yes, exceeded
Cobalt	39.41	103							no ARAR	no ARAR
Copper	115.42	382			1300	1300	200	200	no, not exceeded	yes, exceeded
Iron	108654.09	281000							no ARAR	no ARAR
Lead	91.73	361	50		5	0	50	25	yes, exceeded	yes, exceeded
Magnesium	149702.73	595000							no ARAR	no ARAR
Manganese	4223.73	13700							no ARAR	no ARAR
Mercury	0.32	1.4	2		2	2	2	2	no, not exceeded	no, not exceeded
Nickel	113.65	345			100	100			yes, exceeded	yes, exceeded
Potassium	7826.91	17500							no ARAR	no ARAR
Silver	2.4	7.6	50				50	50	no, not exceeded	no, not exceeded
Sodium	15240.32	33200							no ARAR	no ARAR
Vanadium	97.94	264							no ARAR	no ARAR
Zinc	414.3	1180					300	300	yes, exceeded	yes, exceeded
ORGANICS										
Benzene, Methylethyl-	NA	25					a	a	no ARAR	no ARAR
Benzene, Methylpropyl-	NA	12					a	a	no ARAR	no ARAR
Benzene, Propyl-	NA	26					a	a	no ARAR	no ARAR
Benzene, 1,2,3-Trimethyl-	NA	110					5	5 a,*	no, not exceeded	yes, exceeded
Butane, 2,3-Dimethyl-	69	80					a	a	no ARAR	no ARAR
Cyclohexane	43	50					a	a	no ARAR	no ARAR
Cyclohexane, Methyl-	NA	30					a	a	no ARAR	no ARAR
Cyclohexanol	25	42					a	a	no ARAR	no ARAR
Cyclopentane, Methyl-	NA	75					a	a	no ARAR	no ARAR
Cyclopentene, 4,4-Dimethyl-	NA	20					a	a	no ARAR	no ARAR
1-H-Indene, 2,3-dihydro-	14	16					a	a	no ARAR	no ARAR
2-Methylnaphthalene	NA	7					a	a	no ARAR	no ARAR
Naphthalene	NA	10					10 a,*	10	no, not exceeded	yes, exceeded
Pentane	NA	37					a	a	no ARAR	no ARAR
Pentane, 3-Methyl-	NA	48					a	a	no ARAR	no ARAR
1-Pentene, 4-Methyl-	NA	23					a	a	no ARAR	no ARAR
Xylenes	34	87	10000	10000			5	5 a,*	yes, exceeded	yes, exceeded

Blank spaces indicate no information is available
MCL = Maximum Contaminant Level, as promulgated
MCLG = Maximum Contaminant Level Goal, as promulgated
PMCL = Proposed Maximum Contaminant Level
PMCLG = Proposed Maximum Contaminant Level Goal
* = guidance value presented
a = value unspecified. May, however, fall under "Principal Organic Contaminant" (5 ppb) or "Unspecified Organic Contaminant" (50 ppb).
Where choices exist, the listed value is the most stringent freshwater value for the protection of human health.
NY State groundwater standards are from 6 NYCRR, Part 703, and from DOH Sanitary Codes 10 NYCRR Part 170, Subpart 5-1.
NY State surface water standards are from 6 NYCRR, Part 701 and 702.

TABLE 9-2
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR SURFACEWATER
HITEMAN LEATHER SITE

SUBSTANCE	SITE SAMPLES		ARARs							
	Average	Maximum	FEDERAL				NEW YORK STATE			
	Concentration in Groundwater (ug/L)	Concentration in Groundwater (ug/L)	MCL (ug/L)	MCLG (ug/L)	PMCL (ug/L)	PMCLG (ug/L)	Drinking Water (MCL) Standards (ug/L)	Ambient Water Standards (ug/L)	ARAR Exceeded By Average? (yes/no)	ARAR Exceeded By Maximum? (yes/no)
INORGANICS										
Aluminum	69.46	76.70						100	no, not exceeded	no, not exceeded
Barium	31.01	32.00	1000		2000	2000	1000	1000	no, not exceeded	no, not exceeded
Calcium	80587.50	81700.00							no ARAR	no ARAR
Iron	142.00	175.00							no ARAR	no ARAR
Magnesium	7500.00	8870.00							no ARAR	no ARAR
Manganese	10.90	16.70							no ARAR	no ARAR
Mercury	0.10	0.40	2		3		2		no, not exceeded	no, not exceeded
Nickel	5.84	8.20			100	100			no, not exceeded	no, not exceeded
Potassium	480.06	561.00							no ARAR	no ARAR
Sodium	4322.5	4500.00							no ARAR	no ARAR
Zinc	5.98	9.00					300	300	no, not exceeded	no, not exceeded

MCL = Maximum Contaminant Level, as promulgated
MCLG = Maximum Contaminant Level Goal, as promulgated
PMCL = Proposed Maximum Contaminant Level
PMCLG = Proposed Maximum Contaminant Level Goal
Where choices exist, the listed value is the most stringent freshwater value for the protection of human health.

ATTACHMENT NO. 4

Responsiveness Summary

New York State Department of Environmental Conservation
Response Summary
for
Proposed Remedial Action Plan
Hiteman Leather Site
Site #6-22-007
West Winfield, New York

A public meeting was held by the New York State Department of Environmental Conservation (NYSDEC) on January 30, 1992 at the Village Hall in West Winfield, New York to discuss the Proposed Remedial Action Plan (PRAP) for the Hiteman Leather inactive hazardous waste site located in the Village of West Winfield.

The Remedial Investigation and Feasibility Study Reports were prepared by SAIC Engineering, Inc. for the NYSDEC under New York State Superfund. At the meeting, representatives of the NYSDEC, SAIC, and the New York State Department of Health (NYSDOH) made a presentation of the activities outlined below:

1. Discussed the PRAP procedure, public comment period, Record of Decision (ROD) procedure, tentative schedule, and intended course of action at site.

2. Provided a brief description of site, site history description of past investigations conducted at site, and purpose and intention of the RI/FS.

3. Summarized findings of the RI/FS reports including: nature and extent of contamination, Public Risk Assessment Analysis, Remedial Objectives and Alternatives.

4. Discussed Hazardous Substance Regulations, how they apply to the site and the limitations they present for further remedial action.

The following is a review and further response to the comments received during the January 30, 1992 public meeting. No other questions or comments were received during the public comment period, which ended February 21, 1992.

Q1. What statutes, laws or regulations prevent the NYSDEC from cleaning up the site?

A1. The wastes at the former Hiteman Leather Company property meet the exclusion requirements set in the NYSDEC Hazardous Waste Substance Regulations, 6 NYCRR Part 371.1 (e)(ix).

As explained at the January 30, 1992 public meeting, the following conditions of the exclusion requirements apply to the Hiteman Site: (1) the waste is primarily trivalent chromium, rather then hexavalent chromium, (2) the waste does not exhibit the characteristics of EP toxicity or any other hazardous waste, and (3) the waste was generated by the leather tanning industry, which is categorically exempt from the Hazardous Waste Regulations.

Q2. Why does the public comment period end February 21, 1992 when you say it started January 23, 1992 and the public meeting was held on January 30, 1992?

A2. The public comment period starts with the issuance of the PRAP document. The PRAP was sent to the document repository and a public mailing list notifying this issuance was sent on January 23, 1992. The public meeting can fall anywhere within that time frame. We chose to have it at this point in time because we thought it was good to give you some time to review the PRAP and get a feel for the site before the presentation summarizing the PRAP was given.

Q3. The worst case scenario situation assumes somebody coming to the Hiteman Site and drilling a well and getting groundwater for human consumption. Isn't this somewhat far fetched when we have got a good water system here that anyone would go and do that?

A3. Public Health and Environmental considerations require that the NYSDEC review the worst case scenario. Moreover, the NYSDEC cannot prevent somebody from drilling the well unless circumstances allow the exercise of summary abatement powers or other emergency authority, and that is very unlikely.

Q4. If the village were to adopt an ordinance restricting groundwater use, could it be district-wide or with respect to this area only?

A4. That question would have to be addressed by the Village Attorney, who may wish to contact either the Department of Health or the Department of State.

Q5. What have you gentlemen got to say with respect to our situation here in the village where we got this eyesore [the building] down here that's been here for quite some time? The owner of record is now deceased. The building is an extreme hazard fronting on State Route 51. We would like to know how we can get that building at least eliminated while all of this study and further alternatives are going to be developed. Can that building be taken down? I will ask the engineers, if you start taking that building down, are you going to disrupt the toxicity of the lagoons? Is there toxic under the building? Can the building be taken down?

A5. We don't have any reason to believe that there is anything under that building. The building was considered in all Remedial Alternatives and did not interfere with remediation of site waste.

Q6. I guess we are not making ourselves clear. We want the building taken down. It's an eyesore. This community takes a little bit of pride in what they have got here. You are on the main highway which is an entrance to the village, and we have been wasting a lot of time here.

A6. The building itself was not determined to be a significant hazardous waste issue, and is not eligible for superfund monies. The village or the owner is responsible, as in any other case of abandoned and decrepit premises.

Q7. Pursuing this responsible party business, why have you waited so long? You say there is no responsible party. I mean there is, there is an owner, there is an estate involved here, and there's nothing being done at all?

A7. In terms of clearing the site for working on it under the state superfund, an assessment is made about the viability of an owner to fund a remedial program. There are laws and statutes that could be used and there could be suits taken by the state to carry out activities at the site.

If the assessment is made where the ability of a responsible party, in this case an owner, is limited to a great extent then usually they don't pursue that particular avenue. The assessment was made that the PRP was not a viable funding source.

The Division of Environmental Enforcement (DEE) within the NYSDEC is considering whether some cost recovery can be had from the owner's estate to alleviate use of State monies for the investigation of the site. The estate has been advised that it may have responsibility for the safety of individuals who gain access to the building, legally or otherwise.

Q8. What is the relationship between GHR Engineering and SAIC Engineering Incorporated? Are the same people involved?

A8. SAIC Engineering, Inc. acquired the assets to GHR Engineering as part of a bankruptcy settlement. This included personnel familiar with the project. The principals of GHR did not become principals of SAIC in the course of the acquisition.

Q9. How long does EPA take to make a decision? How long does it take them to make the superfund available? What can the community do to speed the process?

A9. The national priorities list nomination was sent to EPA on January 27, 1992. The NPL update is typically completed semi-annually. Therefore, the next update should fall in September, 1992. However, the USEPA has indicated that recent developments may delay this update until March, 1993.

The best thing that people could do would be to contact the EPA regional administrator and suggest or request that the Hiteman Leather site definitely be reviewed during this update.

Q10. Under federal law are you required to turn this over to them?

A10. No, we are not required to turn it over to them. We are trying to do so in order to find an alternative source of funding to address the issues at the site.

Q11. Are you saying to the people of this village the data that was prepared, the foot and a half of paper in the repository, costs $700,000 plus?

A11. Yes. These cost are comparable for investigations that are being done throughout the State of New York and other states.

Q12. Approximately how much has the DEC spent on this RI/FS?

A12. The revised total cost to complete the project is $845,338.

Q13. When you are talking of 200 parts per million, it sounded like not a very serious contamination of chromatics in the soil; is that correct?

A13. The presentation demonstrated how a cleanup level is established. A level down to which we wanted to remove or eliminate potential risks. The 200 ppm, when it was used in the health risk assessments on that type of contamination, came out to be acceptable. If you go much below that, perhaps 100 ppm or 50 ppm then you may start to be trying to cleanup below the concentrations which may be found in naturally occurring soils. It will probably be somewhere in the range between 50 and 200 ppm chromium that would ultimately be remediated.

Q14. I think the intent of the last question was what's in the soil right now, what are the actual hazards?

A14. A summary of sample information is available in attachment 3 of the ROD.

DOH RESPONSE: Inorganic chemicals (metals) are present at levels which greatly exceed common background soil concentrations. Potential adverse health affects exist for each compound through exposure via ingestion, inhalation or dermal contact. In the absence of site remediation, the best method of reducing the risk of exposure to site contaminants is to restrict the use of the site. By precluding site access, the dermal contact and ingestion pathways could be eliminated and the mobilization of airborne particulates (which may be contaminated) would be greatly reduced.

Q15. If there is a fire on the land, is there a problem with airborne material contaminants?

A15. An assessment of the potential of airborne material being a health risk was done and the results indicated a minimal risk. Assuming that there was no vegetation out there at all, it would certainly increase the risk if that vegetation was gone.

The problem there would be if the vegetation is lost then the ability to hold that material in place and keep it from becoming an airborne contaminant would increase, so it might pose more of a risk to the public for as long as that vegetation wasn't there.

Q16. If this is so bad out here and so terrible, why is the grass so green and the trees so beautiful and the coattails are higher than anywhere else in town, that's unusual.

A16. Vegetative Toxicity testing was done as part of the Risk Assessment. Actual lettuce plants were grown and analyzed as part of this testing. The results showed these plants grew just as any other garden plants would. However, when analyzed it was found that the lettuce leaves were contaminated with high concentrations of chromium. If a person were to eat the lettuce they would be ingesting high concentrations of chrome. The contamination may not demonstrate itself as an impact to vegetation, but that doesn't mean that a potential human or a risk to other species on the site doesn't exist.

Q17. Are any of the substances on-site cancer causing?

A17. DOH RESPONSE: Of the contaminants present at levels above background, the only contaminant of concern with carcinogenic potential is chromium. The carcinogenic potential of chromium depends on the chemical form and route of exposure to chromium. Hexavalent chromium (CR VI) has been shown to cause lung cancer in laboratory animals and occupationally exposed humans by inhalation exposure. The carcinogenic potential of trivalent chromium (CR III), the predominant from found on-site, is unknown. There is no evidence that chromium is carcinogenic by ingestion exposure (ATSDR, 1992).

Q18. Now, to put a fence around this site is interesting, but it really doesn't make much sense because who's going to maintain the fence once we get it up?

A18. It will depend on which agency installs the fence, whether it be New York State, the Federal Government, the Village of West Winfield, or the Erle Davis Estate.

The Response Summary addresses the major questions and comments discussed during the January 30, 1992 public meeting. No additional correspondence from the public was received during the Proposed Remedial Action Plan (PRAP) public comment period which ended on February 21, 1992.

The Stenographic Record of the Proceedings at the public meeting offers further detail of these issues. This document is available, as part of the Administrative Records, for public review at the West Winfield Village Hall and at the NYSDEC Central Office, 50 Wolf Road in Albany, New York.

Please address any additional questions or comments regarding the Hiteman Leather site to the following:

Douglas Hill, Project Manager
NYSDEC, Division of Hazardous Waste Remediation
50 Wolf Road - Room 224
Albany, New York 12233-7010
(518) 457-5677

Charles Nevin
Citizen Participation Specialist
NYSDEC, Region 6
Regional Headquarters
State Office Building
Watertown, NY 13601
(315) 785-2244

ATTACHMENT NO. 5

NYSDOH Toxicological Profile

UPDATE
UPDATE
UPDATE

Toxicological
Profile
for

CHROMIUM

Draft
For Public Comment

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

Comment Period Ends:

February 18, 1992

This report is printed on recycled paper.

DRAFT

TOXICOLOGICAL PROFILE FOR CHROMIUM

Prepared by:

Syracuse Research Corporation
Under Subcontract to:

Clement International Corporation
Under Contract No. 205-88-0608

Prepared for:

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

October 1991

DRAFT FOR PUBLIC COMMENT

CONTENTS

APPENDICES

FOREWORD

The Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499) extended and amended the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund). This public law directed the Agency for Toxic Substances and Disease Registry (ATSDR) to prepare toxicological profiles for hazardous substances which are most commonly found at facilities on the CERCLA National Priorities List and which pose the most significant potential threat to human health, as determined by ATSDR and the Environmental Protection Agency (EPA). The lists of the 250 most significant hazardous substances were published in the Federal Register on April 17, 1987, on October 20, 1988, on October 26, 1989, and on October 17, 1990.

Section 104(i)(3) of CERCLA, as amended, directs the Administrator of ATSDR to prepare a toxicological profile for each substance on the lists. Each profile must include the following content:

(A) An examination, summary, and interpretation of available toxicological information and epidemiological evaluations on the hazardous substance in order to ascertain the levels of significant human exposure for the substance and the associated acute, subacute, and chronic health effects,

(B) A determination of whether adequate information on the health effects of each substance is available or in the process of development to determine levels of exposure which present a significant risk to human health of acute, subacute, and chronic health effects, and

(C) Where appropriate, an identification of toxicological testing needed to identify the types or levels of exposure that may present significant risk of adverse health effects in humans.

This toxicological profile is prepared in accordance with guidelines developed by ATSDR and EPA. The original guidelines were published in the Federal Register on April 17, 1987. Each profile will be revised and republished as necessary.

The ATSDR toxicological profile is intended to characterize succinctly the toxicological and adverse health effects information for the hazardous substance being described. Each profile identifies and reviews the key literature (that has been peer-reviewed) that describes a hazardous substance's toxicological properties. Other pertinent literature is also presented but described in less detail than the key studies. The profile is not intended to be an exhaustive document; however, more comprehensive sources of specialty information are referenced.

Each toxicological profile begins with a public health statement, which describes in nontechnical language a substance's relevant toxicological properties. Following the public health statement is information concerning levels of significant human exposure and, where known, significant health effects. The adequacy of information to determine a substance's health effects is described in a health effects summary. Data needs that are of significance to protection of public health will be identified by ATSDR, the National Toxicology Program (NTP) of the Public Health Service, and EPA. The focus of the profiles is on health and toxicological information; therefore, we have included this information in the beginning of the document.

The principal audiences for the toxicological profiles are health professionals at the federal, state, and local levels, interested private sector organizations and groups, and members of the public. We plan to revise these documents in response to public comments and as additional data become available. Therefore, we encourage comments that will make the toxicological profile series of the greatest use.

Comments should be sent to:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
Mail Stop E-29
Atlanta, Georgia 30333

This profile reflects our assessment of all relevant toxicological testing and information that has been peer reviewed. It has been reviewed by scientists from ATSDR, the Centers for Disease Control, the NTP, and other federal agencies. It has also been reviewed by a panel of nongovernment peer reviewers and is being made available for public review. Final responsibility for the contents and views expressed in this toxicological profile resides with ATSDR.

William L. R

William L. Roper, M.D., M.P.H.
Administrator
Agency for Toxic Substances and
Disease Registry

1. PUBLIC HEALTH STATEMENT

This Statement was prepared to give you information about chromium and to emphasize the human health effects that may result from exposure to it. The Environmental Protection Agency (EPA) has identified 1,300 sites on its National Priorities List (NPL). Chromium (total) has been found in at least 564 of these sites. However, we do not know how many of the 1,300 NPL sites have been evaluated for chromium. As EPA evaluates more sites, the number of sites at which chromium is found may change. This information is important for you to know because chromium may cause harmful health effects and because these sites are potential or actual sources of human exposure to chromium.

When a chemical is released from a large area, such as an industrial plant, or from a container, such as a drum or bottle, it enters the environment as a chemical emission. This emission, which is also called a release, does not always lead to exposure. You can be exposed to a chemical only when you come into contact with the chemical. You may be exposed to it in the environment by breathing, eating, or drinking substances containing the chemical or from skin contact with it.

If you are exposed to chromium or chromium compounds, several factors will determine whether harmful health effects will occur and what the type and severity of those health effects will be. These factors include the dose (how much), the duration (how long), the route or pathway by which you are exposed (breathing, eating, drinking, or skin contact), the other chemicals to which you are exposed, and your individual characteristics such as age, sex, nutritional status, family traits, life style, and state of health.

1.1 WHAT IS CHROMIUM?

Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases. Chromium is present in the environment in several different forms. The most common forms are chromium(0), chromium(III), and chromium(VI). Chromium(III) occurs naturally in the environment whereas chromium(VI) and chromium(0) are generally produced by industrial processes. No known taste or odor is associated with chromium compounds. The metal chromium, which is the chromium(0) form, is a steel-gray solid with a high melting point. Chromium(0) is used mainly for making steel and other alloys. The naturally occurring mineral chromite in the chromium(III) form is used as brick lining for high-temperature, industrial furnaces. Chromium compounds, mostly in chromium(III) or chromium(VI) forms, produced by the chemical industry are used for chrome plating, the manufacture of dyes and pigments, leather, wood preservative, and treatment of cooling tower water. Smaller amounts are used in drilling muds, textiles, and toner for copying machines. For more information on the physical and chemical properties and on the production and use of chromium, see Chapters 3 and 4.

1.2 WHAT HAPPENS TO CHROMIUM WHEN IT ENTERS THE ENVIRONMENT?

Chromium enters the air, water, and soil as a result of natural processes and human activities. Emissions from burning coal and oil, steel production, stainless steel welding, and chromium manufacturing and use can increase chromium levels in air. Waste streams from electroplating, leather tanning, and textile industries can discharge chromium into waterways. The level of chromium in soil increases mainly from disposal of chromium-containing products, chromium wastes from factories, and coal ash from electric utilities. In air, chromium compounds are present mostly as fine dust particles. This dust eventually settles over land and water. Rain and snow aid in removing chromium from air. Chromium compounds will usually remain in the air for less than 10 days. Although most of the chromium in water settles in the material on the bottom, a small amount may dissolve in the water. Soluble chromium compounds can remain in water for years before settling out. Fish do not accumulate chromium from water into their bodies to any great extent. Most of the chromium in soil is water-insoluble or is bound to the soil. A very small amount of the chromium in soil, however, will dissolve in water and be carried deeper in the soil to groundwater. The movement of chromium in soil depends on the type and condition of the soil and other environmental factors. For more information about the fate and movement of chromium compounds in the environment, see Chapters 4 and 5.

1.3 HOW MIGHT I BE EXPOSED TO CHROMIUM?

You can be exposed to chromium by breathing air, drinking water, or eating food containing chromium or through skin contact with chromium or chromium compounds. The level of chromium in air and water is generally low. The concentration of total chromium in air is generally ranges between 0.01 and 0.03 microgram (μg) (1 μg = 1/1,000,000 of a gram) per cubic meter of air ($\mu g/m^3$). Chromium concentrations in drinking water are generally lower than 2 parts of chromium in a billion parts of water (2 ppb). For the general population, eating foods that contain chromium is the most likely route of chromium exposure. Chromium(III) occurs naturally in many fresh vegetables, fruits, meat, yeast, and grain. Various methods of processing, storage, and preparation can alter the chromium content of food. Acidic foods in contact with stainless steel cans or cooking utensils might contain higher levels of chromium because of leaching from stainless steel. Refining processes used to make white bread or sugar can decrease chromium levels. Chromium(III) is an essential element that humans need to properly use sugar. On the average, adults in the United States take in an estimated 60 μg of chromium daily. The officially recommended level for adults is 50 to 200 μg/day.

People who work in industries that process or use chromium or chromium compounds can be exposed to higher-than-normal levels of chromium. An estimated 305,000 workers in the United States are potentially exposed to chromium and chromium-containing compounds in the workplace.

Occupational sources of chromium exposure may occur in the following industries:

- Stainless steel welding
- Chromate production
- Chrome plating
- Ferrochrome alloys
- Chrome pigments
- Leather tanning

Examples of other occupations that may involve chromium exposure include:

- Painters
- Workers involved in the maintenance and servicing of copying machines, and the disposal of some toner powders from copying machines
- Battery makers
- Candle makers
- Dye makers
- Printers
- Rubber makers
- Ship and boat builders
- Automobile and truck mechanics

A list of other industries that may be sources of occupational exposure are given in Section 5.5.

You may be exposed to higher-than-normal levels of chromium if you live near the following:

- Landfill sites with chromium-containing wastes
- Industrial facilities that manufacture or use chromium and chromium-containing compounds
- Cement-producing plants, because cement contains chromium
- Industrial cooling towers that use chromium as rust inhibitors
- Waterways that receive industrial discharges from electroplating, leather tanning, and textile industries
- Busy roadways, because emissions from automobile brake lining and catalytic converters contain chromium

In addition, you may be exposed to higher levels of chromium if you use tobacco products, since tobacco contains chromium. For additional information about chromium exposure, see Chapter 5.

1.4 HOW CAN CHROMIUM ENTER AND LEAVE MY BODY?

Chromium can enter your body when you breathe air, eat food, or drink water containing chromium. Chromium(VI) enters the body more easily than chromium(III), but once inside the body, chromium(VI) is changed to chromium(III). When you breathe air containing chromium, chromium particles can be deposited in the lungs. However, you might swallow some of the chromium you breathe in as your body removes the chromium from your lungs. Some of the chromium in your lungs will enter the blood, pass through the kidneys, and be eliminated in the urine within a few days. Everyone normally eats or drinks a small amount of chromium daily. Most of the chromium that you swallow leaves your body within a few days through the feces and never enters your blood. A small amount (about 0.4% to 2.1%) will pass through the kidneys and be eliminated in the urine in a few days. Chromium(III) present in food can attach to other compounds that make it easier for chromium to enter your bloodstream from your stomach and intestines. This form of chromium is used by your body to carry out essential body functions. If your skin comes into contact with chromium, not very much will enter your body unless your skin is scraped or cut. For more information, please read Chapter 2.

1.5 HOW CAN CHROMIUM AFFECT MY HEALTH?

Chromium(III) is an essential nutrient that helps the body use sugar, protein, and fat. An intake of 50 to 200 μg of chromium(III) per day is recommended for adults. Without chromium(III) in the diet, the body loses its ability to use sugars, proteins, and fat properly, which may result in weight loss or decreased growth, improper function of the nervous system, and a diabetic-like condition.

The health effects resulting from exposure to chromium(III) and chromium(VI) are fairly well characterized. Breathing in high levels (greater than 0.002 milligram [mg] chromium per cubic meter of air [0.002 mg chromium/m^3]) of chromium(VI) can cause soreness of the nose, ulcers, nose bleeds, and holes in the nasal septum. These effects have primarily occurred in factory workers who make or use chromium(VI) every workday over a few months to years. Breathing in small amounts of chromium(VI) for short or long periods does not cause a problem in most people. However, chromium can cause asthma attacks in people who are allergic to chromium. Breathing in chromium(III) does not cause irritation to the nose or mouth in most people. In the same way, small amounts of chromium(VI) that you swallow will not hurt you; however, intentional or accidental swallowing have caused stomach upsets and ulcers, convulsions, kidney and liver damage, and even death. The levels of chromium(VI) that caused these effects are far greater than those that you might be exposed to in food or water. Although chromium(III) in small amounts is an important nutrient needed by the body, swallowing large amounts of chromium(III) may cause health problems. Workers handling liquids or solids that have chromium(VI) in them have developed skin ulcers. Some people have been found to be extremely sensitive to chromium(VI) or chromium(III). Allergic reactions consisting of severe redness and swelling of the skin have been noted. Exposure to chromium(III) is less likely than exposure to chromium(VI) to cause skin rashes in chromium-sensitive people. The metal, chromium(0), is less common, and we do not know much about how it affects your health.

Animals that breathed high levels of chromium had harmful effects on the respiratory system and a lower ability to fight disease. However, we do not know if similar effects could occur in humans or if chromium can lower a person's ability to fight disease. We have no information that any form of chromium, when swallowed, has harmful effects on reproduction or causes birth defects in humans. However, some of the female mice that were given chromium(VI) by mouth had fewer offspring and had offspring with birth defects. Some male mice that were given chromium(VI) or chromium(III) by mouth had decreased numbers of sperm in the testes. The harmful effects seen as birth defects or as a decrease in sperm occurred in mice at levels about 100 to 1,000 times higher than the normal daily intake by humans.

Long-term exposure to chromium has been associated with lung cancer in workers exposed to levels in air that were 100 to 1,000 times higher than those found in the natural environment ($<0.1\ \mu g/m^3$). Lung cancer may occur long after exposure to chromium has ended. It is not clear which form(s) of chromium is capable of causing lung cancer in workers. Chromium(VI) is believed to be primarily responsible for the increased lung cancer rates observed in workers who were exposed to high levels of chromium in air. The Department of Health and Human Services has determined that chromium and certain chromium compounds are known carcinogens. For more information, please read Chapter 2.

The Agency for Toxic Substances and Disease Registry has calculated environmental media evaluation guides (EMEGs) for chromium. EMEGs are derived from Minimal Risk Levels (MRLs) which are calculated from human or animal data for chromium. The MRL is further described in Chapter 2 and the footnote to Table 2-1. If a person is exposed to chromium at a level below the EMEG for the period listed below, we do not expect harmful health effects to occur. Because this level is based only on information currently available, some uncertainty is always associated with it. Also, an EMEG does not imply anything about the presence, absence or level of risk for cancer because the methods for deriving EMEGs do not use any information about cancer. The EMEG is provided as a concentration in order to allow for comparison to levels people might encounter in air.

- An air EMEG of 0.00002 mg chromium/m^3 for chromium(VI) was derived from human data for exposures longer than 14 days but less than 1 year.

1.6 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO CHROMIUM?

Chromium can be measured in the hair, urine, serum, red blood cells, and whole blood. However, since chromium(III) is an essential nutrient, low levels of chromium are found in the body tissues and urine. Tests for chromium exposure are most useful for people exposed to high levels. Chromium levels in the urine and red blood cells indicate exposure to chromium(VI) or chromium(III) compounds. Since the body changes chromium(VI) to chromium(III), the form of chromium that you were exposed to cannot be determined. Because red blood cells last about 120 days before they are replaced by newly made red blood cells, the presence of chromium in red blood cells can show whether a person was exposed to chromium 120 days prior to testing but not if exposure occurred longer than 120 days before testing. Skin patch tests may indicate whether a person is allergic to chromium. For more information, please read Chapters 2 and 6.

1.7 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?

EPA has set the maximum level of chromium(III) and chromium(VI) allowed in drinking water at 0.05 mg chromium per liter of water (mg/L). According to the EPA, the following levels of chromium(III) and chromium(VI) in drinking water are not expected to cause harmful effects: 1.4 mg chromium/L water for 10 days of exposure for children, 0.24 mg chromium/L water for longer-term exposure for children, 0.84 mg chromium/L for longer-term exposure for adults, and 0.12 mg chromium/L water for lifetime exposure of adults.

The Occupational Safety and Health Administration (OSHA) regulates chromium levels in the workplace air. The occupational exposure limits for an 8-hour workday, 40-hour workweek are 0.5 mg chromium/m^3 for water-soluble chromic (chromium[III]) or chromous (chromium[II]) salts and 1 mg chromium/m^3 for metallic chromium (chromium[0], and insoluble salts). The level of chromic acid and chromium(VI) compounds in the workplace air should not be higher than 0.1 mg chromium(VI)/m^3 for any period of time.

For chromium(VI) compounds that do not cause cancer, the National Institute for Occupational Safety and Health (NIOSH) recommends an exposure limit of 0.025 mg chromium(VI)/m^3 for a 10-hour workday, 40-hour workweek. The levels of the chromium(VI) compounds that do not cause cancer should not be greater than 0.05 mg chromium(VI)/m^3 for any 15-minute period. For chromium(VI) compounds that do cause cancer, NIOSH recommends an exposure limit of 0.001 mg chromium(VI)/m^3 for a 10-hour workday, 40-hour workweek.

1.8 WHERE CAN I GET MORE INFORMATION?

If you have any more questions or concerns, please contact your community or state health or environmental quality department or:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, E-29
Atlanta, Georgia 30333

This agency can also provide you with information on the location of the nearest occupational and environmental health clinic. These clinics specialize in the recognition, evaluation, and treatment of illnesses resulting from exposure to hazardous substances.

OTSH

Toxicological Profile for

ANTIMONY

Draft
For Public Comment

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

Comment Period Ends:

February 15, 1991

DRAFT FOR PUBLIC COMMENT

TOXICOLOGICAL PROFILE FOR ANTIMONY AND COMPOUNDS

Prepared by:

Syracuse Research Corporation
Under Subcontract to:

Clement Associates, Inc.
Under Contract No. 205-88-0608

Prepared for:

Agency for Toxic Substances and Disease Registry
U.S. Public Health Service

October 1990

FOREWORD

The Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499) extended and amended the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund). This public law directed the Agency for Toxic Substances and Disease Registry (ATSDR) to prepare toxicological profiles for hazardous substances which are most commonly found at facilities on the CERCLA National Priorities List and which pose the most significant potential threat to human health, as determined by ATSDR and the Environmental Protection Agency (EPA). The lists of the 225 most significant hazardous substances were published in the Federal Register on April 17, 1987, on October 20, 1988, and on October 26, 1989.

Section 104(i)(3) of CERCLA, as amended, directs the Administrator of ATSDR to prepare a toxicological profile for each substance on the list. Each profile must include the following content:

> (A) An examination, summary, and interpretation of available toxicological information and epidemiological evaluations on the hazardous substance in order to ascertain the levels of significant human exposure for the substance and the associated acute, subacute, and chronic health effects,
>
> (B) A determination of whether adequate information on the health effects of each substance is available or in the process of development to determine levels of exposure which present a significant risk to human health of acute, subacute, and chronic health effects, and
>
> (C) Where appropriate, an identification of toxicological testing needed to identify the types or levels of exposure that may present significant risk of adverse health effects in humans.

This toxicological profile is prepared in accordance with guidelines developed by ATSDR and EPA. The original guidelines were published in the Federal Register on April 17, 1987. Each profile will be revised and republished as necessary, but no less often than every three years, as required by CERCLA, as amended.

The ATSDR toxicological profile is intended to characterize succinctly the toxicological and adverse health effects information for the hazardous substance being described. Each profile identifies and reviews the key literature (that has been peer-reviewed) that describes a hazardous substance's toxicological properties. Other pertinent literature is also presented but described in less detail than the key studies. The profile is not intended to be an exhaustive document; however, more comprehensive sources of specialty information are referenced.

Foreword

Each toxicological profile begins with a public health statement, which describes in nontechnical language a substance's relevant toxicological properties. Following the public health statement is information concerning significant health effects associated with exposure to the substance. The adequacy of information to determine a substance's health effects is described. Data needs that are of significance to protection of public health will be identified by ATSDR, the National Toxicology Program (NTP) of the Public Health Service, and EPA. The focus of the profiles is on health and toxicological information; therefore, we have included this information in the beginning of the document.

The principal audiences for the toxicological profiles are health professionals at the federal, state, and local levels, interested private sector organizations and groups, and members of the public. We plan to revise these documents in response to public comments and as additional data become available. Therefore, we encourage comments that will make the toxicological profile series of the greatest use. Comments should be sent to:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road, E-29
Atlanta, Georgia 30333

This profile reflects our assessment of all relevant toxicological testing and information that has been peer reviewed. It has been reviewed by scientists from ATSDR, the Centers for Disease Control, the NTP, and other federal agencies. It has also been reviewed by a panel of nongovernment peer reviewers and is being made available for public review. Final responsibility for the contents and views expressed in this toxicological profile resides with ATSDR.

William L. Roper

William L. Roper, M.D., M.P.H.
Administrator
Agency for Toxic Substances and
Disease Registry

CONTENTS

APPENDICES

1. PUBLIC HEALTH STATEMENT

The purpose of this Statement is to provide you with information about antimony and to emphasize the human health effects that may result from exposure. The Environmental Protection Agency (EPA) has identified 1,177 National Priorities List (NPL) sites. Antimony and its compounds have been found at 52 out of 1,177 evaluated sites. As more sites are evaluated by the EPA, this number may change. The information in this profile is important for you to know because these sites are potential or actual sources of human exposure to antimony and because antimony may cause harmful health effects.

When a chemical is released from a large area such as an industrial plant, or from a container such as a drum or bottle, it enters the environment as a chemical emission. This emission, which is also called a release, does not always lead to exposure. You are exposed only when you come into contact with the chemical. You can come into contact with it in the environment through breathing, eating, or drinking substances containing the chemical. Exposure may also result from skin contact with the chemical.

If you are exposed to a hazardous substance such as antimony, several factors determine whether harmful health effects will occur and the type and severity of those health effects. These factors include the dose (how much), the duration (how long), the route or pathway by which you are exposed (breathing, eating, drinking, or skin contact), the other chemicals to which you are exposed, and your individual characteristics such as age, sex, nutrition, family traits, life style, and state of health.

1.1 WHAT IS ANTIMONY?

Antimony is a silvery white metal of medium hardness that breaks easily. Small amounts of antimony are found in the earth's crust. Antimony ores are mined and then either changed into antimony metal or combined with oxygen to form antimony oxide.

Antimony oxide is a white powder that does not evaporate. Only a small amount of it will dissolve in water. Most antimony oxide produced is added to textiles and plastics to prevent their catching on fire.

Antimony metal is too easily broken to be used much by itself. A little antimony is usually mixed with other metals such as lead and zinc to form mixtures of metals called alloys. These alloys are used in lead storage batteries, solder, sheet and pipe metal, bearings, castings, type metal, ammunition, and pewter.

Antimony enters the environment during the mining and processing of its ores and in the production of antimony metal, alloys, antimony oxide, and combinations of antimony with other substances. Little or no antimony is mined in the United States. Antimony ore and impure metals are imported into this country for processing. Small amounts of antimony are also released into the environment by incinerators and coal-burning power plants. The antimony that comes out of the smoke stacks of these plants is attached to very small particles that settle to the ground or are washed out of the air by rain. It usually takes many days for antimony to be removed from the air. Antimony attached to very small particles may stay in the air for more than a month. Antimony cannot be destroyed in the environment. It can only change its form or become attached to or separated from particles. Most antimony will end up in the soil or sediment, where it attaches strongly to particles that contain iron, manganese, or aluminum. For more information, see Chapters 3, 4, and 5.

1.2 HOW MIGHT I BE EXPOSED TO ANTIMONY?

Antimony is found at very low levels in the environment, so low that we often cannot measure it. You may be exposed to antimony by breathing air, drinking water, and eating foods that contain it. You also may be exposed by skin contact with soil, water, and other substances that contain antimony. We do not always know what form of antimony we are exposed to. Much of the antimony found in sediment, soil, and rock is so strongly attached to dust and dirt or buried in minerals that it cannot easily affect your health. Some antimony in the environment is less tightly attached to particles and may be taken up by plants and animals. We do not know what forms of antimony are found in hazardous waste sites.

The concentration of antimony in air ranges from a very small part of a nanogram (1 nanogram equals a billionth of a gram) in a cubic meter (m^3) of air (ng/m^3) to about 170 ng/m^3. However, near companies that change antimony ores into metal or make antimony oxide, concentrations may be more than 1,000 ng/m^3. You may breathe high levels of antimony in dust if you live or work near antimony mines or processing companies.

The concentration of antimony that is dissolved in rivers and lakes is very low, usually less than 5 parts of antimony in 1 billion parts of water (ppb). We cannot measure such small amounts without special equipment. Antimony does not appear to accumulate in fish and other aquatic animals. The concentration of antimony dissolved in one polluted river where wastes from antimony mining and processing had been dumped was as high as 8 ppb. Most of the antimony in the river, however, was not dissolved, but was attached to particles of dirt. Although antimony is used in solder for water pipes, it does not seem to get into the drinking water.

Soil usually contains very low concentrations of antimony, less than 1 part of antimony in a million parts of soil (ppm). However, concentrations close to 9 ppm have been found. The highest soil concentrations found at hazardous waste sites on the NPL and at antimony-processing sites range from 109 to 2,550 ppm. High concentrations of antimony may be found in soil because dust sent out during processing settles out from the air. Also, waste from antimony-processing and other antimony-using industries is usually dumped onto the soil. We do not know the form of antimony at these sites. However, we know that much of the antimony in antimony-processing wastes is strongly attached to soil. You may be exposed to this antimony by skin contact. Children may also be exposed to this antimony by eating the dirt.

Food usually contains small amounts of antimony. You eat and drink about 5 micrograms (5 millionths of a gram) of antimony every day. The average concentration of antimony in meats, vegetables, and seafood is 0.2-1.1 ppb. The antimony oxide that is added to many materials for fire protection is very tightly attached to these materials and does not expose people to antimony.

You may also be exposed to antimony in the workplace. If you work in industries that process antimony ore and metal or make chemicals that contain antimony, such as antimony oxide, you may be exposed to antimony by breathing dust or by skin contact.

For more information on how you may be exposed to antimony, see Chapter 5.

1.3 HOW CAN ANTIMONY ENTER AND LEAVE MY BODY?

Antimony can enter your body when you drink water or eat food, soil, or other substances that contain antimony. Antimony can also enter your body if you breathe air or dust containing antimony. We do not know if antimony can enter your body when it is placed on your skin.

A small amount of the antimony you eat or drink enters the blood after a few hours. The amount and the form of antimony in the food or water will affect how much antimony enters your blood. After you eat or drink very large doses of antimony, you may vomit. This will prevent antimony from entering your blood. Antimony in your lungs will enter your blood after several days or weeks. The amount of antimony that will enter your blood from your lungs is not known.

After antimony enters your blood, it goes to many parts of your body. Most of the antimony goes to the liver, lungs, intestines, and spleen. Antimony will leave your body in feces and urine over several weeks. Further information on how antimony enters and leaves your body is presented in Chapter 2.

1.4 HOW CAN ANTIMONY AFFECT MY HEALTH?

Antimony can have beneficial effects when used for medical reasons. It is used as a medicine to treat people infected with parasites. Exposure to antimony for a long time can irritate your eyes, skin, and lungs, and can cause heart problems, vomiting, and diarrhea. We do not know if antimony can cause cancer or birth defects, or affect reproduction in humans. However, antimony can cause lung cancer in animals that breathe antimony dust. We do not know if cancer occurs in animals that eat or drink antimony, either because studies have not been done or studies were done at too low a dose to cause cancer. Breathing very high levels of antimony will kill animals. We do not know if this can occur in humans.

The effects below are listed at the lowest levels at which they were first observed. They may also be seen at higher levels.

There is no information on human health effects from breathing antimony for less than 15 days.

The following human health effects have been found from breathing antimony for more than 14 days:

- People who breathed 2 milligrams per cubic meter of air (mg/m^3) of antimony for 8 months to 2 years had heart problems and stomach ulcers.
- People who breathed 9 mg/m^3 of antimony for more than 9 years had lung, eye, and skin irritation.

The following animal health effects have been found from breathing antimony for less than 15 days:

- Rats that breathed 20 mg/m^3 of antimony for 5 days had lung, heart, liver, and kidney damage.
- Rats and guinea pigs that breathed 1,395 mg/m^3 of antimony for 30 minutes had eye irritation.
- Rats and guinea pigs that breathed 1,395 mg/m^3 of antimony for 30 minutes died.

The following animal health effects have been found from breathing antimony for more than 14 days:

- Rats that breathed 0.05 mg/m^3 of antimony for 1 year had lung damage and eye irritation.
- Rats that breathed 0.2 mg/m^3 of antimony for 13 weeks had eye irritation.
- Rats that breathed 0.9 mg/m^3 of antimony for 13 weeks had lung damage and hair loss.
- Rats that breathed 2 mg/m^3 of antimony for 6 weeks had lung damage and heart problems (such as heart damage and increased blood pressure).

1. PUBLIC HEALTH STATEMENT

- Dogs that breathed 4 mg/m^3 of antimony for 10 weeks had heart problems.
- Rats that breathed 209 mg/m^3 of antimony for 9 weeks had problems with fertility.

The following human health effect has been found from eating or drinking antimony for less than 15 days:

- People who drank over 19 ppm of antimony once, vomited.

There is no information on human health effects from eating or drinking antimony for more than 14 days.

The following animal health effects have been found from eating or drinking antimony for less than 15 days:

- Dogs that were fed 1,000 ppm of antimony for 1 day vomited.
- Rats that drank 1,600 ppm of antimony for 1 day died.

The following animal health effects have been found from eating or drinking antimony for more than 14 days:

- Rats that drank water with 2 ppm of antimony for more than 600 days died sooner than rats not exposed.
- Rats that were fed food with 8,360 ppm of antimony for 24 weeks had liver damage and fewer red blood cells.
- Dogs that drank 17,500 ppm of antimony for 32 days had diarrhea.
- Dogs that drank 138,000 ppm of antimony for 32 days lost weight.

There is no information on human health effects from skin contact with antimony.

The following animal health effects have been found after skin contact with antimony for less than 15 days:

- Rabbits that had very small amounts of antimony placed on their skin for less than 1 day had skin irritation.
- Rabbits that had small amounts of antimony placed in their eyes had eye irritation.
- Rabbits that had large amounts of antimony placed on their skin for 1 day died.

More information on how antimony can affect your health is presented in Chapter 2.

1.5 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO ANTIMONY?

There are reliable and accurate ways of measuring antimony levels in the body. Antimony can be measured in the urine, feces, and blood. High levels of antimony in these fluids will show that you have been exposed to high levels of antimony. However, we do not know if such measurements can tell how much antimony you have been exposed to for how long, or what, if any, short-term or long-term health effects you will have. For more information, see Chapters 2 and 6.

1.6 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?

EPA has set a limit of 146 ppb in lakes and streams to protect human health from the harmful effects of antimony taken in through water and contaminated fish and shellfish. EPA has also set limits on the amount of antimony that industry can release.

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.5 mg/m^3 of antimony in workroom air to protect workers during an 8-hour work shift (40-hour workweek). The National Institute of Occupational Safety and Health (NIOSH) also recommends that the concentration in workroom air be limited to 0.5 mg/m^3 for antimony, averaged over an 8-hour work shift. Further information on regulations and guidelines pertaining to antimony is provided in Chapter 7.

1.7 WHERE CAN I GET MORE INFORMATION?

If you have any more questions or concerns, please contact your state health or environmental department or:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road, E-29
Atlanta, Georgia 30333

This agency can also provide you with information on the location of the nearest occupational and environmental health clinic. These clinics specialize in the recognition, evaluation, and treatment of illness resulting from exposure to hazardous substances.

UPDATE
UPDATE
UPDATE

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LEAD

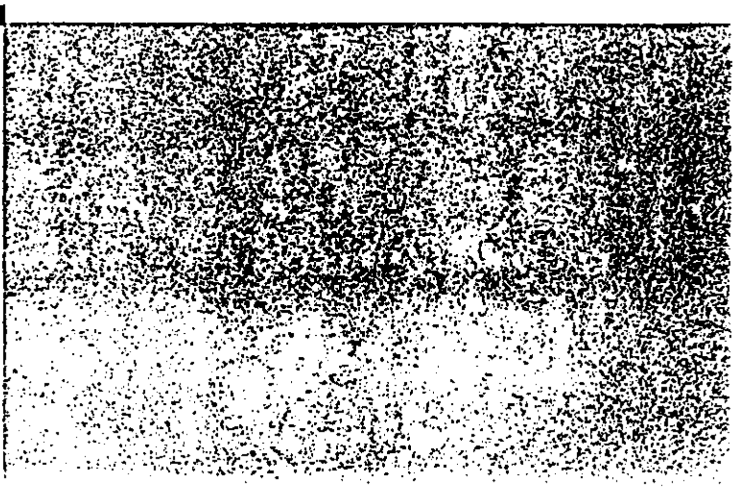
Draft

For Public Comment

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

Comment Period Ends:

February 18, 1992



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DRAFT

TOXICOLOGICAL PROFILE FOR LEAD

Prepared by:

Clement International Corporation
Under Contract No. 205-88-0608

Prepared for:

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

October 1991

DRAFT FOR PUBLIC COMMENT

FOREWORD

The Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499) extended and amended the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund). This public law directed the Agency for Toxic Substances and Disease Registry (ATSDR) to prepare toxicological profiles for hazardous substances which are most commonly found at facilities on the CERCLA National Priorities List and which pose the most significant potential threat to human health, as determined by ATSDR and the Environmental Protection Agency (EPA). The lists of the 250 most significant hazardous substances were published in the Federal Register on April 17, 1987, on October 20, 1988, on October 26, 1989, and on October 17, 1990.

Section 104(i)(3) of CERCLA, as amended, directs the Administrator of ATSDR to prepare a toxicological profile for each substance on the lists. Each profile must include the following content:

(A) An examination, summary, and interpretation of available toxicological information and epidemiological evaluations on the hazardous substance in order to ascertain the levels of significant human exposure for the substance and the associated acute, subacute, and chronic health effects,

(B) A determination of whether adequate information on the health effects of each substance is available or in the process of development to determine levels of exposure which present a significant risk to human health of acute, subacute, and chronic health effects, and

(C) Where appropriate, an identification of toxicological testing needed to identify the types or levels of exposure that may present significant risk of adverse health effects in humans.

This toxicological profile is prepared in accordance with guidelines developed by ATSDR and EPA. The original guidelines were published in the Federal Register on April 17, 1987. Each profile will be revised and republished as necessary.

The ATSDR toxicological profile is intended to characterize succinctly the toxicological and adverse health effects information for the hazardous substance being described. Each profile identifies and reviews the key literature (that has been peer-reviewed) that describes a hazardous substance's toxicological properties. Other pertinent literature is also presented but described in less detail than the key studies. The profile is not intended to be an exhaustive document; however, more comprehensive sources of specialty information are referenced.

Each toxicological profile begins with a public health statement, which describes in nontechnical language a substance's relevant toxicological properties. Following the public health statement is information concerning levels of significant human exposure and, where known, significant health effects. The adequacy of information to determine a substance's health effects is described in a health effects summary. Data needs that are of significance to protection of public health will be identified by ATSDR, the National Toxicology Program (NTP) of the Public Health Service, and EPA. The focus of the profiles is on health and toxicological information; therefore, we have included this information in the beginning of the document.

The principal audiences for the toxicological profiles are health professionals at the federal, state, and local levels, interested private sector organizations and groups, and members of the public. We plan to revise these documents in response to public comments and as additional data become available. Therefore, we encourage comments that will make the toxicological profile series of the greatest use.

Foreword

Comments should be sent to:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
Mail Stop E-29
Atlanta, Georgia 30333

This profile reflects our assessment of all relevant toxicological testing and information that has been peer reviewed. It has been reviewed by scientists from ATSDR, the Centers for Disease Control, the NTP, and other federal agencies. It has also been reviewed by a panel of nongovernment peer reviewers and is being made available for public review. Final responsibility for the contents and views expressed in this toxicological profile resides with ATSDR.

William L. R

William L. Roper, M.D., M.P.H.
Administrator
Agency for Toxic Substances and
Disease Registry

CONTENTS

APPENDICES

1. PUBLIC HEALTH STATEMENT

This Statement was prepared to give you information about lead and to emphasize the human health effects that may result from exposure to it. The Environmental Protection Agency (EPA) has identified 1,300 sites on its National Priorities List (NPL). Lead has been found in at least 666 of these sites. However, we do not know how many of the 1,300 NPL sites have been evaluated for lead. As EPA evaluates more sites, the number of sites at which lead is found may change. This information is important for you to know because lead may cause harmful health effects and because these sites are potential or actual sources of human exposure to lead.

When a chemical is released from a large area, such as an industrial plant, or from a container, such as a drum or bottle, it enters the environment as a chemical emission. This emission, which is also called a release, does not always lead to exposure. You can be exposed to a chemical only when you come into contact with the chemical. You may be exposed to it in the environment by breathing, eating, or drinking substances containing the chemical or from skin contact with it.

If you are exposed to a hazardous chemical such as lead, several factors will determine whether harmful health effects will occur and what the type and severity of those health effects will be. These factors include the dose (how much), the duration (how long), the route or pathway by which you are exposed (breathing, eating, drinking, or skin contact), the other chemicals to which you are exposed, and your individual characteristics such as age, sex, nutritional status, family traits, life style, and state of health.

1.1 WHAT IS LEAD?

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. It has no characteristic taste or smell. Lead does not dissolve in water and does not burn. Some natural and man-made substances contain lead, but do not look like lead metal. Some of the substances that contain lead can burn.

Lead has many different uses. Its most important use is in the production of some types of batteries. Other uses include the production of ammunition and some kinds of metal products (such as sheet lead, solder, and pipes). Some chemicals containing lead, such as tetraethyl lead and tetramethyl lead, are used as gasoline additives. However, the use of these lead-containing chemicals in gasoline is much less than it used to be because these additives are being phased out. Other chemicals containing lead are used in paint. The amount of lead added to paints and ceramic products, roofing, caulking, ammunition, gasoline additives, and solder has been reduced in recent years because of lead's harmful effects in humans and animals.

Most lead used by industry comes from mined ores or from recycled scrap metal or batteries. Human activities (such as use of "leaded" gasoline) have spread lead and substances that contain lead to all parts of the environment. For example, lead is in air, drinking water, rivers, lakes, oceans, dust, and soil. Lead is also in plants and animals that humans may eat. Please see Chapter 3 for more information on the physical and chemical properties of lead. Chapter 4 contains more information on the production and use of lead.

1.2 WHAT HAPPENS TO LEAD WHEN IT ENTERS THE ENVIRONMENT

Lead occurs naturally in the environment. However, most of the lead dispersed throughout the environment comes from human activities. Before the use of leaded gasoline was limited, most of the lead released into the environment came from car exhaust. Since the EPA has limited the use of leaded gasoline, the amount of lead released into the air has decreased. In 1979, cars released 94.6 million kilograms (kg) of lead into the air in the United States. In contrast, in 1989 cars released only 2.2 million kg to the air. Other sources of lead released to the air include burning fuel, such as coal or oil, industrial processes, and burning solid waste.

The release of lead to air is now less than the release of lead to soil. Most of the lead that enters soil comes from landfills. Landfills contain waste from lead ore mining, ammunition manufacturing, and from other industrial activities such as battery production. Very little lead goes directly into water.

High levels of lead from car exhausts can be measured near roadways. Very low levels of lead from car exhausts are found at distances of 25 meters from the road edge. However, once lead goes into the atmosphere, it may travel thousands of miles if the lead particles are small. Lead is removed from the air by rain as well as by particles falling to the ground or into surface water. Once lead deposits on soil, it usually sticks to soil particles. Small amounts of lead may enter rivers, lakes, and streams when soil particles wash in along with rainwater. Lead may remain stuck to soil particles in water for many years. Movement of lead from soil particles into groundwater or drinking water is unlikely unless the water is acidic or "soft."

Some of the chemicals that contain lead are broken down by sunlight, air, and water to other forms of lead. Lead is not broken down although it may become part of other chemicals that contain lead. Lead in water will combine with different chemicals depending on the acidity and temperature of the water.

The levels of lead may build up in plants and animals from areas where air, water, or soil are contaminated with lead. If animals eat contaminated plants or animals, most of the lead that they eat will pass through their bodies. Chapters 4 and 5 contain more information on the environmental fate of lead.

1.3 HOW MIGHT I BE EXPOSED TO LEAD?

People living near hazardous waste sites can be exposed to lead and chemicals that contain lead by breathing air, drinking water, eating foods, or swallowing dust or dirt that contains lead. For people who do not live near hazardous waste sites, most exposure to lead occurs by eating foods that contain lead. Foods such as fruits, vegetables, meats, grains, seafood, soft drinks, and wine may have lead in them. Cigarettes also contain small amounts of lead. In general, very little lead is in drinking water. Over 99% of all drinking water contains less than 0.005 parts of lead per million of water (ppm). However, the amount of lead taken into your body through drinking water can be higher in communities with acidic water supplies. Acid in water can make the lead found in lead pipes, solder, and brass faucets enter water.

Exposure to gasoline additives that contain lead can happen while you are pumping leaded gasoline, from sniffing leaded gasoline, and possibly during the use of some do-it-yourself fuel additives. For people who are exposed to lead at work, the largest source of exposure comes from breathing air that contains lead. Breathing or swallowing dust and dirt that has lead in it is another way you can be exposed to lead. Children, especially those who are preschool age, can have a lot of lead exposure because they put many things into their mouths. Their hands, toys, and other items may have lead-containing dirt on them. In some cases, children swallow nonfood items such as paint chips and dirt. These items may contain very large amounts of lead, particularly in and around older houses that were painted with lead-based paint. The paint in these houses often chips off and mixes with dust and dirt. Skin contact with dust and dirt containing lead occurs every day. However, not much lead can get into your body through your skin. During normal use of lead-containing products, very little lead gets on your skin.

The burning of gasoline has been the single largest source (90%) of lead in the atmosphere since the 1920s. A lot less lead in the air comes from gasoline now because EPA reduced the amount of lead that can be used in gasoline. Less than 35% of the lead released to the air now comes from gasoline. Other sources of lead in the air include releases to the air from industries involved in iron and steel production, lead-acid-battery manufacturing, and manufacturing of tetraethyl and tetramethyl lead. Lead released into air may also come from burning of solid waste, windblown dust, volcanoes, exhaust from workroom air, burning or weathering of lead-painted surfaces, and cigarette smoke.

[illegible]

Sources of lead in drinking water include lead that can come out of lead pipes, faucets, and solder used in plumbing. Lead-containing plumbing may be found in public drinking water systems, in houses, apartment buildings, and public buildings. Sources of lead in surface water or sediment include deposits of lead-containing dust from the atmosphere, wastewater from industries that handle lead--primarily iron and steel industries and lead producers--urban runoff.

Sources of lead in food and beverages include deposition of lead-containing dust from the atmosphere on crops and during food processing and uptake of lead from soil by plants. Lead may also enter foods when foods are put into improperly glazed pottery and ceramic dishes. Illegal whiskey made using stills that contain lead-soldered parts (such as truck radiators) may also contain lead.

Sources of lead in dust and soil include deposition of atmospheric lead and weathering and deterioration of lead-based paint. Lead in dust may also come from windblown soil. Disposal of lead in municipal and hazardous waste dump sites also adds lead to soil.

Exposure to lead occurs in many jobs. People employed in lead smelting and refining industries, rubber products and plastics industries, steel welding and cutting operations, battery manufacturing plants, and alkyl lead manufacturing industries may be exposed to lead. People who work at gasoline stations, in construction work and at do-it-yourself renovations, or who work at municipal waste incinerators, pottery and ceramics industry, radiator repair shops and other industries that use lead solder may also be exposed. Between 0.5 and 1.5 million workers are exposed to lead in the workplace; in California alone over 200,000 workers are exposed to lead. Families of workers may be exposed to elevated levels of lead when workers bring home lead dust on clothes worn at work. Chapter 5 contains further information on sources of exposure to lead.

1.4 HOW CAN LEAD ENTER AND LEAVE MY BODY?

Lead can enter your body when you breathe in lead dust or chemicals that contain lead. Most of the lead that gets into your lungs goes quickly to other parts of the body in your blood.

You may swallow a lot of lead by eating food and drinking liquids that contain it. However, very little of the amount you swallow enters your blood and other parts of your body. The amount that gets into your body from your stomach partially depends on when you ate your last meal. It also depends on how well the lead particles you ate dissolved in your stomach juices. Experiments in adult volunteers showed that the amount of lead that got into the body from the stomach was only about 6% in adults who had just eaten. About 60-80% of the lead in the stomach of adults who had not eaten for a day got into their blood. On the other hand, 50% of the lead swallowed by children enters the blood and other body parts even if their stomachs are full.

You come in frequent skin contact with lead in the form of lead-containing dusts and soil. However, only a small portion of the lead will enter your body after skin contact.

Lead behaves the same once it gets into your body no matter what the route of exposure was. Shortly after it gets into your body, lead travels in the blood to the "soft tissues," (such as the liver, kidneys, lungs, brain, spleen, muscles, and heart). After several weeks most of the lead then moves into your bones and teeth. In adults, about 94% of the total amount of lead in the body is contained in their bones and teeth. Children, on the other hand, have only about 73% of the lead in their bodies stored in their bones. The rest is in their organs and blood. Part of the lead stays in your bones for decades. Part of the lead in your bones is available to reenter your blood and organs.

Your body does not change lead into any other chemical. Once it is taken in and distributed to your organs, the lead that is not stored in your bones leaves your body in your urine or your feces. About 99% of the amount of lead that you take into your body will leave in your waste within a couple of weeks, but only about 32% of the lead taken into the body of children will leave in the waste. For more information on how lead can enter and leave your body, please refer to Chapter 2.

1.5 HOW CAN LEAD AFFECT MY HEALTH?

Exposure to lead is particularly dangerous for unborn children, because of their great sensitivity during development. Exposure to lead is also dangerous for young children, because they swallow more lead through normal mouthing activity, take more of the lead that they swallow into their bodies, and are more sensitive to its effects. The American Academy of Pediatrics has concluded that lead continues to be a significant hazard to the health of children in the United States, and that most children in this country are exposed to lead due to pollution of the environment by the burning of leaded gasoline and by the weathering of lead-based paint. Unborn children can be exposed to lead through their mothers. This may cause premature births, smaller babies, and decreased mental ability in the infant. Lead exposure may also decrease intelligence quotient (IQ) scores and reduce the growth of young children.

In adults, lead exposure may decrease reaction time and possibly memory. Lead exposure may also cause weakness in your fingers, wrists, or ankles. Lead exposure may increase blood pressure in middle-aged men. It is not known whether lead has an effect on blood pressure in women. Lead exposure may also cause anemia. At high levels of exposure, lead can severely damage the brain and kidneys in adults or children. In addition, high levels of exposure to lead may cause abortion and damage the male reproductive system. The effects of lead are the same regardless of whether it enters the body through breathing or swallowing.

Tumors have developed in rats and mice given large doses of lead. The Department of Health and Human Services has determined that lead acetate and lead phosphate may reasonably be anticipated to be carcinogens. Please see Chapter 2 for more information on the health effects of lead.

1.6 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO LEAD?

The amount of lead in the blood can be measured to determine if exposure to lead has occurred. Methods to measure lead in teeth or bones by X-ray techniques, although not widespread, also are available.

Exposure to lead can also be evaluated by measuring erythrocyte protoporphyrin (EP). EP is a part of red blood cells known to increase when the amount of lead in the blood is high. This method is commonly used to screen children for potential lead poisoning. The Centers for Disease Control (CDC) considers lead poisoning in children to exist if the amount of lead in the blood is at least 25 micrograms per deciliter (μg/dL). High levels in these tests suggest that adverse health effects may occur. Medical treatment to lower blood levels may be necessary if the lead concentrations in blood are high. For more information on tests to measure lead in the body, see Chapters 2 and 6.

1.7 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?

The CDC recommends that all children should be screened for lead poisoning at least once a year. This is especially important for children between the ages of 6 months and 9 years. Children with blood lead levels of 25 μg/dL or EP levels of 35 μg/dL or greater should be tested by their doctors for symptoms of lead poisoning without delay. The CDC is currently considering lowering the blood lead level of concern below 25 μg/dL.

EPA requires that the concentration of lead in air that the public breathes shall not exceed 1.5 micrograms per cubic meter (μg/m^3) averaged over 3 months. EPA regulations now limit the level of lead in leaded gasoline to 0.1 grams per gallon (0.1 g/gal) and the level in unleaded gasoline to 0.001 g/gal.

EPA regulations also limit lead in drinking water to 0.015 milligrams per liter (mg/L).

The Consumer Product Safety Commission (CPSC), EPA, and the states are required by the 1988 Lead Contamination Control Act to deal with the problem of lead in drinking water coolers by requiring that water coolers containing lead be recalled or repaired and that new coolers be lead-free. In addition, drinking water in schools must be tested for lead and the sources of lead in this water must be removed.

To help protect small children, the CPSC requires that the concentration of lead in most paints available through normal consumer channels be not more than 0.06%. The CDC recommends that inside and outside painted surfaces of dwellings be tested for lead, and that surfaces containing lead equal to or greater than 0.7 milligram per square centimeter (mg/cm^2) of surface area be stripped and repainted according to a four-step paint removal and replacement protocol. This is necessary because stripping can release fine particles of lead that can cause lead poisoning. The CDC has also warned that concentrations of lead in soil or dust greater than 500–1,000 micrograms per gram (μg/g) could lead to elevated blood lead levels in children who breathe or swallow the dirt.

The Department of Housing and Urban Development (HUD) requires that federally funded housing and renovations, public housing, and Indian housing be tested for lead-based paint hazards and that such hazards be fixed by covering the paint or removing it. HUD is carrying out demonstration projects to determine the best ways of covering or removing this paint in housing.

The Occupational Safety and Health Administration (OSHA) regulations limit the concentration of lead in workroom air to 50 $\mu g/m^3$ for an 8-hour workday.

Please see Chapter 7 for more information on federal and state regulations and guidelines for lead.

1.8 WHERE CAN I GET MORE INFORMATION?

If you have any more questions or concerns, please contact your community or state health or environmental quality department or:.

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, E-29
Atlanta, Georgia 30333

This agency can also provide you with information on the location of the nearest occupational and environmental health clinic. These clinics specialize in the recognition, evaluation, and treatment of illnesses resulting from exposure to hazardous substances.

ATTACHMENT NO. 6

USEPA NPL Correspondence

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

JAN 27 1992

Ms. Kathy Callahan
Director
United States Environmental
  Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

Dear Ms. Callahan:

Re: Hiteman Leather
NYS I.D. No. 622007

Enclosed for review by your staff is a completed PA Score for the referenced site, supported by a copy of the draft Remedial Investigation/Feasibility Study.

This site was first nominated for the National Priorities List in September of 1986 but never moved past the nomination stage. Current data appear to indicate that a "proposed" status can be supported if the PA Score of 88 stands up to your staff's review process.

It should be noted that this is our first attempt at utilizing the PA Scoring procedure. Consequently, feedback from your staff on the correctness of our work would be very beneficial to our next effort.

An important issue regarding the data is that hazardous waste, a New York prerequisite in defining inactive hazardous waste disposal sites, has not been identified at this site. Therefore, we cannot continue to fund this project in our program. Thus, federal superfund may be the only viable source of funding to complete the remedial program.

Please call upon Mr. Walter E. Demick, P.E., of my staff, if additional information is necessary. He can be reached at (518) 457-9538.

Sincerely,

Michael J. O'Toole Jr

Michael J. O'Toole, Jr., P.E.
Director
Division of Hazardous Waste
  Remediation

Enclosure