9. ASBESTOS WORK PLAN, 10/92

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ecology and environment
engineering, p.c.

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APPROVED

APPROVED 10/30/92

WORK PLAN
STATE SUPERFUND STANDBY CONTRACT
SCHATZ PLANT, SITE NO. 3-14-074
POUGHKEEPSIE (T), DUTCHESS (C)
W.A. NUMBER: D002625-9.1

Revised
September 10, 1991

Modified
October 27, 1992

Prepared for:

NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
Bureau of Construction Services
Division of Hazardous Waste Remediation
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WORK PLAN

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE SUPERFUND STANDBY CONTRACT (SSSC)

SCHATZ PLANT SITE NO. 3-14-074

W.A. NO. D002625-9.1

Initial Submittal Date: July 11, 1991

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1. INTRODUCTION

Ecology and Environment Engineering, P.C. (E & E) is pleased to submit this work plan to the New York State Department of Environmental Conservation (NYSDEC) for the inspection, sampling, and subsequent removal and disposal of potential hazardous and toxic materials from the Schatz Plant (Site No. 3-14-074), Town of Poughkeepsie, Dutchess County. Specifically, site work will be conducted in only Building 3 and the Heat Treatment Building as shown in Figure 1-2. The preparation of the work plan is authorized pursuant to the Work Authorization Number D112625-9 dated March 6, 1991, and modification dated May 3, 1991. Further modifications to the work plan were necessary as a result of asbestos materials found on site and New York State Department of Labor intervention to review the potential asbestos issues.

Services to be provided in accordance with the State Superfund Standby Contract (SSSC) are limited to:

- Physical building survey to generate an accurate site plan (Heat Treatment Building and Building 3);
- Bulk asbestos inspection, sampling, and analysis in the Heat Treatment Building only during the performance of a physical building survey;
- Exploratory excavation of debris-filled quenching pits in the Heat Treatment Building and implementation of sampling and analytical activities in both buildings as further outlined in this work plan;
- Preparation and submittal of draft recommendations for removal and disposal options;
- Preparation and submittal of contract documents including design plans and specifications for site waste removal and disposal; and
- Preparation and submittal of a closeout report of work performed on site.

Section 2 of this work plan contains a detailed description of the major tasks and subtasks to be performed for this site. Section 3 provides an estimated project schedule with major accomplishment milestones.

Section 4 contains the subcontracting and MBE/WBE requirements for the work assignment. Section 5 presents the proposed E & E staffing plan. A list of subcontractors necessary for performance of the work plan is provided in Section 6. Section 7 contains our detailed budget for tasks for which a scope can be defined and prepared in accordance with contractual reporting requirements.

This work plan explains how tasks 2, 3, 4, and 5 will be performed and completed. As agreed upon in the May 3, 1991 modification to the work plan development cost authorization, an initial Health and Safety Plan (Task 4) was prepared for Task 1 (work plan development) for the on-site project review meeting. As the later subtasks are developed, relevant changes will be incorporated in the Health and Safety Plan which will make it an active and usable document for project reference.

Site History

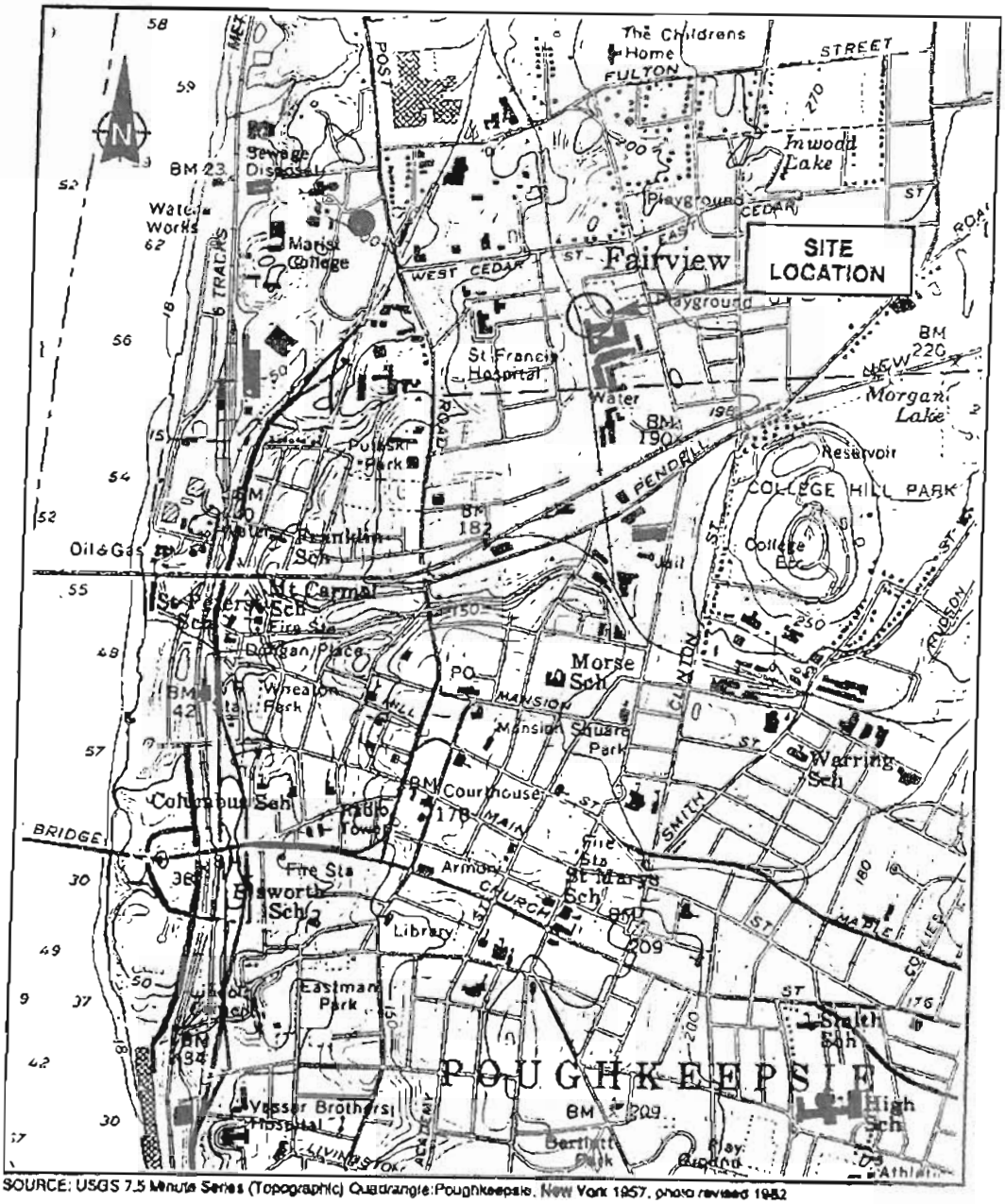
The Schatz Plant is located at 70 Fairview Avenue, Town of Poughkeepsie (see Figure 1-1). The current owner, Mr. Stanley Schutzman, purchased the former automobile bearing manufacturing facility (once operated by Schatz Federal Bearing) in 1982. At the time of purchase, the property had been abandoned and had fallen into extreme disrepair. The current site includes a large active industrial park containing several buildings which support a mental health rehabilitation/day care center, an ongoing commercial textile establishment, and several unoccupied buildings. Schutzman operates and controls Four Seasons Dyeing and Finishing, Inc. on site, which uses hazardous materials in its operations. In addition, there are waste product releases to the public sewer and other materials stored in drums on site which will not be addressed under this work plan.

NYSDEC inspected the former abandoned Heat Treatment Building in May 1986 and found approximately 100 unlabeled 55-gallon drums along with approximately 16 open and partially debris-filled quenching pits containing unidentified liquids. Results of this initial analysis indicate some of the drums contained benzene, toluene, and xylenes, while polychlorinated biphenyls (PCBs), lead, cadmium, barium, and arsenic were identified in random pit samples. Recent 1990 analysis of overpacked drums remaining on site indicated the continued presence of PCBs. PCBs have also been identified in

dust/dirt on the concrete flooring of Building 3 at the site. The County Health Department considers the dust/dirt in Building 3 a public health nuisance and a hazardous condition as it is in an area to which authorized building personnel have access for control of electrical building power.

The work involved in this assignment does not include addressing the existing drummed or overpacked containers that were present during the initial site walkthrough. The open drums and areas within the Heat Treatment Building containing friable asbestos pipe lagging will be removed by the current owner under a separate procurement by a licensed asbestos contractor prior to initiation of field work developed by this work plan.

The Heat Treatment Building also has controlled accessibility via locked doorways. Building 3 can be accessed from any point within the facility and is the prime concern of the County Health Department.



SOURCE: USGS 7.5 Minute Series (Topographic) Quadrangle: Poughkeepsie, New York 1957, photo revised 1982

SCALE 1:24,000

0 ½ 1 Mile

0 .5 1 Kilometer

Figure 1-1
SITE LOCATION MAP, SCHATZ PLANT SITE

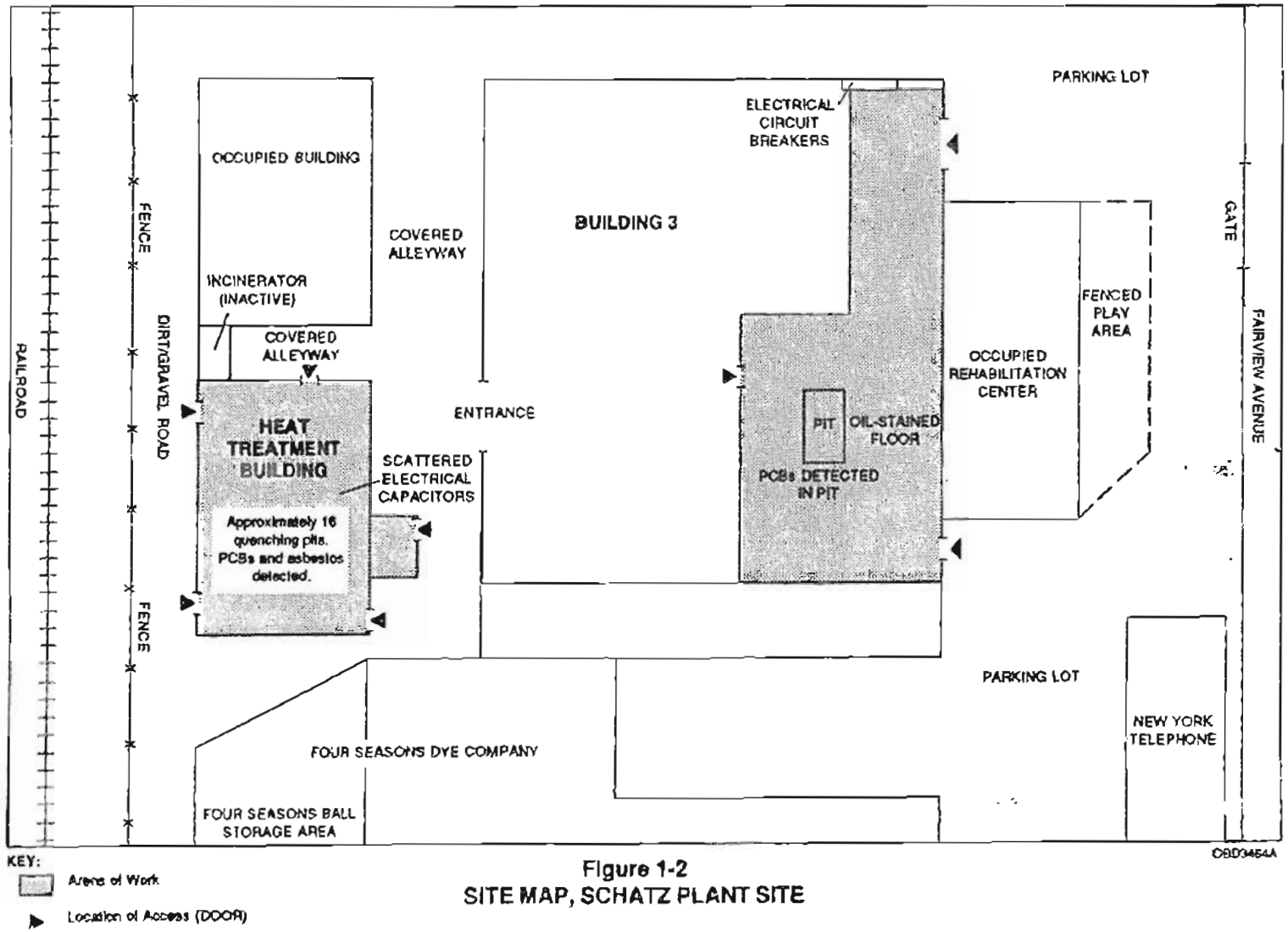


Figure 1-2
SITE MAP, SCHATZ PLANT SITE

2. SCOPE OF WORK FOR TASKS 2 THROUGH 5

Project Management

In performance of the overall project, project management hours will be necessary to support the tasked activities requested. The project management hours, along with office and site support hours, have been distributed over the balance of the project tasks for the project period.

The inclusion of project management hours with off-site hours is necessary because the field project manager will need additional office-based staff support during various stages of the project to fulfill the management and procurement requirements mandated by NYSDEC and the standby contract.

Listed below are a number of general direct charge management items that E & E expects to be performed pursuant to the contract, but not be limited to, during the project period:

- Recruitment, briefing, debriefing, and preparation of field personnel regarding job duties, health and safety concerns, and work scope objective;
- Organization and preparation of transportation and lodging for field personnel;
- Management of field change orders or contract modifications;
- Tracking and review of actual project schedule versus plan schedule;
- Tracking and review of budget and project costs;
- Coordination and scheduling with E & E's Analytical Services Center (ASC) laboratory;
- Preparation and completion of monthly reports;
- Communication of field operations with NYSDEC as well as trouble-shooting;

- Procurement of subcontractors (i.e., remediation specialist Subtask 2-2, and reproduction firms--plans and specifications Subtask 2-4);
- On-site project meetings;
- Review of monthly invoices; and
- Justification and/or dispute resolution of invoice payments.

The addition of these costs--distributed over the tasks for the project period required--will give the NYSDEC project manager a better understanding of the total project costs related to the performance of this work.

Task 2: Site Response Activities

Site response activities will be conducted in areas located in the Heat Treatment Building and Building 3, as shown in Figure 1-2. These buildings have been determined to contain PCB-contaminated material and significant quantities of friable asbestos-containing materials (Heat Treatment Building only). As previously outlined in Section 1, the site response field activities under this subtask will include:

- Physical building survey;
- Bulk asbestos sampling and analysis;
- Development of a site plan and building content report from information obtained during the physical survey;
- Quenching pit exploratory excavation, and implementation of sampling activities outlined in this work plan;
- Development of a waste removal and disposal recommendation report;
- Modification of the site health and safety plan to incorporate information from field activities regarding site contamination and scope of work modifications; and
- Preparation of design plans and specifications for waste removal and disposal.

At our initial meeting, the NYSDEC project manager stated that the friable asbestos within the Heat Treatment Building will be removed by the current owner under a separate contractual arrangement with an accredited asbestos abatement firm; therefore, E & E's work plan will not address asbestos-containing material removal and disposal. However, it has been New York

State Department of Labor's (NYSDOL's) concern that E & E will provide NYSDOL-licensed asbestos personnel who are properly trained in regulatory and personal protection equipment if the previous asbestos removal was not performed prior to the initiation of this work assignment or was not performed correctly.

If the asbestos is removed prior to proceeding with the work assignment, E & E requests that a final air clearance monitoring report from the required third party, accredited, and independent hygiene firm be submitted. After acceptance of the report, entry into the Heat Treatment Building would be permitted. The clearance report will be used to determine proper protective attire and equipment, and the certified personnel to be utilized for the project.

Subtask 2.1: Building Survey

E & E will conduct an internal and limited external site survey at Building 3 and the Heat Treatment Building to obtain existing as-built information for drafting an accurate project site map. Information collected will include, but not be limited to:

- **Inside Buildings:**
  - Basic construction and location of bearing and nonbearing walls, rooms, and building egresses;
  - Location, dimensions, and estimated contents of visible quenching pits, including any floor hazards;
  - Quantity and location of large electrical capacitors;
  - Quantity and location of potential remaining drummed wastes including old drum numbers, volumes, and label information;
  - Approximate location, construction, and dimensions of ceiling support beams and overhead constraints;
  - Locations of remaining asbestos-containing materials in the building;
  - Location of building utilities including: floor drains, indoor sewer connections, and pit drains (if possible); and
  - Location and estimates of contaminated surface areas.
- **Outside Buildings:**
  - Improvements needed to further secure the site;
  - Location and dimensions of accesses;

- Location and dimensions of alleys, roadways, and parking areas; noting any physical or other restrictions to traffic;
- Location of occupied buildings in surrounding complex; and
- Location of fire hydrants, sewer connections, electric power utilities, and permanent fences.

In addition to the building survey task, E & E will perform an asbestos inspection including collection of bulk samples for analysis for any remaining asbestos-containing materials (ACMs) in the Heat Treatment Building. This is to be performed after the bulk and copious ACM-debris removal by the current owner.

Any remaining ACMs found during the building inspection will be indicated on the site map. Bulk samples will be collected and analyzed at E & E's ASC using Polarized Light Microscopy which reports ACMs as a percentage by weight. The asbestos inspection will be limited to the interior of the Heat Treatment Building and will not address any asbestos-containing roofing materials. Ambient air sampling will not be performed since these sampling methods may contaminate occupied areas beyond the building limits.

In staffing this subtask, NYSDEC and NYSDOL have requested that all E & E personnel possess current NYSDOL asbestos Handler and/or Inspector II licenses. In addition, all E & E staff will have completed the Occupational Safety and Health Administration (OSHA) 40-hour Basic Health and Safety Training (including 8-hour annual refresher) for Hazardous Waste Site Operations. The list of certified E & E asbestos personnel and E & E (P.C. and Inc.) asbestos handling licenses are included as Exhibits A and B, respectively.

E & E estimates the building survey will be completed by a three-person survey and inspection crew during a 3-day period. It is anticipated that Level C protection will be used throughout the building survey in the event site personnel disturb asbestos dust and debris that remains.

It will be assumed 40 bulk asbestos samples will be collected during the initial inspection effort. It is presently unknown if ACM debris is located below or mixed in the fill material in the quenching pits and may be uncovered during the exploratory remedial subtask. Photographs will be taken during the initial survey as a documentation of current site status. The photographs will also be used as a means of review for development of the next subtask effort and as exhibits with future reports.

Upon completion of the inspection and surveys for Building 3 and the Heat Treatment Building, E & E will submit a letter report to NYSDEC. Contained in this report will be:

- A summary of completed field activities;
- A copy of the site map generated from field measurements and information;
- Results of asbestos analysis;
- Photographic records; and
- Recommendation and amendments to the future sampling and investigation activities outlined in this work plan.

Subtask 2.2: Proposed Sampling Activities

As a direct result of the asbestos inspection and physical survey subtask, E & E plans one trip to NYSDEC's office by two staff members to discuss the next field subtask of work as well as potential amendments to the sampling activities proposed in this work plan. The results of the surveys and review of E & E's approach to the future sampling subtasks will be discussed, including the following issues:

- Possible procurement of a remedial contractor;
- Certified asbestos personnel;
- Health and safety concerns; and
- Number of analyses and costs.

Any additional concerns that NYSDEC wishes to address prior to E & E's commencement of sampling subtasks can also be discussed at this meeting.

Upon acceptance of the proposed sampling activities, E & E will proceed with the exploratory sampling effort. Due to the possibility that NYSDOL may deem the site as asbestos-contaminated, all field staff used will still be certified for asbestos work.

E & E has prepared the following description of sampling activities to be conducted in the field based on current site information. Amendments to these activities may occur as more information regarding the site condition becomes evident. E & E has divided the sampling activities into five phases:

- Procurement of an asbestos and hazardous waste certified excavation contractor;

- Securing of all access doors and openings at both locations to restrict access; submission of three sets of keys for same to the appropriate authorities.
- Excavation of solid debris from each quenching pit in the Heat Treatment Building to facilitate sample collection;
- Collection of liquid and sediment samples from each quenching pit in the Heat Treatment Building; and
- Collection of soil/floor dust samples found in the flooring of Building 3 and inside the Building 3 quenching pit.

Procurement

Upon NYSDEC's recommendation, E & E will procure a hazardous waste and asbestos certified subcontractor to perform exploratory excavation from the quenching pits (approximately 16 pits) in the Heat Treatment Building. E & E's procedure for procurement of subcontractors involves a two-step process: E & E will first develop a scope of service for potential bidders, then E & E will request proposals from those bidders that are adequately qualified to perform the work. The discrete details of obtaining subcontract procurement typically involve the following steps:

- Identification of potential subcontractors to perform the work;
- Development of requirements for a qualifications statement/scope of work (QS/SOW) to allow screening for potential acceptable subcontractors;
- Sending out the QS/SOW to potential subcontractors generally able to perform the scope of services;
- Screening of the subcontractor QSs to develop a list of potential responsible subcontractors;
- E & E's development and review of proposal package for consistency with the prime agreement;
- Contact of short-listed subcontractors capable of performing the work;
- Discussion of field work relating to the scope of work and responding to specific questions;
- Issuance of a possible addendum to the scope of services;
- Review of final proposals and qualifications of the responding firms;
- Interfacing with NYSDEC on the selection of the subcontractors;

- Negotiation of the subcontract agreement with the lowest responsible subcontractors; and
- Submission of the subcontract agreement to NYSDEC for final review and acceptance.

Pit Excavation

Prior to excavation, all plastic tarps and wood supports presently covering the pits will be removed and contained or drummed and marked as contaminated site debris and placed in a designated area of the building for future disposal. Each pit will again be photodocumented before, during, and after excavation. The remedial subcontractor will then construct individual stockpiles as needed for each of the pits where removal is necessary in the building. For debris from pits requiring excavation, the stockpile areas will be constructed using multiple layers of polyethylene plastic sheeting. Excavation will proceed utilizing equipment selected by the subcontractor for accessibility into the building. Upon completion of exploratory excavations or daily work, all stockpiles will be securely covered with single layer polyethylene plastic to prevent further dust migration.

During the initial site inspection on May 9, 1991, approximately 75 large electrical capacitors were discovered in the Heat Treatment Building. The capacitors are approximately 6 inches wide, 18 inches long, and 24 inches high and weigh approximately 45 to 60 lbs. Of the 75 capacitors, six were labeled with PCB warning labels. Due to their apparent age, and the historical use of PCBs in electrical capacitors, E & E assumed all capacitors found in the building contain PCBs and will be disposed of. For further verification, serial numbers and manufacturer's names were documented. The remedial subcontractor will stockpile these capacitors as well as any remaining overpack drums in a secure area of the building until disposal is decided upon and arranged under Subtask 2.4.

E & E has assumed all exploratory excavations will proceed with workers initially in Level C protection. Initial air monitoring with an OVA and explosimeter will be performed during all subsurface pit activities as a result of the new OSHA regulation regarding confined space entry. The pits in both buildings technically fit the OSHA criteria of being over 5 feet in depth with limited means of egress in and out and would require E & E provide continuous on-site air monitoring during all entries. Also, an ambient air monitoring plan to assess PCB and asbestos contaminants developed along with the initial Health and Safety Plan will be implemented using high volume samples and low

volume personnel pumps. Eight-hour time-weighted samples will be collected inside and outside the building during the exploratory excavation period and analyzed for PCBs and asbestos.

Liquid Sampling

E & E personnel will subsequently collect liquid samples from the quenching pits by either lowering a ladder into the pit or by walking down the natural pit debris angle of repose. All sampling personnel entering the pits will be connected to fitted harnesses and a rope for stabilization. In the event of a fall or emergency, other team members could remove the field sampler from the pit. After each pit is sampled, the ladder used will be cleaned and decontaminated. In some cases, an extended water sampler will be used to lower the horizontal sample bottle into the liquid. The sample obtained will be transferred to a clean sample bottle with the original container disposed of as site-generated debris. New sample bottles and containers will be used for liquids in each pit. If liquids in the pit are too shallow to submerge sample containers, the larger containers may be filled by dipping aliquots with a small container. Solid materials may be scraped together to obtain an adequate sample.

E & E will obtain three (3) samples of the discrete liquids from each pit found in the Heat Treatment Building and Building 3. Two of each dissimilar samples will be shipped back to E & E's ASC. After one series of analyses and sample compositing are performed, typical uniform waste profiles will be completed and included in the recommendation for disposal to NYSDEC. Also, during the initial on-site samplings, E & E will set up an area on site to perform hazard categorization analysis (HazCat) on the third sample from each pit. This procedure is comprised of a series of simple field chemistry and physical tests designed to identify the hazardous characteristics of an unknown chemical, mixture, or waste. The series of quantitative test tube tests permits the unknown materials to be classified into one of nine basic categories:

1. Acid (liquid/solid)
2. Acid oxidizer (liquid/solid)
3. Base (liquid/solid)
4. Base oxidizer (liquid/solid)
5. Flammable (liquid/solid)
6. Chlorinated hydrocarbon

7. Cyanide (liquid/solid)
8. Sulfide (liquid/solid)
9. Nonhazardous (liquid/solid)

The third sample, which can be used for QA/QC purposes for disposal acceptance, will be forwarded to the lowest bidder for disposal.

By thus classifying the materials in this manner further information can be developed for later use in disposal such as:

- Assignment of hazardous waste characteristics;
- Assignment of DOT hazard class;
- Rapid assessment of the material present at the site and evaluation of potential hazards to the populace;
- Selection of mitigative measures such as compositing or segregation; and
- Reduction in analytical costs by allowing samples to be composited.

E & E's HazCat procedures are described in Exhibit C.

Based upon information obtained from the field HazCat results, the remaining samples will be further analyzed at E & E's ASC. The selection of the parameters for analysis are based on information required by disposal firms on their master profile forms for approval for disposal, treatment, or stabilization. The analytical parameters used are typical of Rollins Environmental, Inc. waste profile. Table 2-1 lists these analytical profile parameters along with E & E's cost schedule per waste stream. Exhibit D shows copies of Rollins Environmental, Inc. Uniform Waste Data Sheets.

For purposes of the sampling effort and to be conservative we shall assume that none of the samples from the 16 pits will be composited at this time. The HazCat and laboratory analytical work may allow the materials to be composited for possible savings to the work assignment.

Soil Sampling

Soil in the quenching pits of the Heat Treatment Building and Building 3 will also be obtained for analysis. Three samples from each pit and floor location (to be determined after the site survey) will be collected. As performed with the liquid samples, the first two samples will be analyzed at E & E's ASC

and the third sample will be used for on-site HazCat analysis. The proposed sampling plan will attempt to minimize sampling locations while providing sufficient detail regarding floor contamination.

Samples from Building 3 will be collected with steel trowels and/or scrapers and will be placed in 4-ounce bottles and sent to E & E's ASC. The trowels/scrapers will be cleaned according to standard decontamination procedures, outlined below, after each sample is collected. Because all samples are to be used for only future disposal approval purposes or to complete waste profile forms, no preservation, holding-time protocols, or Quality Assurance Protocol Procedures (QAPP) will be required.

Decontamination. E & E chose sampling methods and equipment to minimize decontamination requirements and to prevent cross-contamination. Decontamination of sampling and heavy equipment will be performed between discrete sampling locations. Disposable equipment used to collect samples and decontamination waters used between sample locations will not require decontamination but will be collected as on-site generated wastes and will become an added waste stream once remediation occurs.

The sampling equipment will be cleaned prior to each use by the following procedures:

- Initially cleaned of all foreign matter;
- Scrubbed with brushes in trisodium phosphate solution;
- Rinsed with deionized water;
- Rinsed with pesticide grade methanol;
- Triple rinsed with deionized water; and
- Allowed to air dry.

Heavy equipment will be cleaned with high pressure steam to remove potentially contaminated liquid and sediment. Rinsate will be collected as on-site generated waste. The chain of custody; documentation; and sample handling, packaging, and shipping will follow the procedures listed in Exhibit E.

Quantification of Materials

During the field operations all potential materials to be remediated will be quantified so as to estimate unit prices for transportation and disposal of those

materials. The quantities will also help in estimating the schedule of the remediation effort for cleanup.

Subtask 2.3: Recommended Disposal Procedures/Disposal Options

Based on analytical results, visual inspections, and transportation and disposal experience, E & E will prepare a report of recommended interim remedial measures required at the Schatz Plant site that are consistent with the goals of the site response activities. The project chemist will tabulate all analytical soil and liquid sampling results; evaluate any problems noted by E & E's ASC, resolve discrepancies with the laboratory, and ensure appropriate qualifiers are attached to the tabulated results. The findings will be summarized in a recommendation report to NYSDEC and the analytical results will be submitted as an appendix. The recommended remedial measures submitted to NYSDEC by E & E will include:

- Procedures for the removal and disposal of liquid or solids excavated and remaining in the quenching pits and electrical capacitor in the Heat Treatment Building, and the dirt cover on the floor and oil in the one pit of Building 3;
- Description of cleaning techniques to remove contaminants from pit surfaces and flooring; and
- Method of securing access to the cleaned pits and flooring.

In addition, order of magnitude costs for remedial construction, oversight monitoring transportation, and disposal of wastes will be developed. A typical construction schedule will also be included.

E & E has planned a trip for two staff members to meet with NYSDEC to discuss the recommendation for finalization to proceed with Subtask 2.4.

The issues regarding an asbestos-contaminated building (Heat Treatment Building only) have not been anticipated to be included in the report unless it is found under previous subtasks.

Subtask 2.4: Development of Bidding Documents for Removal, Disposal, Cleaning, and Closure

Based on the recommended disposal options, E & E will proceed with the removal, disposal, cleaning, and closure methods for Building 3 and the Heat Treatment Building.

At this stage, E & E estimates that the construction work for the remedial contractor transportation and disposal will exceed $100,000. Pursuant to our past discussions with Mr. P.D. Smith, projects that are subcontracted to one vendor at more than $100,000 worth of cleanup work will need to be publicly bid by NYSDEC and cannot be handled as subcontracts to a standby contractor. The remedial design can be performed under the SSSC contract and E & E would be prepared to perform the work pursuant to Work Element IV, Task 1 of the prime contract.

As a part of task 2.4, E & E will assist the agency in the development of public bidding documents for the remediation, disposal of wastes, cleaning and securing of the pits at the two designated buildings at the Schatz Plant site.

E & E will perform the design, performance specifications (CSI format) and drawings (estimated four design drawings) for the intended work scope presented in the previous subtask report. A pre-bid construction estimate will be developed as well as a list of qualified contractors who are capable of performing the work. The construction estimate will be used to evaluate the bids received at the bid opening.

Once the specifications and drawings are approved by NYSDEC, E & E will support one bid walk and a maximum of three addenda in connection with the project. E & E will also attend the bid opening and review the cost, submittals, and recommend a low responsive bidder to NYSDEC.

Presently, it is difficult to estimate future construction oversight and monitoring activities required by the contract. E & E would develop these costs for work assignment modification once the final design scope and construction documents are completed. These additional costs would become an additional modification of the original work authorization.

Task 3: Records

E & E will maintain complete and detailed office and field records associated with the survey, sampling, and disposal recommendations up to and including design and bidding. These records and reports include, but are not limited to, the following:

- Daily work completed, visitors on site, and important conversations;
- Remediation contractor's daily use of personnel, material, and equipment;

- Records documenting E & E's deviation from work as specified in the work authorization (if any), and any instructions issued regarding deviations;
- Unusual circumstances (weather conditions, labor disputes, environmental health and safety hazards encountered, etc.);
- Updating and accuracy checks of security and health and safety log, drum log, air monitoring log, and sampling log;
- E & E progress record in reference to the work schedule;
- General files including correspondence and other documentation related to the project;
- Project meeting minutes;
- Construction photographs;
- Monthly narrative status reports (to be submitted to the NYSDEC project manager); and
- Telephone conversations.

Task 4: Health and Safety Plan

E & E has prepared an Initial Health and Safety Plan for the preliminary surveying and sampling site response activities; this plan is presented in Exhibit F. A comprehensive Health and Safety Plan for all site activities cannot be developed at this time due to the lack of information regarding the subsurface, asbestos, physical, and chemical hazards on site until the physical survey is complete. E & E may develop an upgraded Health and Safety Plan prior to the initiation of sampling activities that will incorporate information obtained from the building survey and sampling activities, if warranted. E & E and the procured remedial subcontractor will adhere to the requirements covered in the health and safety plans. All personnel (E & E, NYSDEC, and subcontractors) who will be involved in on-site work, and, therefore, potentially could be exposed to hazardous substances, will have completed the 40-hour OSHA Health and Safety training for work on hazardous waste sites and actively participate in a medical surveillance program in accordance with OSHA requirement 1910.120.

All E & E personnel, subcontractors, installers, transporters, and NYSDEC staff will be briefed on the specifics of the site Health and Safety Plan upon arrival and prior to beginning of any subtask or task of work.

Task 5: Project Closeout Report

An initial closeout report of activities performed will be generated upon completion of initial Subtasks 2.1, 2,2, and 2.3. The report is estimated to include:

- All site log information;
- Waste disposal locations;
- Remediation work performed by the initial subcontractor;
- Project costs;
- Analyses results; and
- Photographic logs.

A final closeout remediation report after the removal and disposal construction activities have occurred cannot be outlined at this early stage of project development. The contract document as well as the modified work scope after bids may drastically change E & E's effort; therefore, it is difficult to develop closeout requirements at this time. No costs will be presented. However, general construction closeout documents may include:

- Project costs;
- Closeout clearance analyses;
- Meeting minutes;
- Volumes of wastes removed;
- Manifests and bills of lading;
- Photographic logs; and
- Project logs.

Table 2-1

TYPICAL WASTE PROFILE ANALYTICAL PARAMETERS* SCHATZ PLANT SITE

Parameters	Estimated E & E SSSC Analytical Costs**/Waste Stream	
	Liquids	Solids
Hexavalent Chromium (liquids only)[1]	35	–
Total Metals (Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Hg, Mo, Ni, K, Se, Si, Ag, Na, Tl, V, Zn) Table 1-B	302	302
pH	0	0
Ignitability - Table 2	34	34
TOC - Table 1	22	22
% Sulfur, BTU % Halogens - Table 3	50	50
Specific gravity/density - Table 3	11	11
% Solids/water content analysis - Table 3	17	17
% Ash/water content analysis - Table 3	17	17
Reactivity - Table 2	39	39
Total pesticides/PCBs (sample without extraction) - Table 2	177	177
Total volatile organics - Method 8010 - Table 2	118	118
Subtotal Costs	$ 822	$ 787
TCLP analysis consisting of:		
• Zero head space extraction[1]	110	110
• TCLP extraction[1]	100	100
• Volatile organics - Method 8240 - Table 2	213	213
• BNA's - extractable organics - Table 2	413	413
• TCLP pesticides/PCBs (analysis on extraction) Table 2	177	177
• Herbicides - Table 2	235	235

Table 2-1

TYPICAL WASTE PROFILE ANALYTICAL PARAMETERS* SCHATZ PLANT SITE

Parameters	Estimated E & E SSSC Analytical Costs**/Waste Stream	
	Liquids	Solids
• TCLP metals (As, Ba, Cd, Cr, Pb, Hg, Se, and Ag) Table 1B	115	115
Subtotal costs	$1,363	$1,363
Grand Total	$2,185	$2,150

* Based on information required in the waste profile from Rollins Environmental Services, Inc.

** Costs for developing waste profile information may be less depending on other available information or HazCat results obtained in the field.

' No standby price negotiated but two other labs were canvassed for competitive pricing. E & E pricing presented.

Parameter	RECRA- Buffalo, New York	Advanced- Niagara Falls, New York
Hexavalent chromium	$30 per C. Miller	$21 per J. McDougall
Zero head space extraction	$120 per C. Miller	$125 per J. McDougall
TCLP extraction	$100 per C. Miller	$100 per J. McDougall

2A. SCOPE OF WORK FOR TASK 6

Task 6 - The procurement and oversight of Subcontractors to collect, package, transport, and dispose of PCB capacitors at the Schatz Plant.

The addition of new task 6 provides for the development of a subcontracting document for the procurement of a subcontractor to collect, package, transport, and dispose of PCB capacitors at the Heat Treatment Building at the Schatz Plant site.

The document will be developed for procurement in accordance with NYSDEC letter of September 20, 1990.

After review and acceptance of the document by NYSDEC, vendors capable of performing the work will be called and bid walk scheduled.

Upon receipt of bids, a summary will be submitted for compliance checks and a low responsible bidder will be selected.

E & E will submit a subcontract agreement to the acceptable vendor, we begin scheduling the work upon receipt of the signed agreement. A waste profile will be generated for approval and signature by the NYSDEC project officer. Upon approval, the collection, packaging, transport, and disposal of wastes will be scheduled.

E & E will provide oversight of the field activities. It is expected to take approximately one day to collect and package the capacitors and the next day for transport and disposal.

The subcontractor will supply the manifests and support paper work for transportation and disposal. E & E will review that paperwork for consistency of the regulation and recommend signature by the project officer.

Work will be completed upon receipt of the certificate of incineration from the disposal facility.

3. PROJECT SCHEDULE

The following presents the proposed project schedule for the work at the Schatz Plant site as outlined under Work Authorization Number D002625-9.1. The schedule is dependent on the date of approval for notice to proceed with the project.

PROJECT SCHEDULE SCHATZ PLANT	
Project Subtask/Task	**Schedule (weeks from NTP)**
Notice to Proceed (NTP)	0 weeks
Task 2 Site Response Activities	
2.1 Building Survey	2 weeks
- Field Summary Report	5 weeks
2.2 Sampling Plan and Field Exploration and Sampling	10 weeks
- Analysis of Sampling/Data Evaluation	16 weeks
2.3 Recommendations for Remediation/Disposal options	22 weeks
2.4 Design	
- Plans and specs	28 weeks
- Public procurement	32 weeks
- Contract award	38 weeks
Task 3 Project Records	Ongoing
Task 4 Health and Safety Plans	--
Task 5 Project Closeout Report	45 weeks
Task 6 Collection, Packaging, Transport, and Disposal of PCB Capacitors	9 weeks[a]

[a] From NYSDEC Order to Proceed.

4. SUBCONTRACTING REQUIREMENTS-MBE/WBE UTILIZATION PLAN

Objective

E & E fully subscribes to the New York State policy that Minority Business Enterprise (MBE) concerns and Women-Owned Business Enterprise (WBE) concerns be afforded the maximum opportunity to participate in contracts let by New York state agencies. As a prime contractor to NYSDEC, E & E hereby commits itself to full compliance with Executive Law Article 15-A and pertinent federal regulations to further MBE/WBE goals and to achieve significant participation by MBE/WBE firms to a level commensurate with their capabilities and responsibilities.

Contract Goals

E & E fully expects to commit to the following established percentage goals. Actual dollar amounts will be contingent upon the total dollar value of the awarded contract.

- Total estimated project amount: $223,005.00
  Total percent of MBE/WBE work (20%): $ 44,601.00
  - Total percent of MBE work (15%): $ 33,450.75
  - Total percent of WBE work (5%): $ 11,150.25

E & E maintains an up-to-date Affirmative Action Plan and MBE/WBE hiring plan to insure equal opportunity for all job applicants, employees, and subcontractors. For the New York State Superfund Standby Contract, E & E will utilize the following procedure and resources to meet the established MBE/WBE goals:

- The E & E project manager will consult with the E & E MBE/WBE subcontracting coordinator, Kevin Donovan, to identify and evaluate work that requires subcontractor services. The subcontracting opportunities then will be divided into discrete tasks that may each be completed by MBE or WBE firms.

- Following identification of the discrete tasks, the MBE/WBE subcontracting coordinator will review the New York State Directory of Certified Minority and Women-Owned Business Enterprises and E & E's MBE/WBE database. The E & E database has been developed to facilitate the acquisition of qualified MBE and WBE firms for work on various state and federal government contracts. This database consists of the following:

  - MBE and WBE firms listed in the New York State Department of Commerce Directory of Minority and Woman-Owned Business, entered and cross-referenced by nine categories of services most frequently utilized by E & E. The categories are as follows:

    - Environmental Consulting
    - Drilling/Geophysics
    - Community Relations
    - Supplier/Equipment
    - General Contractors
    - Engineering
    - Laboratory
    - Construction Management
    - Miscellaneous Services

    This listing and cross-referencing facilitates E & E's rapid identification of potentially qualified MBE/WBE firms for use in various projects.

  - Firms identified in the database as performing environmental consulting, engineering/geophysical, or drilling services were sent questionnaires that requested the firm to provide more detailed information regarding its background. Any firm responding to this first-tier questionnaire was then requested to submit additional information in a supplemental questionnaire that provided E & E with adequate information in a standardized format enabling the comparison and selection of potential firms using methodical and consistent evaluation criteria.

- Following the identification of qualified, potential MBE/WBE contractors, the project manager will solicit the firms for bids as delineated in Section 4 of this plan, Criteria for Selection.

Subcontracted Services

Typically, E & E has found that opportunities exist for MBEs/WBEs in the following work categories:

- Site security fencing;
- Travel services;
- Protective services;
- Drilling and monitoring well installation;
- Soil borings;
- Physical soil tests;
- Site and typographical surveys;
- Title searches;
- Engineering services;
- Geophysical surveys;
- Photographic services;
- Heavy equipment;
- Laboratory data validation; and
- Photocopying/report reproduction services.

A minimal number of subcontractors will be required for purposes of the subcontract requirements for the Schatz Plant Project.

E & E anticipates subcontracting only the initial on-site remediation for exploratory excavations for the initial subtask work assignments for the Schatz Plant site. Reproduction services may be utilized during the design subtask of work.

All sampling will be performed by E & E personnel and analytical laboratory services will be performed by E & E's ASC.

Costs for subcontractors are not included in the budget. E & E will submit a work plan amendment to include these subcontract costs after the subcontractor bids have been recommended by E & E and approved by NYSDEC.

No further subcontractors are expected to be procured. E & E has previously recommended that if the remediation and disposal is over the $100,000 limit, public bidding documents will be prepared and prime remediation contractors be procured by NYSDEC for the duration of the project.

Criteria for Selection

E & E currently is developing, in conjunction with NYSDEC, a Term Standby Subcontracting Program for both professional subconsulting services and for subcontractor services for use in the performance of this contract. Firms participating in this program will be selected on the basis of professional qualifications and the ability to perform project tasks in a manner that is both cost effective and consistent with the requirements of this contract.

The criteria described below are used to obtain and evaluate bids for other nonprofessional services. Following the identification of discrete tasks and potential MBE/WBE firms by the project manager and MBE/WBE subcontracting coordinator, bid solicitations will be requested from qualified firms and, to the extent possible, one or more MBE/WBE firms (if needed) will be requested to bid on each task. If the estimates exceed $10,000, at least five bids will be obtained.

In the event that additional professional services will be required, these will be subcontracted to MBE/WBE firms pursuant to applicable New York State regulations.

5. STAFFING PLAN

The following staff are proposed, subject to availability, for the work assignment:

- **Project Director** - Jack Wilcox, P.E., Vice President
- **Project Manager** - Michael Steffan
- **Task 2: Site Response Activities**
- **Subtask 2.1: Building Inspection and Physical Survey**
  - Field Team Leader - Michael Steffan
  - Field Team Members - Jim Vaeth, Deborah Race, Kyle Kilga
  - Support Members:

    Word Processors
    Editors
    Graphic Artists
    CAD Manager
    CAD Draftpersons
- **Subtask 2.2: Sampling Plan**
  - Field Team Leader - Michael Steffan
  - Field Team Members - Greg Jones, Kyle Kilga, Jim Vaeth, Michael Aucoin
  - Support Members:

    Chemists
    Chemical Engineers
    Subcontract Administrator
    Sampling Planners

- **Subtask 2.3: Recommended Disposal Procedures/Disposal Options**

  - Team Leader - Michael Steffan

  - Team Members - Kevin Smith, Scott McCone

  - Support Members:

    Word Processors
    Editors
    Graphic Artists
    CAD Draftpersons

- **Subtask 2.4: Development of Bidding Documents for Removal, Disposal, Cleaning, and Closure**

  - Team Leader - Michael Steffan

  - Team Members:

    Scott McCone
    Roger Culleton
    Kevin Smith

  - Support Members:

    Word Processors
    Editors
    Graphic Artists
    CAD Manager
    CAD Draftpersons

- **Task 3: Records**

  - Team Leaders - Michael Steffan, Kevin Smith

  - Team Members:

    Word Processors
    Editors
    Graphic Artists
    CAD Manager
    CAD Draftpersons

- **Task 4: Health and Safety Plan**

  - Team Leaders - Tom Siener, Steve Sherman

  - Team Members:

    Word Processors
    Hygienist, Health and Safety

- **Task 5: Project Closeout Report**
  - Team Leader - Michael Steffan
  - Team Members:

    Support Engineers
    Word Processors
    Editors

- **Task 6: Collection, Packaging, Transport, and Disposal of PCB Capacitors**
  - Team Leader - M. Steffan
  - Field Team Leader - B. Koerner
  - Support Members
    Word Processors
    Editors

6. BUDGET

Schedules 2.11a through 2.11d, 2.11f, 2.11g, and 2.11h contain a breakdown of the estimated costs associated with completion of this work assignment. E & E has prepared the tables in accordance with the requirements of the Standby Contract.

Due to limited knowledge of the material on site and the conditions within the pits, E & E has used the following technical and analytical assumptions to prepare the budget.

Technical Assumptions

- All on-site sampling and off-site analysis will be performed by E & E;
- Procurement time will be needed to acquire a subcontractor for initial exploratory work in Subtask 2.2;
- Public bidding documents will be prepared under Subtask 2.4 pursuant to Work Element IV - Remedial Design Task 1 with 40 sets of specifications along with the development of four project drawings;
- The asbestos issue will be reevaluated under Subtask 2.3 for cost modification and future design;
- Sixteen waste stream samples will be analyzed by E & E's ASC after subtask sampling. The estimated cost at this time is approximately $2,185 per sample;
- The initial site survey inspection will be performed by NYSDOL asbestos-certified personnel employed by E & E; and
- Subtask 2.4 will be re-evaluated after disposal recommendations are submitted to NYSDEC.

Section 6

Schedule 2.11(a) Summary of Work Assignment Price

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

1. Direct Salary Costs (Schedule 2.11(b))		$51,628
2. Indirect Costs (Schedule 2.11(b))		87,628
3. Direct Non-Salary Costs (Schedules and 2.11(c)(d))		63,622

Subcontractor Costs

Cost-Plus-Fixed-Fee Subcontracts (Schedule 2.11(e))

	Name of Subcontractor	Services To Be Performed	Subcontract Price
A.			
B.			
C.			
4.		Total Cost-Plus-Fixed-Fee Subcontracts	$0

Unit Price Subcontracts (Schedule 2.11(f))

	Name of Subcontractor	Services To Be Performed	Subcontract Price
A.	TBD	Remediation/Exploration	*
B.	TBD	Reproduction	*
C.	Clean Harbors	Collection, Packaging, Transport, & PCB Capacitors	10,252
5.		Total Unit Price Subcontracts	$10,252

6. Total Subcontract Costs (lines 4+5)	10,252
7. Fixed Fee	10,275
8. Total Work Assignment Price (lines 1+2+3+6+7)	$223,005

NOTE: Rates are in accordance with Section 2.10 of the State Superfund Standby Contract #D002625
* Subcontractor procurement will be conducted in accordance with the 9/20/90 letter from Mr. F. David Smith.

Section 6
Schedule 2.11(b) Direct Labor Hours Budgeted

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

DIRECT LABOR HOURS BUDGETED - BY NYSPE GRADE

TASK	DESCRIPTION	IX $39.86	VIII $30.44	VII $25.28	VI $23.68	V $18.18	IV $15.18	III $13.38	II $11.88	I $9.54	TOTAL Hours	Labor Cost	Overhead 170.0%	Sub-total	Fee 7.4%	TOTAL Labor, O.H., Fee
1	Work Plan	5	0	28	0	14	40	78	0	50	215	$3,290	$5,592	$8,882	$657	$9,539
2.1	Site Survey	8	0	72	0	2	42	96	80	40	340	5,429	9,230	14,659	1,085	15,744
2.2	Sampling	4	0	88	6	24	112	80	83	26	423	6,967	11,844	18,811	1,392	20,203
2.3	Develop Disposal Recommendations	8	0	56	0	4	42	112	63	70	355	5,360	9,111	14,471	1,071	15,542
2.4	Removal and Disposal	24	0	232	60	0	128	216	307	240	1,207	19,012	32,321	51,333	3,799	55,132
3	Records	2	0	40	0	0	24	100	0	40	206	3,175	5,397	8,572	634	9,206
4	Health and Safety Plan	2	4	8	0	8	6	8	4	8	48	871	1,481	2,352	174	2,526
5	Project Closeout and Report	8	0	40	0	2	82	80	61	89	362	5,255	8,934	14,189	1,050	15,239
	Est. Direct Labor Cost	61	4	564	66	54	476	770	598	563	3,156	$49,359	$83,911	$133,270	$9,862	$143,232

Section 6
Schedule 2.11(b) Direct Labor Hours Budgeted

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schotz Site #3-14-074

DIRECT LABOR HOURS BUDGETED - BY NYSPE GRADE

TASK	DESCRIPTION	IX $42.25	VIII $32.27	VII $26.80	VI $25.10	V $19.27	IV $16.09	III $14.18	II $12.60	I $10.11	TOTAL HOURS	Labor Cost	Overhead 170.0%	Subtotal	Fee 7.4%	Total Labor O.H., Fee
6	Removal Oversight	0	1	52	0	0	0	24	16	10	103	$2,069	$3,517	$5,586	$413	$5,999
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
		0	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
	Est. Direct Labor Cost	0	1	52	0	0	0	24	16	10	103	$2,069	$3,517	$5,586	$413	$5,999

Section 6
Schedule 2.11(c) Direct Non-Salary Costs

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

Item	Maximum Reimbursement Rate	Unit	Estimated No. of Units	Total Estimated Cost
IN-HOUSE COSTS*				
Communication	Est. at $5/Call	Calls	164	$820
Reproduction	$0.07	Page	27,314	1,912
Postage				235
Protective Clothing: Level D	$15	Days	2	30
Level C	$50	Days	29	1,450
Blue Print Copies	$1.50	Print	30	45
Miscellaneous Field Supplies				475
Shipping (Lab Samples/Equipment)				1,950
Purchased Items - Film Development, Sampling Supplies, etc.				1,275
E&E Analytical Services - Asbestos				1,400
E&E Analytical Services - Hazardous Waste				34,960
CAD Computer Usage	$15	Hours	225	3,375
MISCELLANEOUS			Subtotal	$47,927
Travel:				
Airfare: Bflo/Albany	$420	RT	22	$9,240
Airfare: Bflo/Albany	$450	RT	2	$900
Per Diem	$26	Days	39	1,014
Lodging	$61	Nights	3	183
Lodging	$68	Nights	34	2,312
Vehicle Rental				
Auto	$50	Days	11	550
Mini Van	$70	Days	8	560
Mileage	$0.225	Miles	90	20
Tolls				8
Parking	$8	Days	32	256
Parking	$7	Days	3	21
			Subtotal	$15,064

NOTES: *Costs are estimated, actual costs will be billed.

TOTAL DIRECT NON-SALARY $62,991

SCHEDULE 2.11 (C)
CONTINUATION
SCHATZ PLANT
W.A. NUMBER D002625-9

SUMMARY OF SAMPLING AND ANALYTICAL REQUIREMENTS

Task/Parameter	Number of Field Samples	Number of Field Duplicates	Number of Field Blanks	Number of Rinsates	Laboratory QA/QC	Total Samples	Unit Price	Total (In Dollars)
Task 2.1								
On site review and survey								
Asbestos Bulk Heat Treating Building only	38	2	--	--	--	40	35*	1,400
Task 2.3								
On site sampling for hazardous waste liquids in heat treating building only	16	--	--	--	--	16	2,185**	34,960
							TOTAL	36,360

* Our contract does not currently include rates for these analyses
** Table 2-1 in the work plan details the development of the per sample costs

Section 6
Schedule 2.11(d) Equipment Usage Schedule (Page 1)

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

Item	Maximum Reimbursement Rate	Time Period	Estimated No. of Periods	Estimated No. of Units	Total Estimated Cost
OVA	$67	Days	8	1	$536
HNu	61	Days			0
O2/Explosimeter	16	Days	5	1	80
Monitox	21	Days			0
Drager Pump	6	Days			0
Area Pump	13	Days			0
Personal Pump (DuPont)	13	Days			0
Charger (10)	13	Days			0
Personal Pump (MSA)	13	Days			0
Mini-Ram	38	Days			0
Personal Dust Sampler	41	Days			0
Buc. Calibrator	12	Days			0
Thermo-Anemometer	43	Days			0
pH Meter	8	Days			0
pH Conductivity Meter	16	Days			0
SCBA	45	Days			0
Compressor Tank	14	Days			0
PAPR	14	Days			0
Robert Shaw	8	Days			0
ELSA	9	Days			0
Cascade	34	Days			0
Metal Detector	18	Days			0
		Subtotal Page 1			$616

Section 6
Schedule 2.11(d) Equipment Usage Schedule (Continued)

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

Item	Maximum Reimbursement Rate	Time Period	Estimated No. of Periods	Estimated No. of Units	Tota Estimated
Subtotal From Page 1					$616
EM-31	$74	Days			0
Magnetometer	42	Days			0
Total Station w/Tri.	146	Days			0
Level w/Tri. & Rod	20	Days			0
35 mm Camera	17	Days			0
Radiation Monitor	4	Days			0
Mini-Rad	4	Days			0
Radiation Kit (Bicron)	56	Days			0
Radio (3)	18	Days			0
Radio (2)	18	Days			0
Wind Speed Indicator	2	Days			0
Mini Met.	26	Days			0
Remote Drum	45	Days			0
2" Submersible Pump (SP-81E)	63	Days			0
4" Submersible Pump	23	Days			0
2" Submersible Pump (SP-84)	70	Days			0
ISCO Sampler	44	Days			0
Water Level Indicator	9	Days			0
Data Logger 4 Channel	310	Days			0
Data Logger 8 Channel	620	Days			0
Barrel Filter	7	Days			0
Sediment Sampler (186-P10)	9	Days			0
Sediment Sampler (2424015)	9	Days			0
Sediment Sampler (186-P10)	8	Days			0
Generator Opener	41	Days			0
Survey Tape	5	Days	3	1	15
			Total Equipment Usage		$631

SCHEDULE 2.11(F)
UNIT PRICE SUBCONTRACTORS
SCHATZ PLANT SITE NO. 3-14-074
WORK ASSIGNMENT NUMBER D002625-9.1
SUMMARY TASK 6
SUMMARY OF COSTS

Name of Subcontractor:	Services to Be Performed:
Clean Harbors Inc. 32 Bask Road Glenmont, NY 12077 Attn: Steve Strickman Phone: 518/436-9118	Collection, packaging, transport, and disposal of PCB capacitors

Year	Item	Description	Maximum Reimbursement Rate	Number of Units	Total Estimated Cost (in dollars)
1	1	Mobilization and collection of large PCB capacitor	$1,100/LS	Lump Sum (LS)	1,100.00
	2	Containerizatio n, labeling and marking large PCB capacitors for disposal	300.00/LS	LS	300.00
	3	Transportation of containerized large PCB capacitor	500.00/LS	LS	500.00
	4	Treatment and disposal of PCB capacitors	$1.74/lbs.	4,800 lbs.	8,352.00
Subcontractor Price (in dollars)					10,252.60

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

Page ____ of ____
Date Prepared ____
Billing Period ____
Invoice No. ____

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

SUMMARY SCHEDULE

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$51,428	
2) Indirect Costs (170%)							87,428	
3) Subtotal Salary & Indirect Costs							138,856	
4) Travel							15,064	
5) Other Non-Salary Costs							48,558	
6) Subtotal Direct Non-Salary Costs							63,622	
7) Subcontractors							10,252	
8) Total Work Assignment Cost							212,730	
9) Fixed Fee							10,275	
10) Total Work Assignment Price							$223,005	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 1 Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$3,290	
2) Indirect Costs (170%)							5,593	
3) Subtotal Salary & Indirect Costs							8,883	
4) Travel							1,078	
5) Other Non-Salary Costs							628	
6) Subtotal Direct Non-Salary Costs							1,706	
7) Subcontractors							0	
8) Total Work Assignment Cost							10,589	
9) Fixed Fee							657	
10) Total Work Assignment Price							$11,246	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 2.1

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$5,429	
2) Indirect Costs (170%)							9,229	
3) Subtotal Salary & Indirect Costs							14,658	
4) Travel							3,532	
5) Other Non-Salary Costs							3,719	
6) Subtotal Direct Non-Salary Costs							7,251	
7) Subcontractors							0	
8) Total Work Assignment Cost							21,909	
9) Fixed Fee							1,085	
10) Total Work Assignment Price							$22,994	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 2.2	A	B	C	D	E	F	G	H
Expenditure Category	Costs Claimed This Period	Paid To Date	Total Disallowed To Date	Total Costs Incurred To Date (A+B+C)	Estimated Costs To Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1) Direct Salary Costs							$6,967	
2) Indirect Costs (170%)							11,844	
3) Subtotal Salary & Indirect Costs							18,811	
4) Travel							3,980	
5) Other Non-Salary Costs							38,136	
6) Subtotal Direct Non-Salary Costs							42,116	
7) Subcontractors							0	
8) Total Work Assignment Cost							60,927	
9) Fixed Fee							1,392	
10) Total Work Assignment Price							$62,319	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

Page ____ of ____
Date Prepared ____
Billing Period ____
Invoice No. ____

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 2.3 Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$5,360	
2) Indirect Costs (170%)							9,112	
3) Subtotal Salary & Indirect Costs							14,472	
4) Travel							958	
5) Other Non-Salary Costs							517	
6) Subtotal Direct Non-Salary Costs							1,475	
7) Subcontractors							0	
8) Total Work Assignment Cost							15,947	
9) Fixed Fee							1,071	
10) Total Work Assignment Price							$17,018	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

Page ____ of _____
Date Prepared _____
Billing Period _____
Invoice No. _____

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 2.4

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$19,012	
2) Indirect Costs (170%)							32,320	
3) Subtotal Salary & Indirect Costs							51,332	
4) Travel							4,156	
5) Other Non-Salary Costs							4,365	
6) Subtotal Direct Non-Salary Costs							8,521	
7) Subcontractors							0	
8) Total Work Assignment Cost							$9,853	
9) Fixed Fee							3,799	
10) Total Work Assignment Price							$63,652	

Section 6
Schedule 2.12(g) Monthly Cost Control Report/ Summary of Fiscal Information

Page ____ of ____
Date Prepared ____
Billing Period ____
Invoice No. ____

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 3 Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$3,175	
2) Indirect Costs (170%)							5,398	
3) Subtotal Salary & Indirect Costs							8,573	
4) Travel							0	
5) Other Non-Salary Costs							234	
6) Subtotal Direct Non-Salary Costs							234	
7) Subcontractors							0	
8) Total Work Assignment Cost							8,807	
9) Fixed Fee							634	
10) Total Work Assignment Price							$9,441	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 4	A	B	C	D	E	F	G	H
Expenditure Category	Costs Claimed This Period	Paid To Date	Total Disallowed To Date	Total Costs Incurred To Date (A+B+C)	Estimated Costs To Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1) Direct Salary Costs							$871	
2) Indirect Costs (170%)							1,481	
3) Subtotal Salary & Indirect Costs							2,352	
4) Travel							0	
5) Other Non-Salary Costs							125	
6) Subtotal Direct Non-Salary Costs							125	
7) Subcontractors							0	
8) Total Work Assignment Cost							2,477	
9) Fixed Fee							174	
10) Total Work Assignment Price							$2,651	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

Page ____ of ____
Date Prepared ____
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Invoice No. ____

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-16-074
TASK 5

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disallowed To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+C)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$5,255	
2) Indirect Costs (170%)							8,934	
3) Subtotal Salary & Indirect Costs							14,189	
4) Travel							0	
5) Other Non-Salary Costs							655	
6) Subtotal Direct Non-Salary Costs							655	
7) Subcontractors							0	
8) Total Work Assignment Cost							14,844	
9) Fixed Fee							1,050	
10) Total Work Assignment Price							$15,894	

Section 6
Schedule 2.11(g) Monthly Cost Control Report/ Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

TASK 6

Expenditure Category	A Costs Claimed This Period	B Paid To Date	C Total Disalloved To Date	D Total Costs Incurred To Date (A+B+C)	E Estimated Costs To Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1) Direct Salary Costs							$2,069	
2) Indirect Costs (170%)							3,517	
3) Subtotal Salary & Indirect Costs							5,586	
4) Travel							1,360	
5) Other Non-Salary Costs							175	
6) Subtotal Direct Non-Salary Costs							1,535	
7) Subcontractors							10,252	
8) Total Work Assignment Cost							17,373	
9) Fixed Fee							413	
10) Total Work Assignment Price							$17,786	

Section 6
Schedule 2.11(h) Summary of Labor Hours

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

Number of Direct Labor Hours Expended to Date/Estimated Number of Direct Labor Hours to Completion

TASK	IX $39.86 EXP./EST.		VIII $30.44 EXP./EST.		VII $25.28 EXP./EST.		VI $23.68 EXP./EST.		V $18.18 EXP./EST.		IV $15.18 EXP./EST.		III $13.38 EXP./EST.		II $11.88 EXP./EST.		I $9.54 EXP./EST.		TOTAL HOURS
1	0	5	0	0	0	28	0	0	0	14	0	40	0	78	0	0	0	50	215
2.1	0	8	0	0	0	72	0	0	0	7	0	42	0	96	0	80	0	40	340
2.2	0	4	0	0	0	88	0	6	0	24	0	112	0	80	0	83	0	26	423
2.3	0	8	0	0	0	56	0	0	0	4	0	42	0	112	0	63	0	70	355
2.4	0	24	0	0	0	232	0	60	0	0	0	128	0	216	0	307	0	240	1,207
3	0	2	0	0	0	40	0	0	0	0	0	24	0	100	0	0	0	40	206
4	0	2	0	4	0	8	0	0	0	8	0	6	0	8	0	4	0	8	48
5	0	8	0	0	0	40	0	0	0	2	0	52	0	80	0	61	0	89	362
	0	61	0	4	0	564	0	66	0	54	0	476	0	770	0	598	0	563	3,156

Section 6
Schedule 2.11(h) Summary of Labor Hours

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D002625
Work Assignment #:D002625-9.1
Project Name: Schatz Site #3-14-074

Number of Direct Labor Hours Expended to Date/Estimated Number of Direct Labor Hours to Completion

TASK	IX $42.25 EXP.	/EST.	VIII $32.27 EXP.	/EST.	VII $26.80 EXP.	/EST.	VI $25.10 EXP.	/EST.	V $19.27 EXP.	/EST.	IV $16.09 EXP.	/EST.	III $14.18 EXP.	/EST.	II $12.60 EXP.	/EST.	I $10.11 EXP.	/EST.	TOTAL HOURS
6	0	0	0	1	0	52	0	0	0	0	0	0	0	24	0	16	0	10	103
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	52	0	0	0	0	0	0	0	24	0	16	0	10	103

EXHIBIT A

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
ASBESTOS CERTIFIED PERSONNEL

E&E ASBESTOS TRAINING AND CERTIFICATIONS

KEY — { * = certificate copy not yet received; pr = purchase requisition signed }

E&E OFFICE	EMPLOYEE	INSPECTOR	INSPECTOR REFRESHER	MANAGEMENT PLANNER	MP REFRESHER	DESIGNER	DESIGNER REFRESHER	SUPV.	SUPERVISOR REFRESHER	NYSDOL HANDLER	NYSDOL II	NYSDOL REFRESHER	NYC INVEST.	NIOSH 582	OTHER	DOB
ALBUQUERQUE	SANCHEZ S.	7-28-90	PR 3/91													
ANCHORAGE	SIMMONS M.														12/90 A.K.	
ANCHORAGE	DILLON C.	7-13-88	8-30-90	7-15-88	8-30-90											
BATON ROUGE	WALSH T.															
BATON ROUGE	MUELLER J.	4-18-90														
BATON ROUGE	NAQUIN T.	4-18-90														
BUFFALO	ABREY T.													6-19-87		10/2
BUFFALO	BRODZIK P.					2-12-88	4-19-90									11/7
BUFFALO	CHRISTMAN M.													5-25-90		4/14
BUFFALO	DUSTIN D.	12-16-87	8-30-90	12-18-87	8-30-90					*	03375			5-28-87		3/1
BUFFALO	FERRARA T.	5-20-88	8-30-90	5-11-88	8-30-90						02393			1-29-88		9/21
BUFFALO	FORSTER M.	12-16-87	8-30-90	12-18-87	8-30-90						02392			5-06-87		1/14
BUFFALO	GILLINGS M.					2-12-88	4-19-90			08433						2/3
BUFFALO	HERMAN J.							2-09-90		08530				10-26-90		6/27
BUFFALO	HOOD J.									*				5-25-90		3/30
BUFFALO	HORN K.										02393					8/17
BUFFALO	JONES G.	12-16-87	8-30-90	12-18-87	8-30-90						02390			*		12/24
BUFFALO	KILGA K.	07-13-88	8-30-90	07-15-88	8-30-90						02389			5-12-88		8/20
BUFFALO	KIM M.										03377			5-12-89		2/1
BUFFALO	LE D.	11-16-88	8-30-90	11-18-88	8-30-90						02338			11-06-87		1/5
BUFFALO	MALISZEWSKI					4-06-90										10/15
BUFFALO	MATO M.					4-06-90	*									7/16
BUFFALO	MAXWELL G.					4-06-90	*									8/13
BUFFALO	MCDONALD O.					5-15-88	5-19-90									12/28
BUFFALO	RACE D.									02359						1/14
BUFFALO	ROEDL L.										02387			10-31-86		5/25
BUFFALO	SELDEN K.					3-23-89	4-19-90									10/15
BUFFALO	SHERMAN S.	07-13-88	04-27-91	07-15-88	04-27-91						02386		7-23-92			1/31
BUFFALO	STEINER T.	12-16-87	8-30-90	12-18-90	8-30-90						02385			5-07-87		7/25

B&E ASBESTOS TRAINING AND CERTIFICATIONS

KEY— { * certificate copy not yet received / pr = purchase requisition signed }

B&E OFFICE	EMPLOYEE	INSPECTOR	INSPECTOR REFRESHER	MANAGEMENT PLANNER	M/P REFRESHER	DESIGNER	DESIGNER REFRESHER	SUPV.	SUPERVISOR REFRESHER	NYSDOL HANDLER	NYSDOL II	NYSDOL REFRESHER	NYC INVEST.	NIOSH 582	OTHER	DOB
BUFFALO	STACHELSKI D.	2-01-89	8-30-90	2-03-89	8-30-90											
BUFFALO	STEFFAN M.						2-17-88	12-14-90			02386			6-17-88		8/16
BUFFALO	VAETH J.									12086						12/23
BUFFALO	WRIGHT E.							7-19-90		14700						12/1
CHICAGO	ABBOTSON W.	11-03-87	7-15-90								08432			10-20-89		1/29
CHICAGO	KLATT D.							5-23-89								
CHICAGO	LYNCH D.															
DALLAS	LAW A.	5-10-89						6/90								
DENVER	OAK R.															
DENVER	SCHMELZER H.	4-20-90		4-20-90												
FRESNO	FRANZEN D.	3-01-91														
FRESNO	MOORE K.	3-01-91						5-26-89	6-11-90							
FRESNO	ZACCMAN A.	3-01-91														
FRESNO	HYATT D.	3-01-91														
HOLLYWOOD	MILLER M.	8-12-88	10-30-89	8-12-88	10-30-89				9-21-90					5-15-87		
HOUSTON	MCGINTY J.	2-17-88	2-23-89	8-26-88	2-23-89			2-20-87						2-27-87		
HOUSTON	PATTERSON C.															
IDAHO FALLS																
KANSAS CITY	TYSON D.															
LOS ANGELES	JACOBSEN R.	*		6-29-90												
LOS ANGELES	TOMANELLI J.	12-09-87		12-11-87	6-01-89											
LOS ANGELES	HARNER C.	6-27-90														
LOS ANGELES	DIAZ R.	8-29-90		8-31-90												
OAK RIDGE	COLLINS O.						6-29-90									
OAK RIDGE	CONANT T.	5-23-90	pr 7-18-91	5-25-90	pr 7-18-91											
OAK RIDGE	HOPPER O.	1-24-90	1-23-91	1-26-90	1-27-91											
OAK RIDGE	STUART J.	1-24-90														
OAK RIDGE																
PHILADELPHIA	MAXWELL R.								5-24-90							

E&E ASBESTOS TRAINING AND CERTIFICATIONS

KEY—— { * certificate copy not yet received / pr = purchase requisitions signed }

E&E OFFICE	EMPLOYEE	INSPECTOR	INSPECTOR REFRESHER	MANAGEMENT PLANNER	M/P REFRESHER	DESIGNER	DESIGNER REFRESHER	SUPV.	SUPERVISOR REFRESHER	NYSDOL HANDLER	NYSDOL II	NYSDOL REFRESHER	NYC INVEST.	NIOSH 582	OTHER	DOB
SAN FRANCISCO	[illegible] C.	3-01-9[illegible]														
SAN FRANCISCO	GEIGER P.	4-22-88	5-02-91	4-22-88	5-02-91											
SAN FRANCISCO	HOWAR[illegible] M.															
SAN FRANCISCO	MICROBIOLOGISTS IN.	3-07-90		3-09-90												
SAN FRANCISCO	MORIN S.					2-09-90										
SAN FRANCISCO	MUY C.	10-6-89	5-2-91	10-13-90	5-2-91											
SEATTLE	WHITMAN A.					6-15-88	6-19-90									
SEATTLE	KOVANEN D.	2-16-90		2-16-90												
ST. LOUIS	ILENDA K.							6-22-90								
TALLAHASSEE	SCHMIDT J.		11-13-90		11-13-90			12-07-90			I					
WASHINGTON	DAVISON K.	4-6-90	PR	4-6-90											VA CERT	
WASHINGTON	SCHREIBER R.					6-15-88	*									

EXHIBIT B

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C. (AND INC.) ASBESTOS HANDLING LICENSES

STATE OF NEW YORK - DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
License and Certificate Unit
ONE MAIN STREET
BROOKLYN, NY 11201

ASBESTOS HANDLING LICENSE

LICENSE NUMBER: AC-91-0593
DATE OF ISSUE: 07-03-91
EXPIRATION DATE: 06-30-92

Contractor: ECOLOGY & ENVIRONMENT ENGINEERING, P.C.

Address: 368 PLEASANTVIEW DRIVE
LANCASTER, NY 14086

Duly Authorized Representative: GERALD A. STROBEL

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. The licensee verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

Maria L. Colavito

Maria L. Colavito, Director
FOR THE COMMISSIONER OF LABOR

DOSH-432 (2-91)

B-2

STATE OF NEW YORK - DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
Asbestos Control Program
ONE MAIN STREET
BROOKLYN, NY 11201

ASBESTOS HANDLING LICENSE

LICENSE NUMBER: AC-90-0662
DATE OF ISSUE: 08-02-90
EXPIRATION DATE: 08-31-91

Contractor: ECOLOGY AND ENVIRONMENT, INC.

Address: 368 PLEASANTVIEW DRIVE
LANCASTER, NY 14086

Duly Authorized Representative: GERALD A. STROBEL

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12NYCRR Part 56). It is subject to suspension or revocation for serious violations of the aforementioned Laws, Codes, Rules and Regulations.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. The licensee verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Handling Certificate by the New York State Department of Labor.

ROBERT F. GOLLNICK, Director
FOR THE COMMISSIONER OF LABOR

DOSH-480 (2-88)

EXHIBIT C

HAZCAT PROCEDURES

Field Chemistry for First Responders

Hazard Categorization (HAZCAT)

1.0 Introduction

The Hazard Categorization (Hazcat) System currently utilized by EPA Region IX TAT is comprised of a series of simple field chemistry tests designed to identify the hazardous characteristics of an unknown chemical, mixture, or waste. A series of qualitative test-tube tests permits the unknown material to be classified into one of the following 9 categories:

i) ACID (liquid/solid)
ii) ACID OXIDIZER (liquid/solid)
iii) BASE (liquid/solid)
iv) BASE OXIDIZER (liquid/solid)
v) FLAMMABLE (liquid/solid)
vi) CHLORINATED HYDROCARBON
vii) CYANIDE (liquid/solid)
viii) SULFIDE (liquid/solid)
ix) NON-HAZARDOUS (liquid/solid)

By thus classifying the hazardous material, any or all of the following tasks may be performed:

1.1 Assignment of hazardous waste characteristics according to RCRA (40 CFR, Section 261.20) definitions (ignitability, corrosivity, reactivity).

1.2 Assignment of DOT hazard class (49 CFR, Sections 171, 172) to permit placarding and manifesting of the material for transportation.

1.3 Rapid assessment of the materials present at a site, and the evaluation of their potential hazards to the populace and environment. TAT cannot access CERCLA funds for a removal action (40 CFR, Section 300.65) if the materials present are non-hazardous.

1.4 Selection of immediate mitigative measures, such as the segregation of containers of incompatible materials, or the neutralization or containment of a leaking substance with the appropriate material (i.e. soda ash for an acid spill).

1.5 Bulking material into consolidated waste streams for subsequent disposal or treatment, thus reducing disposal/transportation costs.

1.6 Reducing analytical costs by allowing the selection of a limited number of composite samples from each waste stream, instead of submitting many discrete samples to the laboratory.

2.0 The Hazcat Procedure

2.1 Sample Observation

Note the color, viscosity (i.e. water-like), turbidity and number of phases.

2.2 Water Solubility/Specific Gravity

A small quantity (approximately 0.2 mL or 0.1 gram of solid) is added to 3mL of de-ionized water in a test tube.

i) Note whether a temperature change occurs, and whether effervescence or fumes are produced, indicating that the sample is water-reactive.

ii) If the sample completely dissolves in the water, giving no turbidity and forming a one phase solution, then the sample is soluble.

iii) If the sample is insoluble or immiscible, note whether its specific gravity is greater than one (it sinks) or less than one (it floats).

2.3 Determination of pH

This test is performed on a water/sample solution, since a pure organic acid or base will not give a result.

Meter: Immerse the probe of a calibrated pH meter into the sample solution and read the pH.

pH Paper: Dip the test strip into the liquid and compare the color obtained with the reference colors on the pack.

For solid samples, the test strip should be dipped into a solution of the sample, or into an aqueous extract if the sample is only sparingly soluble.

2.4 Oxidizer Test

This test is conducted on all water soluble samples.

i) Acidify a potassium iodide (KI) test strip with a few drops of 3M hydrochloric acid (HCl).

ii) Dip the strip into the liquid sample or aqueous solution of the solid sample.

iii) If the test strip turns blue or black, the sample is an oxidizer.

2.5 Sulfide Test

This test is performed when the pH of a sample is 7 or greater, since sulfides are not stable in acid solution. A detection limit of about 10^{0}ppm can be obtained.

i) The lead acetate test strip is acidified with a few drops of 3M HCl and dipped into the sample, or contacted against the solid sample.

ii) The paper darkens if sulfides are present.

2.6 Cyanide Test

This test is performed when the pH of the solution is greater than 7, since cyanides are not stable in acid solutions.

i) 5 mL of the sample, or 0.2g of the solid sample dissolved in 5 mL of water, is placed in a test tube.

ii) If the pH is not already 11 or greater, add 2-3 drops of 50% sodium hydroxide solution (NaOH) to adjust the pH to 11.

iii) 3 drops of the rhodanine solution are added to the tube, which is gently swirled.

iv) 1 drop of the 0.02M silver nitrate ($AgNO_3$) is added. If cyanide is present, there is no color change. A negative cyanide result is characterized by a precipitate or color change.

2.7 Flammability Test

i) The HNu photoionization detector is used to take a head-space reading from the sample jar.

ii) A small quantity of the liquid sample is applied to a support medium, such as a cotton swab and exposed to a flame (the BIC test).

Flammable: The sample ignites readily and vigorously on exposure to a flame source, and gives an HNu reading (10.2eV probe, 9.8 span) of greater than 200 units. The estimated flash point is approximately 100F or less.

Combustible: The sample ignites and will sustain a flame on exposure to the flame source, and gives an HNu reading (10.2eV/9.8 span) of less than 200 units. Flash point estimated at less than 200F.

Nonflammable: The sample is non-combustible and nonflammable if it does not ignite or burn after sustained exposure to the flame source.

2.7 Chlorinated Hydrocarbons

For all liquid samples which are insoluble and have a specific gravity of greater than 1. 1000ppm detection limit

A. Copper Wire Test (Beilstein Test)

i) Heat the copper wire in the flame of a propane torch until a yellow flame with no green coloration is seen.
ii) Air-cool the wire for 15 seconds.
iii) Dip wire into the sample.
iv) A green flame indicates that chlorinated compounds are present.

2.8 PCB Screening

Kits are commercially available to test for the presence of PCB's semi-quantitatively (CLOR-N-OIL screening kit; McGraw Edison kit).

3.0 The Hazcat Kit

3.1 Reagents and Test Strips

A. pH Test - pH paper
de-ionized water

B. Oxidizer Test - Potassium Iodide (KI) test strips
3M Hydrochloric Acid (HCl)

C. Sulfide Test - Lead Acetate/Starch test strips
3M HCl

D. Cyanide Test - 50% sodium hydroxide solution
Rhodanine solution (20 mg of para-amino-benzalrhodanine in 100 ml of acetone)
0.02M silver nitrate Solution.

E. Chlorinated Hydrocarbon Test - Copper Wire
Propane Torch.

3.2 Equipment

Test tubes (100)
Test tube rack
Test tube holder
Disposable pipets (100)
Wash bottle of deionized water (250 mL)
Copper wire
Propane torch
Garbage bags
Kimwipes
Cotton swabs
Duct tape
HNu
Draeger pump & tubes
Container inventory sheets
Hazcat result sheets

3.3 Reagents & Test Strips

Rhodanine solution (in acetone) (30 mL)
3M Hydrochloric Acid (30 mL)
50% Sodium hydroxide solution (30 mL)
0.02M Silver nitrate solution (30 mL)
Potassium iodide test strips (2 packs)
Lead acetate/starch test strips (2 packs)
pH test strips (2 packs)
Deionized water (250 mL)

4.0 Personal Protective Clothing For HAZCAT

4.1 Sijal Suit

4.2 Canister Respirator with GMC-H organic vapor/acid gas cartridges

4.3 Neoprene boots

4.4 Latex inner & neoprene outer gloves

4.5 Hard hat with face shield (optional)

4.6 Acid Splash apron (optional)

Notes:

General

If the hazcat procedure is performed carefully, with attention to detail, little or no contamination of the gloves or other protective clothing should occur:

1. The Sijal Suit offers the most complete protection against acids, bases and organics. Saranex is an alternative, offering good protection against acids, bases, some organics and PCB's. However, Saranex offers poor protection against halogenated and aromatic hydrocarbons and has stitched seams which may constitute a penetration pathway.

2. Canister respirators are listed in preference to cartridge respirators since the canister is belt-mounted outside the breathing zone and thus away from the area of maximum contaminant concentration during sample handling.

3. If the samples are known to be principally halogenated and aromatic hydrocarbons, then viton gloves would afford better protection than neoprene. In general, neoprene gloves offer the best compromise when many classes of chemicals are to be handled, although their susceptibility to attack by halogenated hydrocarbons should be noted.

5.0 Data Management

Field data (container markings, container size, etc. and hazcat test results) are recorded directly on the data sheets included in Appendix A. In Region IX TAT, this data is subsequently entered into a computer database, using a portable Compaq field computer. A database management program permits the samples to be grouped according to hazard class, so that print-outs of samples having similar chemical properties can be obtained. This is particularly important for large removal operations, in which thousands of drums may have been sampled, since it obviates lengthy and tedious manual compilation of the data.

6.0 Compatibility Studies

For a removal action, it is usually desirable to consolidate compatible wastes from different containers in order to generate waste streams for disposal or treatment. Thus, it would be desirable to consolidate all cyanide wastes for one stream, and for example, all non-oxidizing acids (liquid) into another. However, it must be appreciated that the qualitative nature of hazcatting does not completely categorize a given sample since there is the possibility of incompatibilities between samples of the same hazard class. Therefore, a bench-top compatibility study must first be conducted using small quantities of each sample from a given class, so that any incompatibilities are detected before the materials are mixed in bulk.

Composite samples for each hazard class are thus prepared by taking small quantities (5-10 mL) of each sample of that class, and mixing them in an 8 oz. sample jar. The aliquot drawn from each sample should be proportional to the bulk amount of that material present on site. Therefore, the following composite might be prepared from ten containers, each of which were determined to be liquid cyanide wastes from the results of hazcatting.

Sample #	Container Size (gallon)	% Full	Aliquot Taken (mL)
1	55	100	5
2	55	50	2.5
3	10	100	1
4	100	100	10
5	25	100	2.5

Thus, the composite sample generated approximately reflects the composition of the waste stream obtained when the bulk containers are mixed.

On addition of each constituent to the composite sample, the following observations are made:

i) Is an effervescence observed?
ii) Is any gas/vapor evolved?
iii) Is any heat generated?
iv) Is any solid precipitated?

A positive observation of i, ii or iii indicates incompatibility between the samples; they are probably not suitable for bulking into one consolidated waste steam. Perhaps only one sample gives such reactions. In this case, that sample would be disposed of as a separate waste stream (i.e. cyanide (reactive)).

During the compositing process, the sample jar should at all times be pointed away from the person compositing, since adverse reactions do occur, and the solution can spray out of the jar. Care is essential in this process, as in the hazcatting procedure itself, during which the test tube mouth is always pointed away from the person conducting the tests.

In the open-air environment in which hazcatting is conducted, the hazcatting/compositing processes are not dangerous, provided that the specified protective clothing is worn, and good laboratory practice in handling potentially dangerous chemicals is followed. It should always be remembered, however, that the potential for injury exists when high-concentration source samples are handled, so that caution must always be exercised.

7.0 Additional Tests

7.1 Draeger Tubes

Draeger tubes can provide valuable confirmation, particularly for the rhodanine/silver nitrate test for cyanide, which often proves ambiguous with dirty, opaque solutions in which a negative result (precipitation) is difficult to see. If a small (0.5 mL or less) portion of the sample is acidified to a pH of ≤ 5 with a few drops of 3M HCl, hydrogen cyanide gas (HCN) is liberated, which can be detected with the hydrogen cyanide Draeger tube. Although HCN is extremely toxic (TLV = 10 ppm) the small quantity generated by this test does not represent a health hazard to an operator wearing a respirator (equipped with a GMC-H canister) operating in the open-air. It is imperative, however, that only a small quantity of the sample is acidified for this test.

Similarly, acidification of a small aliquot of a sulfide containing sample generates hydrogen sulfide (H_2S; TLV; 10 ppm) which may be detected with a hydrogen sulfide Draeger tube. Again, less than 0.5 mL should be used for health and safety reasons.

Finally, when time is available and a site is better characterized so that the contaminants present or suspected of being present are known, specific Draeger tubes may be used to screen certain hazard classes. Examples are:

i) Flammable Liquids: Could be screened for acetone, alcohol, methyl ethyl ketone or ethyl acetate.
ii) Acid Oxidizers: SO_2 Draeger tube (sulfuric acid) NO_2 Draeger tube (nitric acid)
iii) Acid Liquids: HF Draeger tube (hydrofluoric acid) HCl Draeger tube (hydrochloric acid)

7.2 Other Test Strips

Test strips are commercially available to test for many metals (e.g. nickel, zinc and chromium) and many anions (e.g. sulfate, chromate, and nitrate) in aqueous solution. However, these are of limited use due to interferences which occur when many species are present in the same solution.

7.3 PCB Test Kits

The CLOR-N-OIL test kit permits the concentration of PCB's in transformer oils to be qualitatively measured. The sample is reacted with metallic sodium in the presence of a catalyst, stripping the chlorine from the PCB's to form sodium chloride, which is subsequently extracted and determined colorimetrically.

McGraw Edison market a similar kit which uses a chloride ion electrode to determine the sodium chloride generated and is thus a little more quantitative. Both kits are easily used in the field.

7.4 Pesticide Screening Kits

A qualitative field test is available for organophosphorus pesticides. Chlorinated pesticides give a positive copper wire test.

7.5 Physical Appearance

It is tempting, particularly for a chemist, to make a tentative identification of an unknown sample by its physical appearance. For example, nickel salts are green crystalline solids, giving clear green solutions in water; sodium cyanide is commercially available in white pellets, approximately 1/4" in length. However, an unknown material must never be identified solely by supposition based on color or physical appearance; these characteristics provide valuable corroborating evidence, but can be misleading, due to the plethora of mixtures, formulations and contaminated materials existing on a hazardous waste site. Similarly, one should never assume that the labeling on a container is correct.

8.0 Ambiguous Results and Other Problems

8.1 A water soluble sample (an aqueous solution or some lower molecular weight organic species) cannot be a chlorinated hydrocarbon. If such a sample gives a positive copper wire test, it is simply a solution containing chloride ions. Hydrochloric acid, for example, gives a positive copper wire test, but is clearly not a chlorinated hydrocarbon.

8.2 As commented previously, the cyanide test (and in some cases the sulfide and oxidizer tests) may give ambiguous results with certain dirty, opaque solutions. In these cases, the test may be repeated with diluted samples (using deionized water for dilution) or in the case of the cyanide and sulfide tests, confirmation may be obtained by acidifying and testing with Draeger tubes.

Highly colored pure solutions (such as potassium permanganate, which is deep red-purple in color) may also cause difficulty because their color masks that of the pH paper or the oxidizer test strip. Again, the sample may be diluted with deionized water, because although this will change the pH of the solution, it will not do so sufficiently to confuse the qualitative identification of acids and bases. (Potassium permanganate would hazcat as an oxidizer, and could be acid or basic according to the application for which it was formulated.)

8.3 Since the pH of a solution is a measure of the concentration of hydrogen ions in aqueous solutions, organic liquids cannot usually be tested with pH paper. An aqueous extract must be prepared by shaking the sample with an equal volume of deionized water; the extract is then tested with pH paper.

8.4 Some samples may have more than one phase; an aqueous phase and an oraganic phase being fairly common. In this instance, both phases should be hazcatted separately. In these cases, the validity of the hazcat test reflects the skill of the sampler who withdrew the sample from the drum/container. Without a representative sample to work with, the person conducting the hazcatting cannot properly characterize the material in the container.

LABORATORY EXERCISE

Summary of Hazcat Procedure

1. Sample Observation/Description

2. Water Solubility/Specific Gravity
   - Reactivity?/Solubility?
   - Denser/less dense than water (if not soluble)

3. Determination of pH
   - Performed on a solution of the sample.

4. Oxidizer Test
   - All water soluble samples
   - Acidify potassium iodide test strip with hydrochloric acid
   - Test strip turns blue/black if the sample is an oxidizer.

5. Sulfide Test
   - All smaples with pH >7
   - Acidify lead acetate test strip
   - Darkening of test strip indicates the presence of sulfides

6. Cyanide Test
   - All samples with pH >7
   - Adjust pH of solution/sample to >11 with sodium hydroxide, if necessary
   - Add 3 drops of rhodanine solution
   - Add 1 drop of silver nitrate solution. No color change indicates that cyanide is present.

7. Flammability Test
   - ~~HNu--Reading of >200 units (5.0 span/10.2 eV) indicates flammability~~
   - Expose a cotton swab wetted with the sample to a flame

8. Chlorinated Hydrocarbons
   - For all liquid samples that are insoluble, and have a specific gravity greater than 1.
   - Heat the copper wire until a pure yellow flame is seen
   - Air cool (15 seconds) and dip into the sample
   - A green flame indicates that chlorinated compounds are present.

INC[illegible]TIBLE MATERIALS

In the lists below, the mixing of Group A materials with a Group B material may have the potential consequence as noted.

GROUP 1-A	GROUP 1-B
Acetylene sludge	Acid sludge
Alkaline caustic liquids	Acid and water
Alkaline cleaner	Battery acid
Alkaline corrosive liquids	Chemical cleaners
Alkaline corrosive battery fluid	Electrolyte acid
Caustic wastewater	Etching acid liquid or solvent
Lime sludge and other corrosive alkalies	Pickling liquor and other corrosive acids
Lime wastewater	Spent acid
Lime and water	Spent mixed acid
Spent caustic	Spent sulfuric acid

Potential consequences: heat generation, violent reaction

GROUP 2-A	GROUP 2-B
Aluminum	Any waste in Group 1-A or 1-B
Beryllium	
Calcium	
Lithium	
Potassium	
Sodium	
Zinc powder	
Other reactive metals and metal hydrides	

Potential consequences: fire or explosion, generation of flammable hydrogen gas

GROUP 3-A	GROUP 3-B
Alcohols	Any concentrated waste in Groups 1-A or 1-B
Water	Calcium
	Lithium
	Metal hydrides
	Potassium
	SO_2Cl_2, $SOCl_2$, PCl_3, CH_3SiCl_3
	Other water-reactive waste

Potential consequences: fire, explosion or heat generation gen[illegible] of flammable or toxic gases

GROUP 4-A	GROUP 4-B
Alcohols	Concentrated Group 1-A or 1-B wastes
Aldehydes	Group 2-A wastes
Halogenated hydrocarbons	
Nitrated hydrocarbons	
Unsaturated hydrocarbons	
Other reactive organic compounds and solvents	

Potential consequences: fire, explosion, or violent reaction

GROUP 5-A	GROUP 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

Potential consequences: generation of toxic hydrogen cyanide or hydrogen sulfide gas

GROUP 6-A	GROUP 6-B
Chlorates	Acetic acid and other organic acids
Chlorine	Concentrated mineral acids
Chlorites	Group 2-A wastes
Chromic acid	Group 4-A wastes
Hypochlorites	Other flammable and combustible wastes
Nitrates	
Nitric acid, fuming	
Perchlorates	
Permanganates	
Peroxides	
Other strong oxidizers	

Potential consequences: fire, explosion, or violent reaction

Source: Hazar[illegible]agement Law, Regulations, and Guidelines for Hazardous Waste, California Department of [illegible]amento, California, Feb. 1975.

CONTAINER INVENTORY

(PROJECT NAME): _____

(DOCUMENT CONTROL NUMBER): _____

(CONTAINER/DRUM I.D. NUMBER): _____ DATE: _____

(DESCRIPTION): SIZE OF CONTAINER/DRUM: _____ GALS/LBS

CONTAINER MATERIAL: (POLY), (STEEL), (GLASS), (PAPER)

CONTAINER TYPE: (OPEN TOP), (BUNG TOP)

CONDITION OF CONTAINER: (POOR), (FAIR), (GOOD)

CONTAINER: (UNDER PRESSURE), (NON PRESSURE)

AMOUNT: (FULL), (3/4), (1/2), (1/4), (EMPTY)

MATERIAL CONTAINED: (LIQUID), (SOLID), (GAS)

LABELS ATTACHED: _____

MARKINGS: _____

LOCATION ON SITE: _____

ACTION TAKEN: (CONTENTS TRANSFERED),
(OVERPACKED),
(SAMPLED),
(CONTAINER DECONTAMINATED & SHIPPED FOR DISPOSAL),
(CONTAINER STORED ON SITE)

HAZCAT

(PROJECT NAME):
(DOCUMENT CONTROL NUMBER):

(SAMPLE I.D. NUMBER):_____ DATE:_____

1. * SAMPLE DESCRIPTION_____
_____
_____
_____

2. SPECIFIC GRAVITY: = 1 / <1 / >1

3. WATER REACTIVITY: NEG / POS

4. SOLUBILITY:_____

5. PH:_____

6. PRESENCE OF CYANIDES: NEG / POS

7. PRESENCE OF SULFIDES: NEG / POS

8. PRESENCE OF OXIDIZERS: NEG / POS

9. PRESENCE OF CHLORINATED HYDROCARBONS:
   A. Copper Wire Test: NEG / POS
   B. Chlor-n-oil Test Kit: NEG / POS _____PPM
   C. PCB Field Test Kit: NEG / POS _____PPM

10. FLAMMABILITY:_____
    A. HND_____
    B. BIC_____

11. HAZARD CLASS ASSIGNED:_____
    (Ref. 49 CFR 172.101)

12. LABELING:_____

13. I.D. NUMBER:_____

FIELD HAZCAT PROCEDURES

1. Describe physical nature of sample. Include color, viscosity (use water as reference material), opacity or transparency, homogeneity, turbidity, phasality, etc.

2. Determine relative specific gravity. Slowly add sample to equal part water. If sample sinks, then specific gravity is greater than 1. If the sample floats, then the specific gravity is likely to be less than 1.

3. Determine water reactivity of the sample. If upon slow addition of equal parts sample to water intense heat (at least a 10 degree Celsius increase) is generated then the sample is water reactive.

4. Determine solubility of sample. Upon slow addition of sample to water, note if sample goes into solution. Some descriptive categories are given below:

soluble or miscible	if material completely mixes with water and forms no precipitate or cloudy solutions;
slightly soluble	more difficult to call in field but can be used if upon addition of 1:1 water/sample volume ratio the material does not go into solution but does go into solution upon addition of at least a 9:1 water/sample volume ratio;
emulsion	use if upon addition of sample to water a mixture is formed but no real solution is formed;
suspension	use if upon addition of sample to water a mixture with suspended material or cloudy characteristics is formed;
insoluble	use if upon addition of sample to water phases or layers are formed or if a large amount of precipitate is formed.

Note - record any bubbles and or vapors that may be generated during this step.

5. Determination of pH

Meter: Immerse probe of properly calibrated instrument into sample and read pH.

Paper: Dip pH paper into solution and read pH from scale on paper. If the sample is too highly colored or viscous to allow for a proper determination of pH on paper, then mix the sample with a water/sample volume ratio of no greater than 9:1 and read the pH with a new strip of paper.

If pH greater than 8, check sample for cyanides and sulfides (see steps [illegible]).
If pH less than 7 check for presence of oxidizers (see step six).

6. Determination of presence of oxidizing material contained within the sample.

Insert a strip of pH 4.0 buffer wetted KI-starch paper into sample. If the paper turns anywhere from light brown to dark purple or black, oxidizing material is likely to be present. A light brown color is generated upon contact with nitric acid and a deep purple color is generated upon contact with hydrogen peroxide.

7. Determination of sulfide content of sample. This test is generally performed when the sample pH is greater than 14.

The test for hydrogen sulfide should be performed on water that has been freshly pumped. If the water has been aerated or allowed to stand before testing, such, if not all, of the hydrogen sulfide will be lost through aeration and oxidation.

TEST PROCEDURE

1. Fill the sample vial to the 25 mL mark with the water to be tested for hydrogen sulfide.
2. Place a circle of Hydrogen Sulfide Test Paper inside the cap of the sample vial.
3. Add an Alka Seltzer tablet to the water sample, and IMMEDIATELY snap the cap containing the test paper onto the vial.
4. After the tablet has dissolved, remove the test paper and compare the color of the test paper to the color chart.

8. Determination of presence of cyanides in sample solution. This test is generally performed when the pH is 10 or greater.

- Add 1-3 drops of 5% KI solution to sample (if highly colored, dilute);
- Add one drop 0.0192 N silver nitrate (1 ml = 1 mg CN);
- If a white or light brown precipitate forms immediately, then cyanide is present.

NOTE: Precipitate will redissolve upon swirling.

9. Determination of volatile organics.

Use standard procedures for operation of properly maintained/calibrated HNU photoionizer and OVA-128 (scan mode).

EXHIBIT D

ROLLINS ENVIRONMENTAL, INC.
UNIFORM WASTE DATA SHEETS

ROLLINS ENVIRONMENTAL SERVICES

(SHADED AREAS FOR RES USE ONLY)

ROLLINS ENVIRONMENTAL SERVICES
UNIFORM WASTE DATA SHEET
(EXHIBIT B)

DOC. NO. _____ RES SALES EXEC: # _____ STREAM NO. _____

CONTRACT NO. _____ SAMPLE NO. _____ SAMPLE RECEIVED DATE _____

A. GENERATOR INFORMATION

1. Generator Name: _____
2. Purchasing Contact: _____ (Title) 3. Phone No. (____) _____
4. Technical Contact: _____ (Title) 5. Phone No. (____) _____
6. Emergency Contact: _____ (Title) 7. Phone No. (____) _____
8. Generator USEPA I.D.: _____

B. PICK UP LOCATION

1. Company Name: _____
2. Address (not P.O. Box): _____
3. City: _____ 4. State: _____ 5. Zip Code: _____
6. Pickup Contact: _____ (Title) 7. Phone No. (____) _____

C. MANIFEST INFORMATION (if same as "B", write "SAME" but indicate Manifest Contact below if different)

1. Company Name: _____
2. Address: _____
3. City: _____ 4. State: _____ 5. Zip Code: _____
6. Manifest Contact: _____ (Title) 7. Phone No. (____) _____

D. INVOICE INFORMATION (if same as "B" or "C" write "SAME" but indicate Invoice Contact below if different

1. Company Name: _____
2. Address: _____
3. City: _____ 4. State: _____ 5. Zip Code: _____
6. Invoice Contact: _____ (Title) 7. Phone No. (____) _____

E. GENERAL WASTE DESCRIPTION

1. Name of Waste: _____
2. Process Generating Waste: _____
3. Quantity Generated: _____ Per _____ (Year or Month)

F. SHIPPING INFORMATION (check all that apply)

1. ☐ Yes ☐ No EPA RCRA Hazardous Waste 2. ☐ Wastewater or ☐ Non-Wastewater 3. ☐ Yes ☐ No TSCA Waste TSCA Waste Code: _____
4. All applicable EPA Hazardous Waste Codes and subcategories including Characteristic ("D") codes: _____
5. ☐ Yes ☐ No Disposal State Regulated Material 6. Generating State Number: _____ Destination State Waste Code Number: _____
7. ☐ Yes ☐ No DOT Regulated Material 8. DOT Shipping Name: _____
9. DOT Hazard Class: _____ 10. DOT (UN/NA) No.: _____ 11. RQ (lbs.): _____

G. METHOD OF SHIPMENT

1. ☐ Drums: Type/Size: _____ 2. ☐ Bulk: Type/Size: _____
3. Other (Please be specific): _____
4. Transportation Requirements: _____
5. ☐ Yes ☐ No Customer to Transport 6. ☐ Yes ☐ No Truck Scale at Customer Site

CUSTOMER REVISION: Signature _____ Date _____

Stream No. ______

H. REGULATORY COMPLIANCE (check all that apply)

Yes No

1. ☐ ☐ OSHA Carcinogens (list below)

______ ______ ppm

______ ______ ppm

______ ______ ppm

2. ☐ ☐ Radioactive Material
3. ☐ ☐ TSCA Regulated PCB (fill in appropriate concentration below):
   ☐ < 50 ppm ☐ 50-500 ppm ☐ > 500 ppm
4. ☐ ☐ Biomedical Waste
   ☐ ☐ Infectious Waste

Yes No

5. ☐ ☐ FIFRA Pesticides with Specific Disposal Requirements
6. ☐ ☐ Asbestos
7. ☐ ☐ Benzene
8. ☐ ☐ California List Regulated Waste
9. ☐ ☐ Solvent Regulated Waste
10. ☐ ☐ Dioxin Regulated Waste (F020, F021, F022, F023, F02[illegible] F027, F028)
11. ☐ ☐ First, Second or Third Third Regulated Waste

I. WASTE COMPOSITION (must add up to a minimum of 100%)

1. Chemical Name and Constituent	Concentration (range ± 10%)	CASRN	RQ(lbs.)
TOTAL	≥ 100%	—	—

J. PROPERTIES OF WASTE (write "N.A." for all that don't apply)

1. Color: ______ 2. Odor: ______ ______
3. Ignitability (Flash Point): ______ °F
4. pH ______ or Corrosivity ______ mm/yr
5. Melting Point: ______ °F
6. Boiling Point: ______ °F
7. TOC (Total Organic Carbon): ______ mg/L
8. Viscosity: ______ CPS @ 25°C (77°F)
9. Vapor Pressure ______ mmHg @ ______ °C
10. Bromine: ______ %
11. Iodine: ______ %
12. Fluorine: ______ %
13. Chlorine: ______ %
    Sulfur: ______ %

Yes No

☐ ☐ Flowable at 25°C (77°F)

16. Physical state at 25°C (77°F) and phases by volume (check all th[at] apply):
    ☐ Powder ______ % (phase or laye[r])
    ☐ Gas ______ %
    ☐ Sludge/Semisolid ______ %
    ☐ Liquid ______ %
    ☐ Solid ______ %
    ☐ Other ______ ______ %
17. % Solid by Weight. ______
18. Heat of Combustion: ______ BTU/l[b]
19. Ash: ______
20. Scrub: ______ lb. NaOH/lb. Wast[e]
21. Specific Gravity: ______ or Bulk Density: ______ lb./cu.f[t]
22. VOC (Total Volatile Organic Compounds): ______ mg/

CUSTOMER REVISION: Signature ______ Date ______

Stream No. _____

K. REACTIVE CHARACTERISTICS (check all that apply)

	Yes	No	
1.	☐	☐	Explosive
	☐	☐	Pyrophoric
	☐	☐	Shock Sensitive
4.	☐	☐	Water Reactive
5.	☐	☐	Air Reactive
6.	☐	☐	Reactive Cyanide: _____ mg/kg
7.	☐	☐	Reactive Sulfide: _____ mg/kg
8.	☐	☐	Oxidizers (specify): _____
9.	☐	☐	Other (specify): _____

L. ELEMENTAL ANALYSIS (Total Metals and TCLP metals data are required for incineration waste streams. TCLP metals data are required for landfill material. For liquid wastes with less than 0.5% solids, total metals (in mg/kg) x density of waste (in kg/L) = TCLP results (in mg/L).* (Record data for all that apply).

Total Metals: ☐ mg/kg ☐ mg/L ☐ ppm (Check appropriate unit)

Antimony (Sb)		Copper (Cu)		Selenium (Se)	
Arsenic (As)		Lead (Pb)		Silicon (Si)	
Barium (Ba)		Manganese (Mn)		Silver (Ag)	
Beryllium (Be)		Mercury (Hg)		Sodium (Na)	
Cadmium (Cd)		Molybdenum (Mo)		Thallium (Tl)	
Chromium (Cr)		Nickel (Ni)		Vanadium (V)	
Chromium VI (CrVI)		Potassium (K)		Zinc (Zn)	
Cobalt (Co)					

TCLP	(mg/L)	TC Level	TCLP	(mg/L)	TC Level
D004 - Arsenic		5.0	D008 - Lead		5.0
Barium		100.0	D009 - Mercury		
Cadmium		1.0	D010 - Selenium		1.0
D007 - Chromium		5.0	D011 - Silver		5.0

*N.B. - EP Toxicity Characteristic data are acceptable until 9/25/90, or 3/25/91 for small quantity generators.

M. ORGANIC TOXIC CHARACTERISTIC WASTE (specify EPA waste code and TCLP results (mg/L) for all that apply; see instructions for list).

_____	_____ mg/L	_____	_____ mg/L	_____	_____ mg/L
_____	_____ mg/L	_____	_____ mg/L	_____	_____ mg/L
_____	_____ mg/L	_____	_____ mg/L	_____	_____ mg/L
_____	_____ mg/L	_____	_____ mg/L	_____	_____ mg/L

N. RECOMMENDED TREATMENT METHOD (check applicable box)

1. ☐ Incineration
2. ☐ Incineration with chemical stabilization and encapsulation of residues
3. ☐ Chemical stabilization and encapsulation
4. ☐ Direct landfill
5. ☐ Underground injection
6. ☐ Chemical treatment
7. ☐ Other (specify) _____

O. CERTIFICATION

I hereby certify and warrant that the information supplied on this form and on any attachments or supplements represents a complete and accurate identification and description by the generator company of this waste material, its constituents and its known or suspected hazards.

Signature _____ Title: _____

D _____

CUSTOMER REVISION: Signature _____ Date _____

Stream No. _____

P. POLYCHLORINATED BIPHENYL (PCB) ITEMS

1. LIQUIDS:
   a. Name of Original Fluid: _____
   b. Name of Solvent: _____
   c. PCB Concentration: _____ pp
   d. Shipping Weight: _____ kilogra
2. CAPACITORS:
   a. Quantity: _____
   b. Shipping Weight: _____ kilogra
3. TRANSFORMERS AND REGULATORS:
   a. Dimensions: _____
   b. Nameplate Gallons: _____ gallo
   c. PCB Concentration: _____ pp
   d. Shipping Weight: _____ kilogra
   e. To Be Shipped: ☐ Full ☐ Drained Only ☐ Drained and Flushed
4. OTHER TYPES OF PCB ARTICLES (Be specific):
   a. Name: _____
   Quantity: _____ Shipping Container: _____
   c. Shipping Weight: _____ kilogra
   d. PCB Concentration: _____ ppr

ROLLINS ENVIRONMENTAL SERVICES SALES OFFICES

CORPORATE OFFICE
Rollins Environmental Services (SALES) Inc.
Mail To: One Rollins Plaza, P.O. Box 2349
Wilmington, DE 19899
(302) 479-2768 1-800-X-WASTES Fax (302) 479-3339

NEW JERSEY
Rollins Environmental Services (SALES) Inc.
Mail To: P.O. Box 337
Bridgeport, NJ 08014
Ship To: Rt. 322 & I-295
Bridgeport, NJ 08014
(609) 467-3105 Fax (609) 467-1040

LOUISIANA
Rollins Environmental Services (SALES) Inc.
Mail To: P.O. Box 74137
Baton Rouge, LA 70807
Ship To: 13351 Scenic Highway
Baton Rouge, LA 70807
(504) 778-3535 Fax (504) 778-3553

Rollins Environmental Services of LA, Inc.
Mail To: Rt. 2, Box 1200
Plaquemine, LA 70764
Ship To: West Sorrell Road, Gracie Lane
Plaquemine LA 70764
(504) 659-2434 Fax (504) 659-7870

ILLINOIS
Rollins Environmental Services (SALES) Inc.
Mail To: P.O. Box 88480
Carol Stream, IL 60188
Ship To: 135 East St. Charles Road - Unit C
Carol Stream, IL 60188
(708) 260-9566 Fax (708) 260-0358

TEXAS
Rollins Environmental Services (SALES) Inc.
Mail To: P.O. Box 609
Deer Park, TX 77536
Ship To: 2027 Battleground Road
Deer Park, TX 77536
(713) 930-2300 Fax (713) 930-2334

CALIFORNIA
Rollins Environmental Services (SALES) Inc.
Mail To/Ship To: 3777 Spinnaker Court
Fremont, CA 94538
(415) 226-1680 Fax (415) 490-8152

Rollins Environmental Services (SALES) Inc.
Mail To/Ship To: 1848 E. 55th Street
Los Angeles, CA 90058
(213) 583-6040 Fax (213) 589-5443

CUSTOMER REVISION: Signature _____ Date _____

ROLLINS
ENVIRONMENTAL SERVICES

ROLLINS ENVIRONMENTAL SERVICE
UNIFORM WASTE DATA SHEET
(EXHIBIT B)
INSTRUCTIONS

GENERAL INSTRUCTIONS:

1. Shaded areas on the Waste Data Sheet are for use by Rollins Environmental Services.
2. Please type or print in black ink.
3. Detailed instructions are included to help you complete the Waste Data Sheet. The letters and numbers which precede each instruction refer to the lettered and num entries on the Waste Data Sheet.
4. The Waste Data Sheet must be signed by an authorized employee of the generator, as it is a contractual document.
5. If you have any questions concerning the use of the Waste Data Sheet, please contact your Rollins Environmental Services Account Executive.
6. Make a copy of the completed Waste Data Sheet for your records. Mail the ORIGINAL and all attachments to your Rollins Environmental Services Account Executive

This information is used to determine if the waste may be transported, treated, stored, or disposed in a legal, safe, and environmentally sound manner. This information will maintained in strict confidence. ANSWERS MUST BE MADE TO ALL QUESTIONS. A response of "NONE" or "N.A." (not applicable) can be made if appropriate.

SECTION A. GENERATOR INFORMATION

1. Generator Name: Enter the name of the generating facility.
2. Purchasing Contact: Enter the name and title of purchasing contact.
3. Phone Number: Enter purchasing contact's phone number.
4. Technical Contact: Enter the name and title of the person who will answer technical questions about the waste.
5. Phone Number: Enter Technical Contact's phone number.
6. Emergency Contact: Enter the name and title of the person who should be contacted in event of any emergency situation involving the waste.
7. Phone Number: Enter Emergency Contact's phone number.
8. Generator USEPA ID: Enter the I.D. issued by the USEPA to the facility generating the waste (if applicable).

SECTION B. PICKUP LOCATION

1. Company Name: Enter the name of the Company at the physical pickup location.

2.-5. Address: Enter the address of the Company at the pickup location (not a P.O. Box).

6. Pickup Contact: Enter the name and title of the person who may be contacted at the pickup location.
7. Phone Number: Enter the Pickup Contact's phone number.

SECTION C. MANIFEST INFORMATION (If same as Section B, write "SAME" but indicate Manifest Contact below if different)

1. Company Name: Enter the name of the Company to which Manifest questions or comments should be directed.

2.-5. Address: Enter the address of the Company to which Manifests should be returned.

6. Manifest Contact: Enter the name and title of the person who should be contacted in the event that Manifest questions or comments occur.
7. Phone Number: Enter the Manifest Contact's phone number.

SECTION D. INVOICE INFORMATION (If same as Section "B" or "C" write "SAME" but indicate Invoice Contact below if different)

1. Company Name: Enter the name of the Company to which the invoice should be mailed.

2.-5. Address: Enter the address of the Company to which the invoice should be sent.

6. Invoice Contact: Enter the name and title of the person to whom the invoice should be sent.
7. Phone Number: Enter the Invoice Contact's phone number.

SECTION E. GENERAL WASTE DESCRIPTION

1. Name of Waste: Enter the name that is generally descriptive of the waste (e.g. Paint Stripper).
2. Process Generating Waste. List the specific process/operation generating the waste.
3. Quantity Generated: Enter actual or estimated quantity to be disposed per period of time (year or month)

SECTION F. SHIPPING INFORMATION

1. [illegible] RCRA Hazardous Waste. Indicate if the waste is an EPA RCRA Hazardous Waste per 40CFR261.
2. Indicate if the waste is a wastewater or non-wastewater. A wastewater is <1% Total Organic Compounds and <1% Total Suspended Solids.
3. Indicate if the waste is a TSCA waste and identify TSCA waste code (i.e. PCB1, PCB2)
4. List all applicable EPA Hazardous Waste Codes and subcategories (per 40CFR268) including characteristic ("D") codes per 40CFR261.
5. Indicate if the waste is a regulated material as defined by the state of destination facility.
6. Enter the appropriate generating state number and destination facility state waste code number (call "Reference Agencies" listed at bottom of page 2 for appropriate stat number; destination facility number required for the states of Texas and Missouri only).
7. Indicate if the waste is a US DOT Regulated material per 49CFR172.101.
8. Indicate the proper US DOT Shipping name for the waste per 49CFR172.101.
9. Enter the proper US DOT Hazard Class per 49CFR172.101.
10. Enter the proper US DOT (UN/NA) Identification number per 49CFR172.101.
11. Enter the reportable quantity for the waste (in pounds) per 49CFR172.101 or 40CFR302 (if applicable).

SECTION G. METHOD OF SHIPMENT

1. Drums: Indicate type and size (i.e. 17E/55 Gallon; 2-20 Gallon fiber drums in 55 Gallon steel).
2. Bulk. If waste is to be shipped in bulk, indicate type and size of equipment (i.e. 5000 Gallon tank truck; 6000 Gallon heated tank truck; 20 cu. yd. bin).
3. Other: Indicate other methods of shipment (i.e. box, pallets).
4. Transportation Requirements: Indicate any special transportation requirements (i.e. 40 feet of 2 inch hose; security clearance required prior to entry)
5. Indicate if customer is to handle transportation.
6. Indicate if truck scale available at customer site.

CUSTOMER REVISION: If changes or revisions are required to the original Uniform Waste Data Sheet, please make change(s) on existing page, sign and date at bottom of page and send to your Account Executive.

SECTION H. REGULATORY COMPLIANCE

1. Indicate and list OSHA Carcinogens per list below and indicate ppm. Note: container labels must identify compounds and cancer warning.

Acrylonitrile (vinyl cyanide)	Inorganic arsenic	4-Aminodiphenyl
4-Nitrobiphenyl	Coke oven emissions	beta-Propiolactone
Methyl chloromethyl ether	1,2-dibromo-3-chloropropane	4-Dimethylaminoazobenzene
3,3'-Dichlorobenzidine (and its salts)	Asbestos	Vinyl chloride
Benzidine	alpha-Naphthylamine	Ethylene oxide
Ethyleneimine	bis-Chloromethyl ether	Formaldehyde
2-Acetylaminofluorene	beta-Naphthylamine	4,4'-Methylene bis (2-chloroaniline)
N-Nitrosodimethylamine	Benzene	

2. Indicate if the waste contains radioactive material.
3. Indicate if the waste contains TSCA regulated PCBs. Indicate concentration range (ppm) and complete Section P. PCB items. PCBs are TSCA regulated when PCB concentration of original PCB Source or PCB Waste is ≥ 50 ppm.
4. Indicate if the waste contains biomedical waste materials and/or infectious waste materials. (Note that a special manifest is required for disposal of biomedical and infe[ctious wast]e in the state of New Jersey)
5. Indicate if the waste contains FIFRA Pesticides with specific disposal requirements.
6. Indicate if the waste contains asbestos.
7. Indicate if the waste contains benzene.
8. Indicate if the waste is a California List Regulated Waste per 40CFR268.32.
9. Indicate if the waste is a Solvent Regulated Waste per 40CFR268.30.
10. Indicate if the waste is a USEPA Dioxin Regulated Waste per 40CFR268.31.
11. Indicate if the waste is a 1st, 2nd, or 3rd Third Land Disposal Restriction Regulation waste per 40CFR268.

SECTION I. WASTE COMPOSITION

1. List all organic and/or inorganic components of the waste using specific chemical name and constituent. DO NOT list trade names. For all components, indicate concentration in which EACH component is present. The concentration may be expressed as a range (e.g. ± 10%). The total of all concentrations must equal a minimum 100%. For each component list the Chemical Abstract Substance Registry Number (CASRN) and the Reportable Quantity (RQ) in pounds.

SECTION J. PROPERTIES OF WASTE

1. Indicate color of waste (brown, clear, etc.)
2. Odor: DO NOT SMELL THE WASTE. Indicate if the waste has a known incidental odor (i.e. sweet, pungent, etc.)
3. Ignitability: Indicate the flash point in degrees Fahrenheit obtained per SW-846 as referenced in 40 CFR 261.21.
4. For aqueous liquids indicate pH; for all other liquids and sludges indicate Corrosivity (in mm/year), if known, per 40 CFR 261.22.
5. Specify the melting point for a solid in degrees Fahrenheit.
6. Specify the boiling point for a liquid in degrees Fahrenheit.
7. TOC: Specify Total Organic Carbon in mg/l.
8. Viscosity: Specify viscosity in centipoise at 25 degrees Celcius (or 77°F) for liquids and sludges only.
9. Vapor Pressure: Specify vapor pressure in mm of mercury and fill in appropriate temperature in degrees Celcius for liquids and sludges only.
10. Specify concentration (in weight %) of Bromine.
11. Specify concentration (in weight %) of Iodine.
12. Specify concentration (in weight %) of Fluorine.
13. Specify concentration (in weight %) of Chlorine.
14. Specify concentration (in weight %) of Sulfur.
15. Indicate qualitative assessment of flowability of the waste at 25 degrees Celcius (or 77°F).
16. Check all applicable boxes identifying physical state, by volume, at 25 degrees Celcius (or 77°F). Indicate approximate % of each phase or layer for each phys state.
17. Indicate % solid by weight.
18. Heat of combustion: Indicate the Heat of Combustion in BTU/pound.
19. Ash: Indicate % ash content per ASTM D482.80
20. Scrub: Indicate scrub as sum of concentrations of all acid gases released as product of total combustion, reported as pounds of NaOH per pound of waste.
21. Indicate specific gravity or bulk density in pounds per cubic foot.
22. VOC. Indicate the concentration of total Volatile Organic Compounds (VOC) in mg/L per EPA method 8015, or 8010 and 8020 (for OPC only).

SECTION K. REACTIVE CHARACTERISTICS

1.-5. Indicate reactive characteristics of the waste by marking appropriate boxes to specify if waste is explosive, pyrophoric, shock sensitive, water reactive or reactive.
6. Indicate if the waste contains reactive cyanide and specify concentration (in mg/kg)
7. Indicate if the waste contains reactive sulfide and specify concentration (in mg/kg)
8. Indicate if the waste contains oxidizers and specify
9. Indicate if the waste has any other reactive characteristics and specify.

SECTION L. ELEMENTAL ANALYSIS

Total Metals and TCLP metals data are required for incinerable waste streams. TCLP metals data are required for landfill material. For liquid wastes with less than 0 solids, total metals (in mg/kg) x density of waste (in kg/L) = TCLP results (in mg/L). Record data for all that apply. N.B. EP Toxicity Characteristic data are acceptable u 9/25/90, or 3/25/91 for small quantity generators. Consult your Customer Service Representative for applicable elements for each disposal facility.

SECTION M. ORGANIC TOXIC CHARACTERISTICS WASTE

Specify EPA waste code and TCLP results in mg/L for all that apply per list below:

D012-Endrin	D023-o-Cresol	D034-Hexachloroethane
D013-Lindane	D024-m-Cresol	D035-Methyl ethyl ketone
D014-Methoxychlor	D025-p-Cresol	D036-Nitrobenzene
D015-Toxaphene	D026-Cresol	D037-Pentachlorophenol
D016-2,4-D	D027-1,4-Dichlorobenzene	D038-Pyridine
D017-2,4,5-TP (Silvex)	D028-1,2-Dichloroethane	D039-Tetrachloroethylene
D018-Benzene	D029-1,1-Dichloroethylene	D040-Trichloroethylene
D019-Carbon tetrachloride	D030-2,4-Dinitrotoluene	D041-2,4,5-Trichlorophenol
D020-Chlordane	D031-Heptachlor (and its hydroxide)	D042-2,4,6-Trichlorophenol
D021-Chlorobenzene	D032-Hexachlorobenzene	D043-Vinyl chloride
D022-Chloroform	D033-Hexachlorobutadiene	

SECTION N. RECOMMENDED TREATMENT METHOD

1.-6. Check applicable box for recommended treatment method.
7. If treatment method other than listed in 1-6, indicate method.

SECTION O. CERTIFICATION

The Waste Data Sheet is a contractual representation of the waste material. The Waste Data Sheet must be completed and signed by a knowledgeable and authori employee of the generator of the waste.

SECTION P. POLYCHLORINATED BIPHENYL (PCB) ITEMS

1. Liquids
   a. Indicate name of original fluid (i.e. Transformer Oil, Askarel).
   b. Indicate name of any solvent contaminated with PCBs (i.e. diesel).
   c. Indicate PCB concentration (in ppm).
   d. Indicate shipping weight in kilograms.
2. Capacitors
   a. Indicate quantity of PCB capacitors.
   b. Indicate shipping weight of PCB capacitors in kilograms.
3. Transformers and Regulators
   a. Indicate dimensions of transformers or regulators.
   b. Specify nameplate gallons.
   c. Indicate PCB concentration of transformers or regulators (in ppm).
   d. Specify shipping weight in kilograms.
   e. Indicate if transformers or regulators will be shipped full or drained only or drained and flushed.
4. Other Types of PCB Articles (be specific).
   a. Specify name of any other PCB articles (i.e. spill debris).
   b. Indicate quantity and shipping container.
   c. Indicate shipping weight in kilograms.
   d. Indicate PCB concentration in ppm.

SNCE AGENCIES:

Department of Transportation (DOT) Hotline: 202-366-4488
RCRA Hotline: 1-800-424-9346
TSCA Hotline: 202-554-1404
Texas Water Commission: 512-463-8175
Louisiana Department of Environmental Quality: 504-342-1227
New Jersey Department of Environmental Protection, Division of Hazardous Waste Management: 609-292-8341
Missouri Department of Natural Resources: 314-751-3176
California Department of Health Services, Toxic Substance Control Program: 818-567-3000
See Page 6 for complete addresses and phone numbers for Rollins Environmental Services Sales Offices

EXHIBIT E

STANDARD OPERATING PROCEDURES: CHAIN-OF-CUSTODY, DOCUMENTATION, SAMPLE HANDLING, PACKAGING, AND SHIPPING

CHAIN OF CUSTODY

The primary objective of the chain-of-custody procedure is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from collection to completion of all required analyses. A sample is in custody if it is:

- In someone's physical possession;
- In someone's view;
- Locked up; or
- Kept in a secured area that is restricted to authorized personnel.

Field Custody Procedures

- As few persons as possible should handle samples.
- Sample bottles will be obtained precleaned from a source such as I-Chem. Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use.
- The sample collector is personally responsible for the care and custody of samples collected until they are transferred to another person or dispatched properly under chain-of-custody rules.
- The sample collector will record sample data in the field notebook.
- The site manager will determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

Sample Tags

Sample tags attached to or affixed around the sample container must be used to properly identify all samples collected in the field. The sample tags are to be placed on the bottles so as not to obscure any QA/QC lot numbers on the bottles; sample information must be printed in a legible manner using waterproof ink. Field identification must be sufficient to enable cross-reference with the logbook. For chain-of-custody purposes, all QC samples are subject to exactly the same custodial procedures and documentation as "real" samples.

Transfer of Custody and Shipment

- The coolers in which the samples are packed must be accompanied by a chain-of-custody record. When transferring samples, the individuals relinquishing and receiving them must sign, date, and note the time on the chain-of-custody record. This record documents sample custody transfer.

- Shipping containers must be sealed with custody seals for shipment to the laboratory. The method of shipment, name of courier, and other pertinent information are entered in the "Remarks" section of the chain-of-custody record and traffic reports.

- All shipments must be accompanied by the chain-of-custody record identifying their contents. The original record accompanies the shipment. The other copies are distributed appropriately to the site manager.

- If sent by mail, the package is registered with return receipt requested. If sent by common carrier, a bill of lading is used. Freight bills, Postal Service receipts, and bills of lading are retained as part of the permanent documentation.

Chain-of-Custody Record

The chain-of-custody record must be fully completed in duplicate, using black carbon paper where possible, by the field technician who has been designated by the project manager as responsible for sample shipment to the ASC for analysis.

Custody Seals

Custody seals are preprinted adhesive-backed seals with security slots designed to break if the seals are disturbed. Sample shipping containers (coolers, cardboard boxes, and the like, as appropriate) are sealed in as many places as necessary to ensure security. Seals must be signed and dated before use. Upon receipt at the laboratory, the custodian must check and certify, by completing the package receipt log that seals on boxes and bottles are intact. Strapping tape should be placed over the seals to ensure that seals are not accidentally broken during shipment.

DOCUMENTATION

Sample Identification

All containers of samples collected from the site will be identified using the following format on a label or tag fixed to the sample container (labels are to be covered with Mylar tape):

DL - XX - # - O/D

where DL indicates Devey Loeffel site, XX is the type of sample matrix, the number indicates the successive number of samples taken at the site that quarter and O/D designates original or duplicate when field duplicates are taken. Matrix types are as follows:

GW - Groundwater

SW - Surface water

SE - Sediment

L - Leachate

Each sample will be labeled with the site name, chemically preserved (if required), and sealed immediately after collection. To minimize handling of sample containers, labels will be filled out prior to sample collection. The sample label will be filled out using waterproof ink and will be firmly affixed to the sample containers and protected with Mylar tape. The sample label will give the following information:

- Name of sampler,
- Date and time of collection,
- Sample number,
- Analysis required,
- pH, and
- Preservation.

Daily Logs

Daily logs and data forms are necessary to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project and to refresh the memory of the field personnel if called upon to give testimony during legal proceedings. All daily logs will be kept in a bound waterproof notebook containing numbered pages. All entries will be made in waterproof ink, dated, and signed. No pages will be removed for any reason. Corrections will be made according to the procedures given at the end of this section. The daily logs will include a site log and a task log.

The site log is the responsibility of the team leader and will include a complete summary of the day's activity at the site. The log will include:

- Name of person making entry (signature).
- Names of team members on-site.
- Levels of personnel protection:
  - Level of protection originally used;
  - Changes in protection, if required; and
  - Reasons for changes.
- Time spent collecting samples.
- Documentation on samples taken, including:
  - Sampling location and depth station numbers;
  - Sampling date and time, sampling personnel;
  - Type of sample (grab, composite, etc.); and
  - Sample matrix.
- On-site measurement data.
- Field observations and remarks.
- Weather conditions, wind direction, etc.
- Unusual circumstances or difficulties.
- Initials of person recording the information.

Corrections to Documentation

Notebook. As with any data logbooks, no pages will be removed for any reason. If corrections are necessary, these must be made by drawing a single line through the original entry (so that the original entry can still be read) and writing the corrected entry alongside. The correction must be initialed and dated. Most corrected errors will require a footnote explaining the correction.

Sampling Forms. As previously stated, all sample identification tags, chain-of-custody records, and other forms must be written in waterproof ink. None of these documents are to be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement document.

If an error is made on a document assigned to one individual, that individual may make corrections simply by crossing a line through the error and entering the corrected information. The incorrect information should not be obliterated. Any subsequent error discovered on a document should be corrected by the person who made the entry. All corrections must be initialed and dated.

SAMPLE HANDLING, PACKAGING, AND SHIPPING

The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of the sample, but also prevents any detrimental effects due to the possible hazardous nature of samples. Regulations for packaging, marking, labeling, and shipping hazardous materials are promulgated by the United States Department of Transportation (DOT) in the Code of Federal Regulations, 49 CFR 171 through 177. All samples will be delivered to the laboratory with 24 to 48 hours from the day of collection.

Sample Packaging

Samples must be packaged carefully to avoid breakage or contamination and must be shipped to the laboratory at proper temperatures. The following sample packaging requirements will be followed:

- Sample bottle lids must never be mixed. All sample lids must stay with the original containers.

- The sample volume level can be marked by placing the top of the label at the appropriate sample height, or with a grease pencil. This procedure will help the laboratory to determine if any leakage occurred during shipment. The label should not cover any bottle preparation QA/QC lot numbers.

- All sample bottles are placed in a plastic bag to minimize the potential for vermiculite contamination.

- Shipping coolers must be partially filled with packing materials and ice when required, to prevent the bottles from moving during shipment.

- The sample bottles must be placed in the cooler in such a way as to ensure that they do not touch one another.

- The environmental samples are to be cooled. The use of "blue ice" or some other artificial icing material is preferred. If necessary, ice may be used, provided that it is placed in plastic bags. Ice is not to be used as a substitute for packing materials.

- Any remaining space in the cooler should be filled with inert packing material. Under no circumstances should material such as sawdust or sand be used.

- A duplicate custody record and traffic reports, if required, must be placed in a plastic bag and taped to the bottom of the cooler lid. Custody seals are affixed to the sample cooler.

Note: The ASC does not knowingly accept samples with high levels of radioactivity or dioxins, or any samples for which ASC handling procedures may be insufficient to protect laboratory employees. Project staff and field staff must take all feasible precautions, including discussions with site officials and company representatives, and site observations to ensure that neither they nor ASC personnel are exposed to unduly hazardous materials. Note that field staff are (in many cases) equipped with personal protection and breathing apparatus not available to ASC personnel.

Shipping Containers

Environmental samples will be properly packaged and labeled for transport and dispatched for analysis to Ecology and Environment, Inc., Analytical Services Center, 4285 Genesee Street, Buffalo, New York, 14225. A separate chain-of-custody record must be prepared for each container. The following requirements for shipping containers will be followed.

Shipping containers are to be custody-sealed for shipment as appropriate. The container custody seal will consist of filament tape wrapped around the package at least twice and custody seals affixed in such a way that access to the container can be gained only by cutting the filament tape and breaking a seal.

Field personnel will make arrangements for transportation of samples to the ASC. When custody is relinquished to a shipper, field personnel will telephone the ASC custodian (716/631-0360) to inform him of the expected arrival time of the sample shipment and to advise him of any time constraints on sample analysis. The ASC must be notified as early in the week as possible, and in no case later than 3 p.m. eastern standard time on Thursday, regarding samples intended for Saturday delivery. Samples will be retained by the ASC for 30 days after the final report is submitted.

Marking and Labeling

- Use abbreviations only where specified.
- The words "This End Up" or "This Side Up" must be clearly printed on the top of the outer package. Upward pointing arrows should be placed on the sides of the package. The words "Laboratory Samples" should also be printed on the top of the package.
- After a sample container has been sealed, two chain-of-custody seals are placed on the container, one on the front and one on the back. The seals are protected from accidental damage by placing strapping tape over them.
- If samples are designated as medium or high hazard, they must be sealed in metal paint cans, placed in the cooler with vermiculite and labeled and placarded in accordance with DOT regulations.
- In addition, the coolers also must be labeled and placarded in accordance with DOT regulations if shipping medium and high hazard samples.

EXHIBIT F
INITIAL HEALTH AND SAFETY PLAN FOR SITE INSPECTION

ecology and environment, inc.

SITE SAFETY PLAN

A. GENERAL INFORMATION

Project Title: Schatz Site Project No.: 0B4010

TDD/Pan No.: _____

Project Manager: Mike Steffan M.G.S. Project Dir.: Jack Wilcox

Location(s): Poughkeepsie, New York

Prepared by: Kevin Smith Date Prepared: 5/7/91

Approved by: Tom Siener Date Approved: 5/8/91

Site Safety Officer Review: _____ Date Reviewed: _____

Scope/Objective of Work: Initial site investigation under NYSDEC stand-by contract for work plan development. Visual walk through only. No sampling.

Proposed Date of Field Activities: 5/9/91

Background Information: Complete: [ ] Preliminary (no analytical data available) [X]

Documentation/Summary:

Overall Chemical Hazard:	Serious	[ ]	Moderate	[X]
	Low	[ ]	Unknown	[ ]
Overall Physical Hazard	Serious	[ ]	Moderate	[X]
	Low	[ ]	Unknown	[ ]

B. SITE/WASTE CHARACTERISTICS

Waste Type(s):

Liquid	[X]	Solid	[X]	Sludge	[ ]	Gas/Vapor	[ ]

Characteristic(s):

Flammable/ Ignitable	[ ]	Volatile	[ ]	Corrosive	[ ]	Acutely Toxic	[X]
Explosive	[ ]	Reactive	[ ]	Carcinogen	[X]	Radioactive*	[ ]

Other: Asbestos in damaged condition on site.

Physical Hazards:

Overhead:	[ ]	Confined Space	[ ]	Below Grade	[ ]	Trip/Fall	[X]
Puncture	[X]	Burn	[X]	Cut	[X]	Slash	[X]
Noise	[ ]	Other:					

*Requires completion of additional form and special approval from the Corporate Health/Safety group. Contact RSC or HQ.

Site History/Description and Unusual Features (see Sampling Plan for detailed description): Former bearing manufacturing facility containing 14 quenching pits. Site includes large industrial park with several buildings including a mental health center, operational textile establishment.

Locations of Chemicals/Wastes: 55 gallon drums, quenching pits, soil, dust within buildings. Damaged asbe throughout the facility.

Estimated Volume of Chemicals/Wastes:

Site Currently in Operation Yes [X] No [ ] Preliminary asbestos work beginning 5/9/91

C. HAZARD EVALUATION

List Hazards by Task (i.e., drum sampling, drilling, etc.) and number them. (Task numbers are cross-referenced in sec D).

Physical Hazard Evaluation: This will be for initial site inspection for development of formal work plan. Buddy system will be observed. Will monitor for heat stress. Hazards include slips, trips and falls.

Chemical Hazard Evaluation: See attached Chemical Hazard forms.

Compound	PEL/TWA	Route of Exposure	Acute Symptoms	Odor Threshold	Odor Description
PCB's	.5 mg/m^3	inhalation, ingestion, (eye) derm	irritated eyes and skin, chloracne	Mild hydrocarbon	
Lead	.15 mg/m^3	inhalation, ingestion, derm	stomach and nervous system distress	Odorless	
Cadmium	.2 mg/m^3	inhalation, ingestion	irritation of nose and throat, nausea, vomiting	Odorless	
Barium	.5 mg/m^3	skin, ingestion, inhalation	tightness of neck, fact, vomiting, diarrhea, weakness	Odorless	
Arsenic	.2 mg/m^3	inhalation, ingestion, eye (ocular)	ingestion, stomach disturbance, muscle spasms, inhalation, irritation of respiratory tract	Odorless	

Note: Complete and attach a Hazard Evaluation Sheet for major known contaminant.

D. SITE SAFETY WORK PLAN

Site Control: Attach map, use back of this page, or sketch of site showing hot zone, contamination reduction zone, etc.

Perimeter Identified? [Y] Site secured? [Y]

Work Areas Designated? [N] Zone(s) of Contamination Identified? [N]

Personnel Protection (TLD badges required for all field personnel):

Anticipated Level of Protection (cross-reference task numbers to Section C):

Task Number	Description	A	B	C	D
Task 1	Site invest			X	

(Expand if necessary)

Modifications: _____

_____

Action Levels for Evacuation of Work Zone Pending Reassessment of Conditions:

- o Level D: O_2 <19.5% or >25%, explosive atmosphere >10% LEL, organic vapors above background levels, particulates >___ mg/m^3, other _____
- o Level C: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapor (in breathing zone) >5 ppm, particulates > _____ mg/m^3, other _____
- o Level B: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapor (in breathing zone) >500 ppm, particulates > _____ mg/m^3, other _____
- o Level A: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapor >500 ppm, particulates > _____ mg/m^3, other _____

Air Monitoring (daily calibration unless otherwise noted):

Contaminant of Interest	Type of Sample (area, personal)	Monitoring Equipment	Frequency of Sampling

(Expand if necessary)

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc.:

N/A

_____

Personnel Decon Protocol: Personnel will perform a dry decon by removing booties, tyveks, and gloves. Will bag disposables and HVR cartridges and leave on site. Personnel will wash hands ASAP.

Decon Solution Monitoring Procedures, or Procedures, if Applicable:

Special Site Equipment, Facilities, or Procedures (Sanitary Facilities and Lighting Must Meet 29 CFR 1910.120):

All personnel will become familiar with all facility emergency signals and evacuation plans prior to the commencement of work.

Site Entry Procedures and Special Considerations: Level C protection will be donned before entry into work area. Buddy system observed at all times.

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:

N/A

General Spill Control, if applicable: N/A

Investigation-Derived Material Disposal (i.e., expendables, decon waste, cuttings):

Investigation derived waste will be left on site.

Sample Handling Procedures Including Protective Wear:

N/A

Team Member*	Responsibility
Michael Steffan	Team Leader
Kevin Smith	Site Safety Officer

*All entries into exclusion zone require Buddy System use. All E & E field staff participate in medical monitoring program and have completed applicable training per 29 CFR 1910.120. Respiratory protection program meets requirements of 29 CFR 1910.134, and ANSI Z88.2 (1980).

E. EMERGENCY INFORMATION
(Use supplemental sheets, if necessary)

LOCAL RESOURCES

(Obtain a local telephone book from your hotel, if possible)

Ambulance 914-471-3700

Hospital Emergency Room 914-471-2000 St. Francis Hospital

Poison Control Center 1-353-1000

Police (include local, county sheriff, state) 914-485-3434

Fire Department 914-431-8336 City of Poughkeepsie

Airport 518-869-3021 Albany

Agency Contact (EPA, State, Local USCG, etc.) Joseph Yavonditte, NYSDEC, 518-457-9280

Local Laboratory

UPS/Federal Express

Client/EPA Contact Joseph Yavonditte, NYSDEC 518-457-9280

Site Contact

SITE RESOURCES

Site Emergency Evacuation Alarm Method Site layout not known.

Water Supply Source Not known

Telephone Location, Number N/A

Cellular Phone, if available N/A

Radio N/A

Other

EMERGENCY CONTACTS

1. Dr. Raymond Harbison (University of Florida) ..... (501) 221-0486 or (904) 462-3277, 3281
   Alachua, Florida ..... (501) 870-8263 (24 hours)

2. Ecology and Environment, Inc., Safety Director ..... (716) 684-8060 (office)
   Paul Jonmaire ..... (716) 655-1280 (home)

3. Regional Office Contact ..... Buffalo (home)

   N/A (office)

4. FITOM, TATOM, or Office Manager ..... N/A (home)

MEDTOX HOTLINE

1. Twenty-four hour answering service: (501) 370-8263

   What to report:

   - State: "this is an emergency."
   - Your name, region, and site.
   - Telephone number to reach you.
   - Your location.
   - Name of person injured or exposed.
   - Nature of emergency.
   - Action taken.

2. A toxicologist, (Drs. Raymond Harbison or associate) will contact you. Repeat the information given to the answering service.

3. If a toxicologist does not return your call within 15 minutes, call the following persons in order until contact in made:

   a. 24-hour hotline - (716) 684-8940
   b. Corporate Safety Director - Paul Jonmaire - home # (716) 655-1260
   c. Assistant Corporate Safety Officer - Steven Sherman - home # (716) 688-0084

EMERGENCY ROUTES

(NOTE: Field Team Must Know Route(s) Prior to Start of Work)

Directions to hospital (include map) (St. Francis Hospital) North on Fairview Avenue to West Cedar St. Turn left onto West Cedar St. proceed to Albany Post Road - Turn left onto Albany Post Road - hospital entrance is 1/4 mile on left.

Emergency egress routes to get off site Site layout not known.

F. EQUIPMENT CHECKLIST

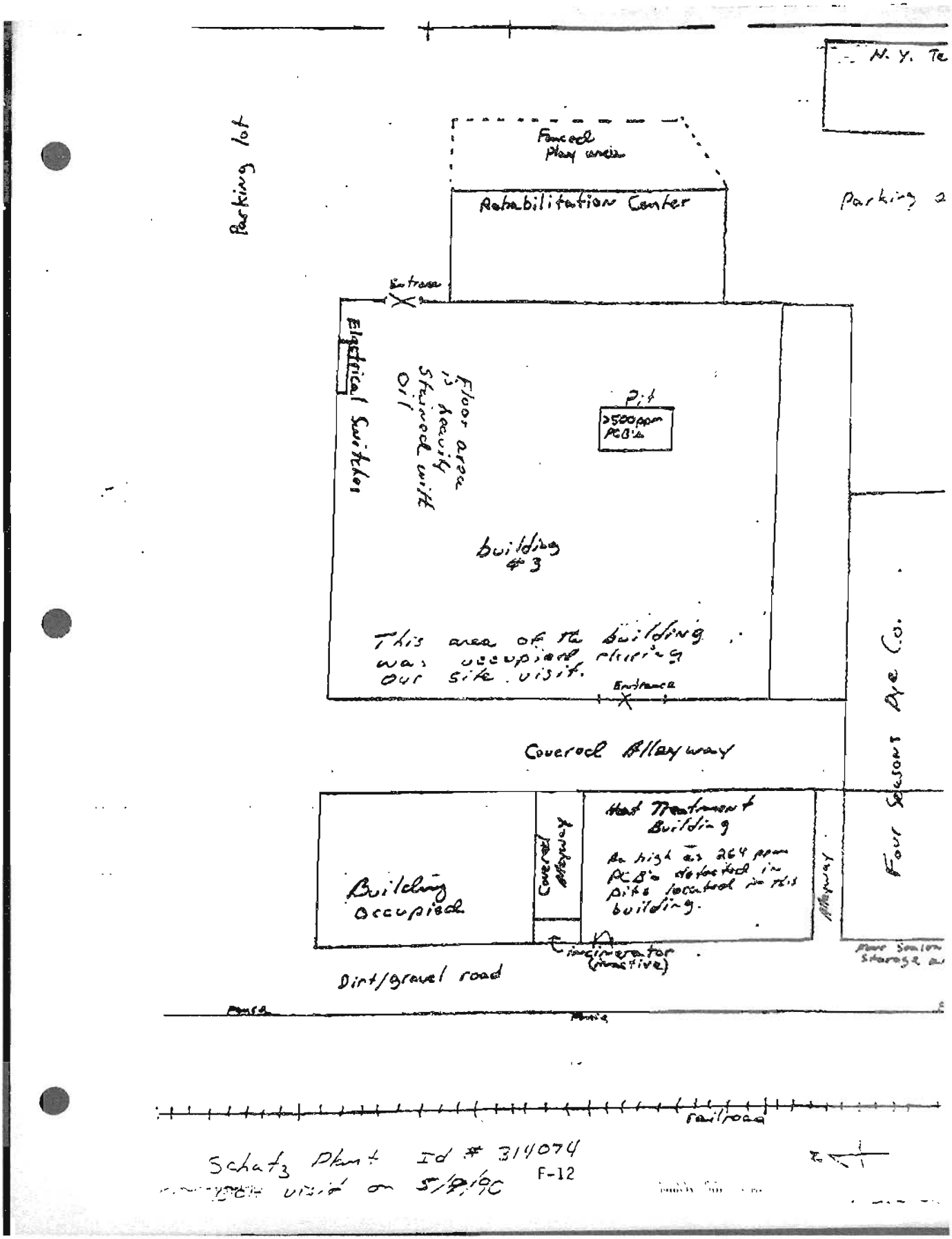
PROTECTIVE GEAR

Level A	No.	Level B	No.
SCBA		SCBA	
SPARE AIR TANKS		SPARE AIR TANKS	
ENCAPSULATING SUIT (Type _____)		PROTECTIVE COVERALL (Type _____)	
SURGICAL GLOVES		RAIN SUIT	
NEOPRENE SAFETY BOOTS		BUTYL APRON	
BOOTIES		SURGICAL GLOVES	
GLOVES (Type _____)		GLOVES (Type _____)	
OUTER WORK GLOVES		OUTER WORK GLOVES	
HARD HAT		NEOPRENE SAFETY BOOTS	
CASCADE SYSTEM		BOOTIES	
5-MINUTE ESCAPE COOLING VEST		HARD HAT WITH FACE SHIELD	
		CASCADE SYSTEM	
		MANIFOLD SYSTEM	
Level C		**Level D**	
ULTRA-TWIN RESPIRATOR	X	ULTRA-TWIN RESPIRATOR (Available)	X
POWER AIR-PURIFYING RESPIRATOR		CARTRIDGES (Type GMCH)	X
CARTRIDGES (Type GMCH)	X	5-MINUTE ESCAPE MASK (Available)	
5-MINUTE ESCAPE MASK		PROTECTIVE COVERALL (Type Tyvek)	X
PROTECTIVE COVERALL (Type Tyvek)	X	RAIN SUIT	
RAIN SUIT		NEOPRENE SAFETY BOOTS	
BUTYL APRON		BOOTIES	X
SURGICAL GLOVES	X	NITRILE	
GLOVES (Type _____)		HARD HAT WITH FACE SHIELD	
OUTER WORK GLOVES		SAFETY GLASSES	X
NEOPRENE SAFETY BOOTS		GLOVES (Type _____)	
HARD HAT WITH FACE SHIELD			
BOOTIES	X		
HARD HAT	X		

INSTRUMENTATION	No.
OVA	
THERMAL DESORBER	
O_2/EXPLOSIMETER W/CAL. KIT	
PHOTOVAC TIP	
Hnu (Probe _____)	
MAGNETOMETER	
PIPE LOCATOR	
WEATHER STATION	
DRAEGER PUMP, TUBES _____	
BRUNTON COMPASS	
MONITOX CYANIDE	
HEAT STRESS MONITOR	
NOISE EQUIPMENT _____	
PERSONAL SAMPLING PUMPS	
MINI RAM (Particulates)	
PID	
RADIATION EQUIPMENT	
DOCUMENTATION FORMS	
PORTABLE RATEMETER	
SCALER/RATEMETER	
NaI Probe	
ZnS Probe	
GM Pancake Probe	
GM Side Window Probe	
MICRO R METER	
ION CHAMBER	
ALERT DOSIMETER	
POCKET DOSIMETER	
TLD BADGE	X
FIRST AID EQUIPMENT	
FIRST AID KIT	
OXYGEN ADMINISTRATOR	
STRETCHER	
PORTABLE EYE WASH	

FIRST AID EQUIPMENT (Cont.)	No.
BLOOD PRESSURE MONITOR	
FIRE EXTINGUISHER	
DECON EQUIPMENT	
WASH TUBS	
BUCKETS	
SCRUB BRUSHES	
PRESSURIZED SPRAYER	
DETERGENT (Type _____)	
SOLVENT (Type _____)	
PLASTIC SHEETING	
TARPS AND POLES	
TRASH BAGS	
TRASH CANS	
MASKING TAPE	
DUCT TAPE	
PAPER TOWELS	
FACE MASK	
FACE MASK SANITIZER	
FOLDING CHAIRS	
STEP LADDERS	
DISTILLED WATER	
SAMPLING EQUIPMENT	
8-OZ. BOTTLES	
HALF-GALLON BOTTLES	
VOA BOTTLES	
STRING	
HAND BAILERS	
THIEVING RODS WITH BULBS	
SPOONS	
KNIVES	
FILTER PAPER	
PERSONAL SAMPLING PUMP SUPPLIES	
4-OZ. JARS	

VAN EQUIPMENT	No.	MISCELLANEOUS (Cont.)	No.
TOOL KIT		BINOCULARS	
HYDRAULIC JACK		MEGAPHONE	
LUG WRENCH			
TOW CHAIN			
VAN CHECK OUT			
Gas			
Oil			
Antifreeze			
Battery			
Windshield Wash			
Tire Pressure			
MISCELLANEOUS		SHIPPING EQUIPMENT	
PITCHER PUMP		COOLERS	
SURVEYOR'S TAPE		PAINT CANS WITH LIDS, 7 CLIPS EACH	
100 FIBERGLASS TAPE		VERMICULITE	
300 NYLON ROPE		SHIPPING LABELS	
NYLON STRING		DOT LABELS: "DANGER"	
SURVEYING FLAGS		"UP"	
FILM		"INSIDE CONTAINER COMPLIES ..."	
WHEEL BARROW		"HAZARD GROUP"	
BUNG WRENCH		STRAPPING TAPE	
SOIL AUGER		BOTTLE LABELS	
PICK		BAGGIES	
SHOVEL		CUSTODY SEALS	
CATALYTIC HEATER		CHAIN-OF-CUSTODY FORMS	
PROPANE GAS		FEDERAL EXPRESS FORMS	
BANNER TAPE		CLEAR PACKING TAPE	
SURVEYING METER STICK			
CHAINING PINS AND RING			
TABLES			
WEATHER RADIO			



Schaf 3 Plant Id # 314074
F-12
visit on 5/8/90

From Page One

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Page 1A

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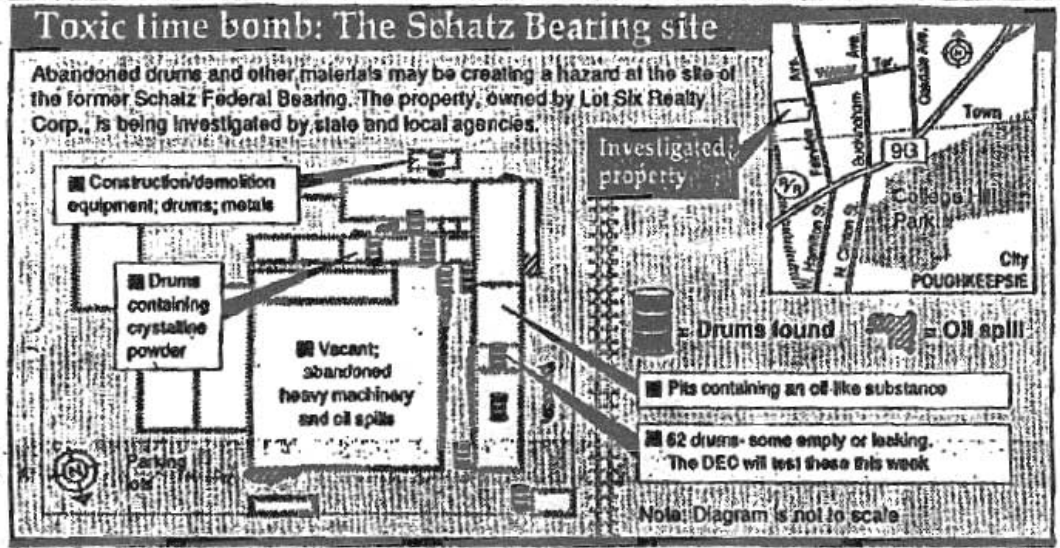
Toxic time bomb: The Schatz Bearing site

Abandoned drums and other materials may be creating a hazard at the site of the former Schatz Federal Bearing. The property, owned by Lot Six Realty Corp., is being investigated by state and local agencies.



Source: Dutchess County Dept. of Health

Journal/ Joanne Cimerelli

PCBs also was discovered.

Health department spokesman W. Steve Capowski said tests of the dust in the largest, central building on the site found PCB levels as high as 350 parts per million. Materials containing 50 parts per million or more of PCBs are considered hazardous.

Separate charges against Schutzman and Four Seasons allege the dye was discharged to the city storm sewer July 30 without a permit.

Pleasant Valley Finishing Co. —with a variety of zoning violations, said Richard Wolf, deputy attorney for the town.

"We are concerned with the danger associated with hazardous materials, electrical problems, oil spills and dye spills," said Poughkeepsie Supervisor Hinkley. "We are really concerned with the danger associated with unidentified barrels."

than two years for the company's assets to be sold and the proceeds distributed to more than 1,000 creditors.

In addition to the plant, the company left a 3-acre dump on a 55-acre site between North Grand Avenue and Van Wagner Road in the Town of Poughkeepsie.

The disposal site operated between 1949 and 1973 and was used

STOP-DWI

Continued from Page

reached for comment.

In the meantime, Ulster officials say they will bac coordinator Mary E. McMic has asked them to withhold 2 of county and City of King driving while intoxicated fi counties have been directed to Albany by Aug. 27.

The State DWI Coordinator ciation executive committe Friday and voted to launch t suit in time for a temporary tion to put a hold on that payment.

McMickle, a member of th association's board, briefed tergovernmental Relations C tee of the Ulster County Legi Monday. Last month, the coun islature adopted a resolution the state to reconsider its actio

In her briefing, McMickle s had discussed the problem County Treasurer Lewis Kirschner and County Adminis William Darwak, asking each

Chemical Name Arsenic Date 5-4-71 YDP

DOT Classification _____ Job Number _____

CAS Number 7440-38-2

REFERENCES CONSULTED (circle; also include MSDS if appropriate.)
(NIOSH/OSHA Pocket Guide) Merck Index Hazardline (Christ/vol III
(ACGIH TLV Booklet) Toxic & Hazardous Safety Manual (SAX) (Aldric
(RTECS) other: Casarett &Doull's Toxicology,Carcinogen Report-NTI

CHEMICAL PROPERTIES: (Synonyms:Arsenicals,metallic arsenic,colloi
Chemical Formula As MW 74.9 Ionization Potential ___
Physical State black solid Boiling Point sublim Freezing Point
Flash Point N/A Flammable Limits N/A Vapor Pressure_
Specific Gravity/Density N/A Odor/Odor Threshold odorle

Solubility-water: Insoluble Solubility-other: nitric acid
Incompatabilities & Reactivity:halogens,oxidizers,zinc,bromine a

TOXICOLOGICAL PROPERTIES:
Exposure Limits: TLV-TWA (ACGIH) 0.2 mg/m³ PEL (OSHA) 10 ug/
STEL none Ceiling Limits 2ug/m³/15min IDLH carcino
Toxicity Data: (Indicate duration of study)
Human; IHL _____ Dermal _____ Oral Tdlo 7857
Rat/Mouse; IHL _____ Dermal _____ Oral Tdlo 605u
Aquatic: none establ. Other: _____
Carcinogen human-pos Mutagen exper. Reproductive Toxin ex
Route(s) of exposure - (circle all that apply): (Inhalation) (Ina
Dermal Contact (Eye(ocular)) Dermal Absorption Other _____

HANDLING RECOMMENDATIONS: (personal protective measures)
Respirators: <100ug/m³ use APR, >100ug/m³ use SCBA
Protective Clothing: rec.-viton,butyl,vinyl,nitrile,neoprene.
Special Equipment:

DISPOSAL,FIRE and SPILLS: (Use numbered codes;see attached sheets explanation.)
Disposal P Fire 11,13 Leaks&Spills 4,6,7,8,9
Decomposition Products:toxic fumes of arsenic oxides.

FIRST AID:
ING: Get medical attention immediately.
IHL: Remove to fresh air,artificial resp. if needed,medical atten
Eye/Skin: Flush/rinse with large amounts of water for at least 15

SYMPTOMS:
acute(immediate) exposure effects:ING-stomach disturbances,burnin oral cavities,vomiting,severe fluid loss,muscle spasms,coma. IHL- chest pain,headache,weakness,perforation of nasal septum,irritati espiratory tract.possible skin irritation.

chronic(long term) exposure effects:IHL-industrial chronic poison: fatigue,weakness,loss of appetite,nausea,diarrhea,hoarseness,uppe mucosa irritation,advanced stages see nerve problems in extremiti liver damage,lung cancer,skin cancer also may result.

HAZARD EVALUATION OF CHEMICALS

Chemical Name Barium
Date 4/12/59 checked 5/3/
DOT Name/U.N. No. 1400
Job No. ~~VH 7500~~
CAS Number

Reference Consulted (circle):
NIOSH/OSHA Pocket Guide Verschueren Merck Index Hazardline Chris (Vol.
Toxic and Hazardous Safety Manual ACGIH (Other) OHS database

Chemical Properties: (Synonyms: Metallic Barium, Barium Metal
Chemical Formula BA Molecular Weight 137.36
Physical State Solid Solubility (H_2O) Reacts Boiling Point 2954
Flash Point Flammable Solid Vapor Pressure/Density 10mm @ 1920°F Freezing Point 1337
Specific Gravity 3.5 Odor/Odor Threshold Flammable Limits
Incompatibilities Reacts with water releasing toxic gases.
also Ammonia, O_2, Halogens, Acids, metal in powdered form is explosi

Biological Properties:
TLV-TWA 0.5 mg/m^3 PEL 0.5 mg/m^3 Odor Characteristic
IDLH 250 mg/m^3 Human Aquatic Rat/Mouse
Route of Exposure Skin, Ingestion, Inhalation.
Carcinogen Teratogen Mutagen

Handling Recommendations: (Personal protective measures)
Prevent skin contact, wear gloves impervious cl

Monitoring Recommendations:

Disposal/Waste Treatment:

Health Hazards and First Aid:
Soluble Barium compounds are Primary skin irritants and convulsant Poisons.

Symptoms: Acute: tightness of neck and facial muscles, vomiting, Diarrhea; pain, weakness, cardiac disturbances
Chronic: No chronic poisoning has been reported

recycled paper

ecology and environment

ecology and environment, inc.

HAZARD EVALUATION OF CHEMICALS

Chemical Name Cadmium Date 5-3-91

DOT Name/U.N. No. Job No. 68-4010

CAS Number 7440-43-9

References Consulted (circle):

NIOSH/OSHA Pocket Guide Yaroshuaren Merck Index Hazardline Chris (Vol. II)

Sax's and Hazardous Safety Manual ACGIH Others

Chemical Properties: (Appearance) Odorless, gray, Powder

Chemical Formula Cd Molecular Weight 112.4

Physical State Solid Solubility (H_2O) insoluble Boiling Point 767°C

Flash Point none Vapor Pressure/Density essentially 0 Freezing Point

Specific Gravity 8.642 Odor/Odor Threshold None Flammable Limits

Incompatibilities Contact w/ strong oxidizers or w/ elemental sulfur, selenium and tellurium may cause fires & explosions.

Biological Properties:

TLV-TWA PEL .2 mg/m³ Odor Characteristic

IDLH Human Aquatic Rat/Mouse

Route of Exposure inhalation, ingestion

Carcinogen possible Teratogen Mutagen possible

Handling Recommendations: (Personal protective measures)

Protective coveralls & gloves to keep dust away.

Monitoring Recommendations:

Cadmium Dust can be collected on air cassette filter & analyzed.

Disposal/Waste Treatment:

disposed in sealed container in a secure landfill.

Health Hazards and First Aid: Contact Physician:

ingestion can cause Nausea Vomiting, diarrhea & abdominal cramps

inhalation causes ↓. If ingested give large quantities of water & make Conscious Vomit

Symptoms: Acute: irritation of nose & throat if enough is inhaled. After a few hrs cough develops, shortness of breath, sweating, chills, chest pain, & weakness.

Chronic: loss of smell, ulcerations of nose, kidney damage, mild anemia

Chemical Name Lead Date ~~9/5/90~~ 5/3/91 gb

DOT Classification ______ Job Number ~~TC 4610~~

CAS Number 7439-92-1

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

CHEMICAL PROPERTIES: (Synonyms: White lead, plumbum
Chemical Formula Pb MW 207 Ionization Potential N/A
Physical State Variable Boiling Point 3164° F Freezing Point ______
Flash Point Incombust. Flammable Limits Incombus Vapor Pressure variab
Specific Gravity/Density 11.3 @61° F Odor/ Odor Threshold None
Solubility-water: Insoluble Solubility-other: ______
Incompatabilities & Reactivity: Strong oxidizers, perioxides, active me

TOXICOLOGICAL PROPERTIES:
Exposure Limits: TLV-TWA (ACGIH) .15 mg/m3 PEL (OSHA) 50ug/m3
STEL None est. Ceiling Limits None est. IDLH Variable
Toxicity Data: (Indicate duration of study)
Human; IHL ______ Dermal ______ Oral Td10 450mg/kg/(
Rat/Mouse; IHL ______ Dermal ______ Oral Tdlo 790mg/kg
Aquatic: Unknown Other: Toxicity varies with lead cpds.
Carcinogen Indef. Mutagen Indef Reproductive Toxin exp. teratogen
Route(s) of exposure - (circle all that apply): (Inhalation) (Ingestion) (Dermal Contact) (Eye(ocular)) (Dermal Absorption) Other ______

HANDLING RECOMMENDATIONS: (personal protective measures)
Respirators: 5mg/m3 high efficiency particulate respirator, other concentrations - SCBA.
Protective Clothing: Avoid skin and eye contact
Special Equipment: None

DISPOSAL, FIRE and SPILLS: (Use numbered codes; see attached sheets for explanation.)
Disposal P Fire 13 Leaks&Spills 7,8,10
Decomposition Products: Toxic fumes of lead

FIRST AID:
ING: Give water, induce vomiting, medical attention immed.
IHL: Move to fresh air, artifical resp. if necessary, medical attent.
Eye/Skin: Irrigate/wash with water. Wash skin thoroughly with soap & wa

SYMPTOMS:
acute(immediate) exposure effects: Cumulative neurotoxin-commonly occurs from prolonged exposure. Symptoms include stomach distress, vomiting, diarrhea, black stools, anemia, nervous system effects.
chronic(long term) exposure effects: 3 clinical types: a-alimentary-abdomin, discomfort, constipation or diarrhea, metallic taste, lead line on gum headache. b-nueromuscular, muscle weakness, joint/muscle pain, dizziness, insomnia, paralysis c-encephalic: brain involvement, stupor, coma, death, rare
reproductive effects: Human epid. studies have concluded that lead is a poison to [illegible] female germ cells; increased [illegible] miscarriages, [illegible] sterility in females, sperm [illegible] motility

References Consulted (circle):

(NIOSH/OSHA Pocket Guide) Verschueren Merck Index Hazardline Chris

Toxic and Hazardous Safety Manual ACGIH (Other: Chemtrec etc.

Chemical Properties: (Synonyms: AROCLOR 1254, 1221, 1232, 124

Chemical Formula $C_{12}H_5Cl_3$ (APPROX) Molecular Weight 326

Physical State liquid Solubility (H_2O) Insoluble Boiling Point 617

Flash Point 431.3°F Vapor Pressure/Density .001 mm Freezing Point —

Specific Gravity 1.3-1.8 Odor/Odor Threshold _____ Flammable Limits _

Incompatabilities strong oxidizers

Biological Properties:

TLV-TWA 1.0 ug/m³ PEL 0.5 mg/m³ Odor Characteristic Mild Ar

IDLH 5 mg/m³ Human _____ Aquatic _____ Rat/Mouse _

Route of Exposure ingestion, inhalation

Carcinogen ✓ Teratogen _____ Mutagen _____

Handling Recommendations: (Personal protective measures)

Impermiable clothing, gloves faceshields.

use - Neoprene, Butyl rubber, saranex, Nitri

Monitoring Recommendations:

NA

Disposal/Waste Treatment:

store contaminated clothing in closed cont.

until discarded or Laundered.

Health Hazards and First Aid:

skin or eye contact - flush with water for at

least 15 minutes

Symptoms: Acute: Irritate eyes, skin, Jaundice, Dark

Chloracne, nausea, vomiting

Chronic: Liver damage

EMERGENCIES DUE TO HEAT

Field operations during the summer months can create a variety of hazards to the employee. As was referenced in an earlier safety memo, heat cramps, heat exhaustion, and heat stroke can be experienced and if not remedied, can be life or health threatening. Therefore, it is important that all employees be able to recognize symptoms respective of these conditions as well as being capable of arresting the problem as quickly as possible.

THE EFFECTS OF HEAT:

As the result of normal oxidation processes within the body, a predictable amount of heat is generated. If the heat is liberated more rapidly, the body cools to a point at which the production of heat is accelerated, and the excess is available to bring the body temperature back to normal.

Interference with the elimination of heat leads to its accumulation and, thus, to the elevation of body temperature. As a result, the person is said to have a fever. When such a condition exists, it produces a vicious cycle in which certain body processes speed up and generate additional heat. Then the body must eliminate not only the normal, but also the additional quantities of heat.

Heat produced within the body is brought to the surface largely by the bloodstream, and it escapes to the cooler surroundings by conduction and radiation. If air movement or a breeze strikes the body, additional heat is lost by convection. However, when the temperature of the surrounding air becomes equal to or rises above that of the body, all the heat must be lost by vaporization of the moisture or sweat from the skin surfaces. As the air becomes more humid (contains more moisture), the vaporization from the skin slows down. Thus, on a day when the temperature is 95 to 100 degrees, with high humidity and little or no breeze, conditions are ideal for the retention of heat within the body. It is on such a day or, more commonly, a succession of such days (a heat wave) that medical emergencies due to heat are likely to occur. Emergencies due to heat are classified in three categories: heat cramps, heat exhaustion and heat stroke.

HEAT CRAMPS:

Heat cramps usually affect people who work in hot environments and perspire a great deal. Loss of salt from the body causes very painful cramps of the leg and abdominal muscles. Heat

convection, but do not allow chilling or overcooling. Treat the patient for shock, and remove him to a medical facility if there is any indication of a more serious problem.

HEAT STROKE:

Heat stroke is a profound disturbance of the heat-regulating mechanism, associated with high fever and collapse. Sometimes this condition results in convulsions, unconsciousness and even death. Direct exposure to sun, poor air circulation, poor physical condition, and advanced age (over forty) bear directly on the tendency to heat stroke. It is a serious threat to life and carries a twenty-percent mortality rate. Alcoholics are extremely susceptible. The symptoms of heat stroke are as follows:

- o sudden onset
- o dry, hot and flushed skin
- o dilated pupils
- o early loss of consciousness
- o full and fast pulse
- o breathing deep at first, later shallow and even almost absent
- o muscle twitching, growing into convulsions
- o body temperature reaching 105 to 106 degrees or higher.

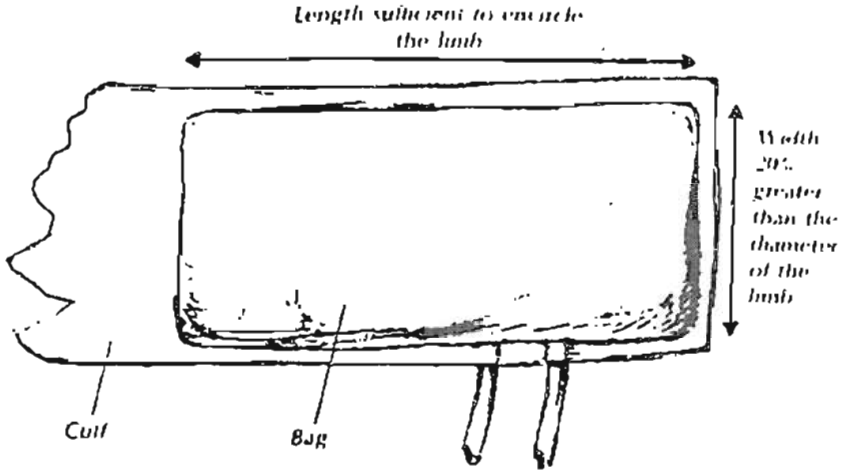
When providing emergency care for heat stroke, remember that this is a true emergency. Transportation to a medical facility should not be delayed. Remove the patient to a cool environment if possible, and remove as much clothing as possible. Assure an open airway. Reduce body temperature promptly by dousing the body with water, or preferably, by wrapping in a wet sheet. If cold packs are available, place them under the arms, around the neck, at the ankles, or any place where blood vessels that lie close to the skin can be cooled. Protect the patient from injury during convulsions, especially from tongue biting.

Please note that in the case of heat cramps or heat exhaustion "Gatorade" or its equivalent is suggested as part of the treatment regime. The reasoning for this type of liquid refreshment is that these beverage will replace much needed electrolytes to the system. Without these electrolytes, body systems cannot function properly, thereby enhancing the represented health hazard. Therefore, when working in situations

Blood Pressure

Choice of Sphygmomanometer. Blood pressure may be satisfactorily measured with a sphygmomanometer of either the aneroid or mercury type. It is essential, however, to select a cuff of the proper size. The inflatable bag encased in the cuff should be about 20 per cent wider than the diameter of the limb on which it is to be used. It should be long enough to encircle the limb. For an average adult, a bag 12–14 cm wide and 30 cm long is suitable. Wider cuffs (e.g., 18–20 cm) should be used on thighs and obese arms; narrower cuffs on children or adults with very thin arms.

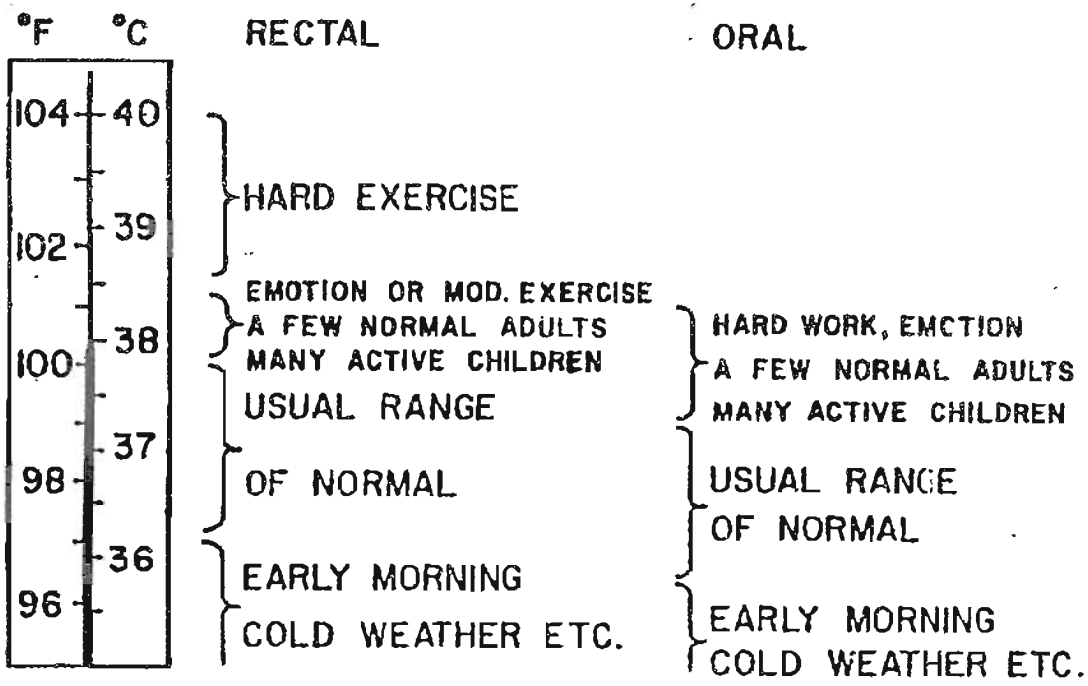
Cuffs that are too small ma falsely high readings; cuffs th are too large may give falsely low readings.



Technique. The patient should be as comfortable as possible, his arm free and slightly flexed at the elbow, his brachial artery approximately at heart level. Center the inflatable bag over the brachial artery on the inside of the arm. Its lower border should be about 2.5 cm above the antecubital crease. Secure the cuff snugly.

Inflate the cuff to about 30 mm Hg above the level at which the radial pulse disappears. Lower the cuff pressure slowly until the radial pulse is again detectable. This is the palpatory systolic pressure and helps you avoid being misled by an auscultatory gap. (See the diagram on page 140). Deflate the cuff completely.

Place a stethoscope firmly, but without undue pressure, over the brachial artery in the antecubital space. This point is usually found just medial to the biceps tendon. The stethoscope should touch neither cuff nor clothing.



DuBois, E. F.: Fever and the Regulation of Body Temperature. Springfield, Illinois, Charles C. Thomas, 1948.

Figure 30-1. Range of Normal Rectal and Oral Temperatures (from DuBois (1))