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DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

Safety and Health Phase-Out Report
Remedial Action, Building T-4002
Fort Drum, New York

VOLUME I

Prepared for

P&R International, Inc.

January 27, 1997

900

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Safety and Health Phase-Out Report
Remedial Action, Building T-4002
Fort Drum, New York

INTRODUCTION

Dames & Moore was selected by R&R International, Inc. (R&R) and approved by the US Army Corp of Engineers, Kansas City District (COE), to develop a Site Safety and Health Plan (SSHP) and conduct on-site safety and health oversight activities for the remedial action conducted by R&R at Building T-4002, Fort Drum, New York (the site). The safety and health plan was developed by Dames & Moore based upon the requirements presented in Section 01110, "Safety, Health, and Emergency Response, " of the specifications documents provided by the COE entitled Fort Drum, New York, Building T-4002, Interim Remedial Action, and dated 3/17/95. Prior to the start of remediation activities, the Safety and Health Plan, was reviewed and accepted as final by the COE. A copy of the SSHP is presented in Appendix A.

BACKGROUND

As required in the COE specifications and stipulated in the Safety and Health Plan, Dames & Moore Industrial Hygienists visited the site to perform baseline air monitoring. The baseline air monitoring was performed from July 17 - 19, 1996 to establish baseline levels for comparison to air monitoring results gathered during the scheduled site activities. A copy of the report presenting the results of the baseline air monitoring is presented in Appendix B.

Stephen Lanham, the Site Safety and Health Officer (SSHO) arrived at the site on August 6, 1996, the first scheduled day of site activities, to begin overseeing the safety and health plan implementation for the site. Mr. Lanham was present at the site for each day of site activities through the last day of scheduled activity which was December 7, 1996. All work was completed on this day at the site with the exception of hauling away temporary trailers and digging equipment. Mr. Kenneth Fischer, PE, CIH served as the Site Safety and Health Manager (SSHM). He reviewed the documentation provided during the project, attended the site kickoff meeting with Mr. Lanham on July 16, 1996, assisted with baseline air monitoring, and conducted weekly site visits during the execution phase of the work to review the safety status. He also prepared addenda to the SSHP as required.

The activities conducted at the site included the following general tasks:

- Trench excavation and installation of dataline in area adjacent to but outside of the exclusion area or area of contamination;
- Backfilling and compaction of the dataline trench and installation of a manhole casing in the trench;
- Demolition, sizing, and containerization of Building T-4002 and the materials contained inside the building;

- Excavation and containerization of contaminated soil in an area surrounding and underneath Building T-4002; and
- Backfilling and compacting the area of the excavation with clean fill material.

SAFETY AND HEALTH PERFORMANCE

Throughout the activities performed at the site, Dames & Moore ensured that site personnel observed and adhered to the requirements of the SSHP.

One minor accident occurred on the site when an R&R employee observing the loading of soil into waste containers. The employee fell when the base of the ladder slid out from under him. The employee was not cut and felt that medical attention was not required. The employee reported minor muscle strain in his lower back. He was advised to alert the SSHO if he decides to see a medical professional for treatment. The employee returned to work on the next scheduled day and said that he felt fine and had not needed medical attention. This incident was verbally reported to the COE representative at the site but no written report was completed because no medical attention, first aid, or lost work time was necessary. Nor was a written report specifically requested by the COE representative.

The Activity Hazard Analysis (Table 3-2) in the SSHP was reviewed and updated once during the site activities. A copy of this revision is attached with the SSHP.

Each individual performing invasive work in the exclusion zone surrounding the excavation and Building T-4002 maintained current Hazardous Waste and Emergency Response (HAZWOPER) training and medical surveillance status. Copies of the training records and medical surveillance records are provided in Appendix C.

Each individual performing work was trained in an initial safety briefing on identified hazards at the site and the hazards inherent to the tasks they were to perform. Prior to beginning work each day, personnel were briefed on the safety and health requirements for the planned activities, and acknowledged their understanding of those requirements by signing the Site Safety Briefing form.

For each day of site activities, a Health & Safety Inspection Form was completed by the SSHO. The Health & Safety Inspection Form was used to evaluate site safety issues such as site access control, use of personal protective equipment (PPE), access to first aid and safety equipment, worker exposure monitoring for physical and chemical hazards, general site safety issues, etc.

Real time air monitoring was performed each day when invasive building demolition and downsizing and soil excavation and loading were performed at the site. Prior to performing the monitoring, each instrument was checked to ensure proper operating conditions and calibrated to ensure the reliability

of the results reported. Records of instrument calibration were recorded on an Instrument Calibration Check Sheet. Following proper calibration, monitoring was performed for concentrations of respirable particulate, hydrocarbon vapors, combustible gases, and worker exposure to noise. Appropriate monitoring was performed depending on the site activities performed. The results of the monitoring performed each day were recorded on the Real Time Air Monitoring Data Sheets. Monitoring for respirable particulate was performed using an instrument with data logging capabilities. Each day when data logging was conducted, the logged data was printed at the end of the day and included with the real time air monitoring data.

During invasive activities involving building material demolition and sizing, and soil excavation and loading, perimeter air sampling was performed for time-weighted-average (TWA) levels of pesticides and lead to evaluate potential migration of airborne contaminants from the exclusion zone. National Institute for Occupational Safety and Health (NIOSH) Analytical Methods were used as specified in the SSHP. The methods used for the identified contaminants were Method 7300 for lead; Method 5001 for 2,4-D and 2,4,5-T; and Method S274 for DDD, DDE, and DDT. In the interest of improved safety and health, longer sampling times were used than as specified in the NIOSH methods because very low or non-detectable levels were present and Dames & Moore desired to detect the lowest levels possible. Time-weighted-average monitoring was also performed on one or more of the workers performing building or soil related activities in the exclusion zone. Records of the sampling activities including pump calibration, sampling times, and flow rates were recorded on Industrial Hygiene Sampling Data Sheets. Air samples submitted to Wisconsin Occupational Health Laboratory (WOHL) for analysis were shipped using chain of custody procedures to protect sample integrity.

Each day that real time air monitoring or TWA air sampling was performed, weather conditions and wind direction at the site were recorded. Depending on the wind direction, four perimeter monitoring conditions were selected and recorded on a schematic drawing of the site. One location was selected upwind of the operations and three locations were selected at downwind positions on the site perimeter.

Appendix D includes copies of the daily records noted above, which were accumulated for each day's activities depending on the site conditions and the tasks scheduled for that day.

EXPOSURE MONITORING AND INDUSTRIAL HYGIENE AIR SAMPLING RESULTS

The results of real time air monitoring and TWA air sampling, performed during the site activities, indicated worker exposures to airborne physical and chemical hazards generally did not exceed baseline air sampling results. The following exceptions and SSHO responses are noted:

- During saw cutting of furniture inside of the Building T-4002 on September 10, 1996, respirable particulate measured in the worker's breathing zone exceeded 3 mg/m^3, which was the action level established in the SSHP. The activity was immediately halted until the furniture was removed from the building and could be cut outside of the building. Following this corrective measure, worker exposures to respirable particulate were reduced to equal to or below background concentrations.

- Detectable concentrations (0.046 mg/m^3.) of 2,4-D were reported by WOHL in an industrial hygiene sample collected on a worker during building demolition on September 11, 1996. The concentration reported did not exceed the exposure limit of 10 mg/m^3 for 2,4-D presented in Table 3-1 of the SSHP.

The results of real time air monitoring are presented on the Real Time Air Monitoring Data Sheets presented in Appendix D. Laboratory reports for industrial hygiene air samples analyzed by WOHL are presented in Appendix E.

FINAL DECONTAMINATION

Since the contaminants noted at the site were principally carried on soil particles, the focus of decontamination activities at the site was on controlling and removing soil from clothing and equipment. Decontamination solutions included an Alconox-water solution to emulsify soil particles and assist in scrubbing surfaces, followed by copious amounts of clean water for rinsing. Dames & Moore observed personnel and equipment decontamination.

Personnel Decontamination - Personnel entering the exclusion zone donned disposable nitrile boot covers and latex gloves. Depending on the tasks to be performed, personnel would also put on cotton or leather work gloves over the latex gloves. In addition, when workers were required to enter waste disposal containers to reposition building materials or soil, they put on disposable Tyvek coveralls to protect their work clothes. Upon exiting the exclusion zone, workers placed work gloves in the equipment drum to be reused, removed Tyvek coveralls (if used) and placed in disposal drum, stepped into the Alconox - water scrub station, aggressively scrubbed soil and debris from their nitrile overboots, stepped into the water rinse station and rinsed visible soil and debris from their nitrile overboots, and then stepped out of the contamination reduction zone. Occasionally, the overboots would become torn or damaged. In this case, the overboots were removed and placed in the disposal drum and the workers decontaminated exposed areas of their work boots following the procedures described above.

Equipment Decontamination - An excavator and a front loader were used for handling building materials and excavating and loading soil. Prior to removing each piece of equipment from the exclusion zone, all surfaces of the equipment including the operator's cab were decontaminated. A

decontamination pad was constructed using high density polyethylene sheeting and the pad was graded so that decontamination solutions could be collected and pumped into 55 gallon drums for disposal. All surfaces of the equipment were wetted with Alconox-water solution and scrubbed using nylon bristle brushes. All surfaces were then rinsed with copious amounts of clean water and visually inspected for visible soil residue. Where soil residue was identified those surfaces were rescrubbed with Alconox-water solution and rinsed again until visibly clean. Following decontamination, the equipment was moved off of the decontamination pad and out of the exclusion zone. Decontamination solutions collected in the reservoir of the pad were pumped off for disposal, and the polyethylene sheeting and brushes were disposed of as hazardous waste.

SUMMARY

In summary, site activities were executed in a safe and healthful manner in accordance with the SSHP.

PHASE-OUT REPORT CERTIFICATION

The undersigned certify that the information provided in this report is true and accurate to the best of their knowledge.

Stephen C. Yaul
Site Safety and Health Officer

1/27/97
Date

Kenneth E. Fischer
Site Safety and Health Manager

1/27/97
Date

Appendix A

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R&R INTERNATIONAL, INC.

SITE SAFETY AND HEALTH PLAN

Interim Remedial Action
Building T4002
Fort Drum, New York
Contract DACW41-94-9009, D.O. 0002

June 1996

R&R INTERNATIONAL

SAFETY, HEALTH, & EMERGENCY RESPONSE PLAN

Project Name and Number:	Remedial Action, Building T4002 USACE Contract DACW41-94-9009, D.O. 0002
Project Site Location:	Fort Drum, New York
Site Manager:	Min Zheng, Ph.D.
Site Safety and Health Manager:	Kenneth E. Fischer, PE, CIH
Site Safety and Health Officer:	Joseph Reese

APPROVED:

Site Safety & Health Manager

(Date) 8-12-96

Site Manager

Site Manager approval signature
on R&R Work Plan

(Date)

Project Manager

Project Manager approval signature
on R&R Work Plan

(Date)

WAS-KF-187
Plan Control Number

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ACRONYMS AND ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
°C	Degrees Celsius
CFR	Code of Federal Regulations
CGI	Combustible gas indicator
CIH	Certified Industrial Hygienist
DHHS	Department of Health and Human Services
EPA	U.S. Environmental Protection Agency
°F	Degrees Fahrenheit
GC	Gas chromatography
ID #	Identification Number
IDLH	Immediately Dangerous to Life and Health
LEL	Lower explosive limit
mg/m^3	Milligrams per cubic meter
mR	MilliRoentgen
NIOSH	National Institute of Occupational Safety and Health
OSHA	U.S. Occupational Safety and Health Administration
PDS	Personnel Decontamination Station
PE	Registered Professional Engineer
PELs	Permissible Exposure Limits
PID	Photoionization detector
PPE	Personal Protective Equipment
ppm	Parts per million
SSHO	Site Safety and Health Manager
SSHP	Site Safety and Health Plan
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time-weighted-average

1.0 PURPOSE

The purpose of this Site-Specific Safety, Health, and Emergency Response Plan (SSHP) is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during site operations.

2.0 APPLICABILITY

The provisions of the plan are mandatory for all onsite personnel who are engaged in hazardous material management activities including, but not limited to, initial site reconnaissance, preliminary field investigations, mobilization, project operations, and demobilization. This plan has been developed under U.S. Army Corps of Engineers and U.S. Environmental Protection Agency (EPA) guidelines and complies with applicable regulations, including Occupational Safety and Health Administration (OSHA) standards [29 Code of Federal Regulations (CFR) 1910 and 1926].

R&R International, Inc. (R&R) will insist on the following health and safety requirements from its subcontractors:

- Subcontractor employees must have appropriate training [i.e., either a 40-hour or 24-hour OSHA-required (29 CFR 1910.120) health and safety course for hazardous waste work, or certified equivalent training].
- Personnel working at hazardous waste sites must have had an annual physical (or physician's waiver for and a biennial physical) and be certified "fit for duty" and, if necessary, "fit for respirator use" by a qualified physician.
- R&R will insist on obtaining proof of both training and a physical before site work may begin.
- Personnel must have appropriate personal protective equipment (PPE) for the specific job. At a minimum, personnel should have the following equipment, which will be inspected by R&R:
    - Hard hat
    - Safety shoes
    - Gloves
    - Goggles/safety glasses
    - Hearing protection, if appropriate
    - Respiratory protection, if appropriate

- Other equipment as specified by the SSHP.

- Drilling equipment and field operations must meet applicable safety standards and satisfy R&R's field inspection. Unsafe equipment or operations will necessitate shut down of the job at a cost to the subcontractor.

The subcontractor will provide at least minimum safety equipment as required by this Site Safety and Health Plan (SSHP). When respirators are necessary, the subcontractor will provide a respirator fit test certificate.

3.0 SITE CHARACTERIZATION AND HAZARD ANALYSIS

3.1 GENERAL INFORMATION

The subject building, T-4002, is located on the north-west corner of the intersection of First Street W. and St. Lawrence Avenue in Fort Drum. Fort Drum is situated on the north shore of the Black River, in the north-east corner of Jefferson County, New York. The remedial area encompasses approximately 8,500 square feet around and including T-4002.

3.2 SITE DESCRIPTION AND SUMMARY OF WORK

Building T4002, a wooden, 14 x 96-foot building on a concrete slab/wooden floor, previously used one room for the storage and mixing of pesticides and herbicides. The room, located on the western side of the building, is approximately 14 x 21 feet in dimension. All existing drains in the room have been sealed with concrete. The remainder of the building was occupied by estimators for Fort Drum.

The perimeter of the exclusion zone surrounding Building T4002 encloses an area of approximately 26,000 square feet. The exclusion zone area is essentially flat with only a one foot drop in elevation from the north-east corner to the north-west corner. A simplified site plan is presented in Figure 3-1.

One room within the western portion of the building, was previously used for the storage and mixing of pesticides and herbicides. The room is approximately 14 x 21 feet. All existing drains have been filled with concrete. Pesticides and herbicides are not currently stored in the building. The building is vacant and a temporary fence has been placed around the building.

The work proposed for the remedial actions at T4002 are as follows:

- Disposal characterization of T4002 and the soils adjacent to T4002 according to Federal, New York State, and disposal regulations.

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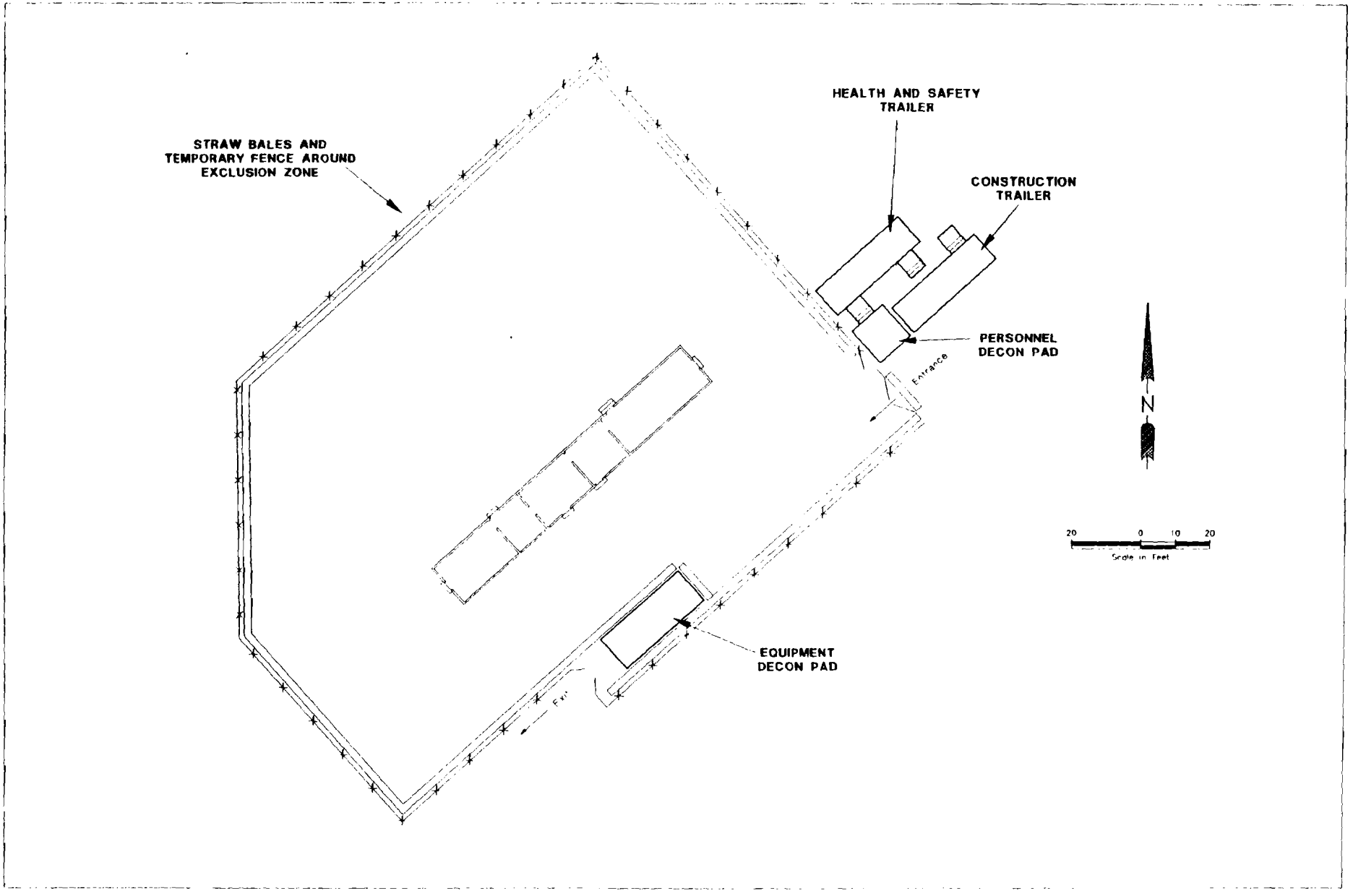

Figure 3-1
Build T4002 Remediation Site Plan
Ft. Drum, New York

- Demolition, containerization, transportation and disposal of building T4002 above ground construction materials and below ground footing.
- Excavation, loading, transportation and disposal of contaminated soils identified during the disposal characterization.
- Installation 4 monitoring wells and collect confirmatory samples to verify remedial efforts.
- Backfilling and site restoration.

Demolition of Building T4002 will be conducted according to four phases as follows:

- Phase I - Above Ground Demolition - Eastern Portion. This demolition phase includes all items above or connected to the structural wood floor system. These items include, but are not limited to, electrical fixtures, building materials, miscellaneous equipment, and incidental items found within the building floor plan.
- Phase II - Above Ground Demolition - Western Portion. This demolition phase includes all items above or connected to the structural wood floor system. These items include, but are not limited to, electrical fixtures, building materials, miscellaneous equipment, and incidental items found within the building floor plan.

The demolition sequence for the Eastern and Western portions of T4002 will be conducted in the following order:

- Roof shingles and sheeting
- Wall siding, sheathing, and dry wall/plaster
- Roof trusses
- Wall framing.
- Phase III - Below Ground Demolition - Western Portion. This demolition phase includes all remaining building components, including, but not limited to,

the concrete slab, all foundation grade beams, and continuous footings, and all associated utilities exposed.

- Phase IV - Below Ground Demolition - Eastern Portion. This demolition phase includes all remaining building components, including, but not limited to, the wood floor system, all foundation grade beams, and continuous footings, and all associated utilities exposed.

The demolition sequence for the Eastern and Western portions of the building foundation components will be conducted in the following order:

- Wood floor and concrete slab
- Foundation grade beams
- Concrete footings.

3.3 ACTIVITY HAZARD ANALYSIS FOR SITE TASKS

The Activity Hazard Analysis for site tasks is shown in Figure 3-2.

3.4 ACCIDENT PREVENTION AND INSPECTIONS

Accident prevention will be the responsibility of the Site Safety and Health Officer (SSHO) and will be achieved through regular site safety briefings and daily inspections. The purpose of the briefings and inspections will be to determine the existence of any hazards that may contribute to the occurrence of an accident and to make recommendations to eliminate any hazards that are identified. The inspections will also attempt to identify any unsafe or unhealthful behavior or condition that may cause an accident and to make recommendations to eliminate these conditions or behavior. R&R will ensure that all personnel working at the site are properly trained for site activities, including hazardous waste operations, and follow safe work practices and standard operating safety procedures.

Guidelines of the Accident Prevention Plan can be found in various sections of this SSHP as listed below. The SSHP was prepared following guidance provided by the U.S.

FIGURE 3-2

Activity Hazard Analysis

Principal Steps	Potential Hazards	Recommended Controls
All Work General Site Work (demolition and soil removal)	General	1. Attend site safety briefing and updates as necessary. 2. Review contents of Site-Specific Safety and Health Plan and question any activities or instructions not understood. 3. Take precautions in operation of heavy equipment, DO NOT operate when taking medications.
	Frostbite and hypothermia	1. Wear proper clothing; if clothing becomes wet or if employee perspires, change to dry clothes. 2. Maintain employee awareness. 3. Provide adequate shelter to allow refuge from inclement conditions.
	Heat stress	1. Provide adequate shelter for workers. 2. Make sure workers maintain normal body fluid levels. 3. Provide cooling devices. 4. Adjust work schedules. 5. Maintain employee awareness.
	Horsing around	1. Maintain a professional attitude.
	Fire	1. Maintain a neat and organized site free of potentially hazardous objects. 2. Properly store flammable materials. 3. Be sure that an operable fire extinguisher is readily accessible and is suitable for the potential types of fire (i.e., ABC: wood & trash; liquid & grease; and, electrical).
	Electrical hazards	1. Locate and mark buried utilities before excavations. 2. If unavoidably close to buried or overhead power lines, have power turned off, with circuit breaker locked and tagged. 3. Properly ground all electrical equipment. 4. If temporary wiring is used, such as extensions lying on ground, use ground fault current interrupters (GFCIs). 5. Avoid standing in water when operating electrical equipment. 6. If equipment must be connected by splicing wires, make sure all connections are properly taped. 7. Be familiar with specific operating instructions for each piece of equipment.

FIGURE 3-2 (cont'd)

Principal Steps	Potential Hazards	Recommended Controls
All Work (cont'd)	Exposure to poisonous plants and animals	PLANTS: 1. Avoid body contact with unknown types of plants. 2. Use protective gloves when handling suspect plants. Should contact occur, be sure to wash area thoroughly and avoid contamination of other body parts. 3. Do not eat any vegetation, berries, or fruits found on-site. ANIMALS OR INSECTS: 1. Watch footing to prevent stepping on snakes and ground dwelling insects (i.e., ground hornets, etc.). 2. Use insect repellant whenever practical. 3. In high tick area, at the end of a work session check body and head for ticks. If a tick is encountered on your body, remove it and place it in a container. Keep the tick, as it may be analyzed later to determine if exposure to any tickborne diseases has occurred. 4. If allergic to insect stings, etc., carry antidote as stipulated by physician. 5. Maintain employee awareness.
	Encountering/exposure to contamination	1. Use proper personal protective equipment (gloves, safety glasses, etc.). 2. Use monitoring equipment appropriate for the potential chemical contaminants. 3. Make careful observations and report possible contamination to other site workers. 4. Stop work and notify Site Safety and Health Officer if action levels are reached. 5. No eating, drinking, chewing gum or tobacco, or smoking while working. 6. Wet dusty areas prior to sampling.

Equipment to be used	Inspection Requirements	Training Requirements
See below	Regular Safety Inspections	Current HAZWOPER Training, First Aid, and CPR

FIGURE 3-2 (cont'd)

Activity Hazard Analysis

Principal Steps	Potential Hazards	Recommended Controls
Hand Auger Borings/Surface Soil Sampling	Injuries from sharp objects	1. Use care when using sharp objects. 2. Maintain employee awareness by constantly observing your surroundings and looking for objects with the potential to cause injury.
	Falling and tripping	1. Keep work site neat and organized. 2. Thoroughly inspect areas prior to entrance. 3. Maintain employee alertness, especially around uneven ground (i.e., watch your step and constantly observe your surroundings).

Equipment to be used	Inspection Requirements	Training Requirements
1. Hand augers 2. Shovels	Regular safety inspections	1. Current HAZWOPER Training, First Aid and CPR

FIGURE 3-2 (cont'd)

Activity Hazard Analysis

Principal Steps	Potential Hazards	Recommended Controls
Stages 2, 3, and 4 Phases I-IV Excavation and loading of contaminated soil; below ground demolition; backfilling excavation	Hitting existing utilities	1. Find and mark existing utilities before excavating. 2. Instruct operator. 3. Use care while excavating.
	Foot injuries from dropped objects	1. Wear steel-toed shoes. 2. Secure loose objects.
	Crushed fingers or hands	1. Keep hands and fingers away from moving parts. 2. Use proper tool handling techniques. 3. Wear protective gloves.
	Backing over workmen	1. Backup alarms on equipment. 2. Have a spotter guide operator while backing. 3. Instruct workmen not to stand or walk behind equipment.
	Flying objects	1. Wear hardhats. 2. Wear proper eye protection with side shields. 3. Wear other protective clothing as necessary. 4. Be aware.
	Noise	1. Wear proper ear protection.
	Back injuries	1. Instruct workmen how to properly lift materials. 2. Instruct workmen to get help and/or to use lifting equipment.
	Falling and tripping	1. Keep work site neat and organized. 2. Thoroughly inspect areas prior to entrance. 3. Maintain employee alertness, especially around uneven ground (i.e., watch your step and constantly observe your surroundings).
	Electrocution	1. Locate underground utilities (see above). 2. Inspect any wiring for exposed wire or faulty connections. 3. Make sure electrical equipment is properly grounded and perhaps employ ground fault current interrupters (GFCIs). 4. Avoid equipment in touch with electrical lines.

FIGURE 3-2 (cont'd)

Principal Steps	Potential Hazards	Recommended Controls
	Pedestrian accidents	1. Rope off or fence investigation site. 2. Mark investigation site clearly.
	Dust	1. Air monitoring for particulates. 2. Use of dust supperssion agent.
	Glass fragments	1. Use of PPE during window removal. 2. Observe safe distance from demolition involving glass. 3. Maintin employee awareness.

Equipment to be used	Inspection Requirements	Training Requirements
1. Backhoe 2. Dump truck	1. Daily Equipment Inspection 2. Daily inspections of excavations, adjacent areas, and protective systems by a competent person	1. Current HAZWOPER Training, First Aid, and CPR 2. Personnel operating equipment shall be thoroughly trained and qualified on that piece of equipment

FIGURE 3-2 (cont'd)

Activity Hazard Analysis

Principal Steps	Potential Hazards	Recommended Controls
Stage 2 Phases I-IV Above Ground Demolition	Head injuries from falling objects	1. Wear hardhats. 2. Be aware of overhead dangers.
	Foot injuries from dropped objects	1. Wear steel-toed shoes. 2. Secure loose objects.
	Crushed fingers or hands	1. Keep hands and fingers away from moving parts. 2. Use proper tool handling techniques. 3. Wear protective gloves.
	Back injuries	1. Instruct workmen how to properly lift materials. 2. Instruct workmen to get help and/or to use lifting equipment.
	Falling and tripping	1. Keep work site neat and organized. 2. Thoroughly inspect areas prior to entrance. 3. Maintain employee alertness (i.e., watch your step and constantly observe your surroundings).
	Electrocution/Electrical contact	1. Inspect any wiring for exposed wire or faulty connections. 2. Make sure electrical equipment is properly grounded and perhaps employ ground fault current interrupters (GFCIs). 3. Avoid equipment in touch with electrical lines. 4. Keep equipment and lines clear of standing water.

Equipment to be used	Inspection Requirements	Training Requirements
1. Heavy equipment (i.e., cranes, bulldozers)	1. Regular Equipment Inspection 2. Regular structural inspections of building by a competent person	1. Equipment operators thoroughly trained and qualified on that piece of equipment

FIGURE 3-2 (cont'd)

Activity Hazard Analysis

Principal Steps	Potential Hazards	Recommended Controls
Stage 2, Phases I-IV PCB Electrical Fixture Operations	Falling and tripping	1. Watch where walking and only walk in areas of good stability. 2. In attics, be aware of footing and only walk or cross beams, planks, or similar weight bearing structures. 3. When working in attics and crawl spaces, have adequate illuminating device.
	Lifting	1. Instruct personnel how to lift properly. 2. Get help lifting heavy loads.
	Extension cords and electrical	1. Use GFCI or all extension cords. 2. When working around live electrical equipment (i.e., electrical panels, HVAC, and elevator equipment) special care must be taken to prevent contact with loose electrical components. 3. If sampling must be performed on or near live equipment, the equipment should be de-energized and locked-out/tagged-out.
	Ladders	1. Inspect ladder prior to use. 2. Do not use damaged ladder. 3. Never stand beyond instructed safe rung. 4. Do not use metal ladders near electrical sources.
	Contaminant exposure	1. Wear proper PPE. 2. Follow proper decontamination procedures.

Equipment to be used	Inspection Requirements	Training Requirements
1. Hand tools 2. Airless sprayers	1. Regular inspection	Current HAZWOPER Training, First Aid, and CPR

FIGURE 3-2 (cont'd)

Activity Hazard Analysis

Principal Steps	Potential Hazards	Recommended Controls
Drilling of Borings and Sample Collection; Monitoring Well Installation	Hitting existing utilities	1. Find and mark existing utilities before drilling. 2. Instruct operator. 3. Use care while drilling. 4. Watch for overhead electrical lines.
	Head injuries	1. Wear hardhats. 2. Be aware of overhead dangers.
	Foot injuries from dropped objects	1. Wear steel-toed shoes. 2. Secure loose objects.
	Crushed fingers or hands	1. Keep hands and fingers away from moving parts. 2. Use proper tool handling techniques. 3. Wear protective gloves.
	Backing over workmen	1. Backup alarms on equipment. 2. Have a spotter guide operator while backing. 3. Instruct workmen not to stand or walk behind equipment.
	Rotating equipment	1. Do not wear loose clothing or jewelry when operating. 2. Inspect "kill switches" before using. 3. Make sure "kill switches" are easily accessible and within operator's reach. 4. Do not touch during rotation.
	Flying objects	1. Wear proper eye protection with side shields. 2. Wear other protective clothing as necessary. 3. Be aware.
	Noise	1. Wear proper ear protection.
	Back injuries	1. Instruct workmen how to properly lift materials. 2. Instruct workmen to get help and/or to use lifting equipment.

FIGURE 3-2 (cont'd)

Principal Steps	Potential Hazards	Recommended Controls
	Falling and tripping	1. Keep work site neat and organized. 2. Thoroughly inspect areas prior to entrance. 3. Maintain employee alertness, especially around uneven ground (i.e., watch your step and constantly observe your surroundings).
	Drill rig toppling	1. Make sure rig is properly jacked and stabilized.
	Improper rig operation	1. Follow proper rig operating procedures.
	Cathead rope and operations	1. Inspect rope to make sure it is in good condition. 2. Keep rope in tangle free position. 3. Operate on level surfaces with good, firm footing. 4. Do not operate when wet; operate with extreme caution.
	Electrocution	1. Locate underground utilities (see above). 2. Inspect any wiring for exposed wire or faulty connections. 3. Make sure electrical equipment is properly grounded and perhaps employ ground fault current interrupters (GFCIs). 4. Do not drill during adverse weather conditions. 5. Locate overhead lines; do not position drill rig within 20 feet of overhead lines. 6. Avoid equipment in touch with electrical lines.
	Pedestrian accidents	1. Rope off or fence drill site. 2. Mark drill site clearly.

Equipment to be used	Inspection Requirements	Training Requirements
1. Drill rig	1. Regular Safety Inspection	1. Current HAZWOPER, First Aid, and CPR 2. Equipment operators thoroughly trained and qualified on that piece of equipment

Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, October 1992.

- Hazard analysis and control can be found in Section 3.3.
- Fire Protection and Emergency Procedures; Section 3.5.
- Procedures for Accident Investigation and Reporting; Section 3.4.2.
- Site Control, Site Layout, and Access to Restricted Areas; Section 4.0.
- Decontamination; Section 7.0.
- Safety Training; Section 8.0.
- Administrative responsibilities for effecting the plan can be found in Section 10.1.

3.4.1 Inspections

The SSHO will perform daily safety inspections of the job site and work in progress to ensure compliance with the SSHP, and to prevent accidents from other recognized hazards. Procedures for correcting deficiencies (including actions, timetable, and responsibilities) will be recorded on Daily Inspection Form. See Section 15.0 Forms for a copy of this form. Follow up inspections to ensure correction of the deficiencies will be conducted and documented.

3.4.2 Accident Investigation/Reporting

In the event of an accident/incident, the SSHO will report to the R&R Project Manager, who will immediately notify appropriate installation personnel. Within two working days of any reportable accident, the R&R Project Manager shall complete and submit to installation personnel a U.S. Army Corps of Engineers Accident Investigation Report, Form 3394 (see Section 15.0, Forms). The R&R Project Manager with the assistance of the SSHO, will ensure that followup action is taken to correct the situation that caused the accident.

Incidents Which Require Immediate Reporting

- Any fatality or catastrophe (three or more people hospitalized).
- $50,000 or more damage to government of contractor property.
- All personal injury requiring first aid or resulting in lost time must be recorded on OSHA Form 200. OSHA does not require notification, but a copy must be kept current onsite.

3.5 EMERGENCY INFORMATION

3.5.1 Emergency Contacts

Contact	Person or Agency	Telephone No.
Security	**[to be provided]**	
Fire	**[to be provided]**	
Ambulance	**[to be provided]**	
Hospital	House of the Good Samaritan	315-785-4100
Poison Control	Central New York	800-252-5655
USACE Contracting Officer	**[to be provided]**	
U.S. EPA Region II	Branch Chief, Removal Action	908-321-6621
U.S. EPA Field Control	Dir. Emergency & Remedial Response Division	908-264-8672
R&R Project Manager	Min Zheng, Ph.D.	410-381-5600
Site Safety and Health Manager	Kenneth Fischer, C.I.H., P.E.	301-652-2215
Occupational Physician	Gary Grieger, M.D.	303-294-9100

3.5.2 Emergency Equipment and First Aid Requirements

The following items, as a minimum, shall be maintained onsite and available for immediate use:

- First aid equipment and supplies approved by the consulting physician.
- Emergency eyewashes and showers which comply with ANSI Z358.1.
- Emergency-use respirators. For rescue purposes, two positive pressure self-contained breathing apparatus (SCBA) shall be supplied. these shall be dedicated for emergency use only and maintained onsite in the Contamination Reduction Zone.

- Fire extinguishers with a minimum rating of 20-A:120-B:C shall be provided at site facilities, in all site vehicles, and at any other site locations where flammable or combustible materials present a fire risk.

3.5.3 Location of Hospital/Clinic

House of the Good Samaritan Hospital
8300 Washington Street
Watertown, NY 13601

Directions from Fort Drum to House of the Good Samaritan Hospital.

From Project Location:
Take St. Lawrence Avenue till it dead ends at Great Bend Road (Rt. 3). Make a right on Rt. 3 and go out Gate 3 of the Fort. Proceed on Route into Watertown and make a left on Park Avenue. Look for the Puttermug restaurant as reference to locate Park Avenue, because the Puttermug is on the corner of Park Avenue and Rt. 3. Park Avenue merges with Thompson Avenue. Take Thompson Avenue and make a right onto Washington Street. The Hospital is on the right hand side.

From Borrow site:
Take Munn's Corner Road until it dead ends on Great Bend Road (Rt. 3). Make a left on Rt. 3 and go out Gate 3 of the Fort. Proceed on Route 3 into Watertown and make a left on Park Avenue. Look for the Puttermug restaurant as reference to locate Park Avenue because the puttermug is on the corner of Park Avenue and Rt. 3. Park Avenue merges with Thompson Avenue. Take Thompson Avenue and make a right onto Washington Street. The Hospital is on the right hand side.

3.5.4 Emergency Response Plan

This section describes contingencies and emergency planning procedures to be implemented at the site. This Emergency Response Plan is compatible with local, state, and Federal disaster and emergency management plans, as appropriate. The list of appropriate emergency contacts is given in Section 3.5 above.

3.5.4.1 Pre-Emergency Planning. An emergency evacuation route(s) will be chosen immediately upon arrival at the site. During the periodic site briefings, all workers will be trained in provisions of the Emergency Response Plan, communication systems, and evacuation routes. The plan will be reviewed and revised, if necessary, on a regular basis

by the SSHO to ensure that the plan is adequate and consistent with prevailing site conditions.

3.5.4.2 Personnel Roles and Lines of Authority. The SSHO together with the R&R Site Manager have primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel and the public, such as evacuation of personnel and adjacent residents from the site area. They must also ensure that corrective measures have been implemented, appropriate authorities have been notified, and follow-up reports have been completed.

3.5.4.3 Emergency Recognition. Figure 3-2, the activity hazard analysis, provides listings of onsite hazards. Personnel should be familiar with techniques of hazard recognition from pre-assignment training and site-specific briefings. The SSHO and R&R Site Manager will ensure that the proper preventive devices and emergency equipment are available.

In an emergency, the SSHO and/or Site Manager shall without delay, alert all onsite employees that there is an emergency situation; take action to remove or otherwise minimize the cause of the emergency; alert the Contracting Officer or the designated representative; and institute measures necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency. Three continuous blasts on an air horn of one minute duration each, separated by one minute of silence, shall be the emergency evacuation signal. Employees that are required to respond to hazardous emergency situations shall be trained to respond to such expected emergencies. The plan shall be rehearsed regularly as part of the overall training program for site operations. The plan shall be reviewed periodically and revised as necessary to reflect new or changing site conditions or information.

In an emergency, personnel should proceed to the closest exit with their buddies and go to the safe distance area associated with the evacuation route. Personnel should remain at that area until the re-entry alarm is sounded or further instructions are provided by an authorized individual.

3.5.4.4 Emergency Medical Treatment Procedures. Any person who becomes ill or injured in the Exclusion Zone must be decontaminated to the extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. First aid kits will have gloves and artificial airways to protect against bloodborne pathogens, and personnel who have come into contact with bodily fluids such as blood or saliva will immediately confer with the R&R Occupational Physician to determine whether inoculation or other action is necessary. All injuries and illnesses must be reported immediately to the SSHO.

Emergency instructions shall be posted in an area accessible to all employees and a list of emergency contacts (see Section 3.5.1 above).

In the event that an incident such as an explosion or fire, or a spill or release of toxic materials occurs during the course of the project, the appropriate government agencies shall be immediately notified. In addition, the Contracting Officer shall be verbally notified immediately and receive a written notification within 24 hours. The report shall include the following items:

- Name, organization, telephone number, and location of the Contractor.
- Name and title of the person(s) reporting.
- Date and time of the incident.
- Location of the incident giving pertinent details including type of operation ongoing at the time of the incident.
- Cause of the incident, if known.
- Casualties (fatalities, disabling injuries).
- Details of any existing chemical hazard or contamination.

- Estimated property damage, if applicable.
- Nature of damage, effect on contract schedule.
- Action taken to ensure safety and security.
- Other damage or injuries sustained, public or private.

3.5.4.5 Exposure to Bloodborne Pathogens

For purposes of this SSHP, personnel fall into the category of jobs where required tasks normally do not but could involve exposure to blood, bodily fluids, or tissues--for example, in the event of an accident. If exposure to blood, bodily fluids, or tissues occurs, Universal Precautions such as the following will minimize the chance of contracting disease.

- Wash hands with soap and water as soon as possible after contact with blood, bodily fluids, or human tissue from an injured worker. When handwashing facilities are not readily available, antiseptic hand cleansers in conjunction with clean cloth/paper towels shall be used and hands should be washed with soap and water as soon afterwards as possible.
- Wear gloves when anticipating contact with blood, bodily fluid, tissues, mucous membranes, or contaminated surfaces, or if breaks in the skin are present.
- Wear appropriate protective equipment at all times, including a mask and eye protection, if aerosolization or splattering is likely to occur when attending to an injured worker or when conducting normal work routines.
- Insure that mouthpieces and appropriate personal protective equipment are readily available in first aid kits.
- Report immediately to the SSHO all sticks or cuts, mucosal splashes, or contamination of open wounds with blood or bodily fluids.

- Dispose of all spills which contain or may contain biological contaminants in accordance with policies for hazardous waste disposal. Until cleanup is complete, an accident area should be roped off from other workers.

The following work practice controls shall also be used to eliminate or minimize employee exposure. Where occupational exposure remains after instituting these controls, personal protective equipment shall also be used.

- Ingestion of bloodborne pathogens - Eating, drinking, smoking, applying cosmetics, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure. Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets or on countertops or benchtops where blood or other potentially infectious materials are present.

- If handling potentially infectious bodily parts following dismemberment in an accident, specimens of blood or other potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping. The container shall be labelled or color coded according to labeling requirements and closed prior to storage, transportation, or shipping. If outside contamination of the primary container occurs, the primary container shall be placed within a secondary container that is puncture-resistant in addition to the above characteristics.

- Equipment (such as drill rigs or equipment used in first aid response) which may become contaminated with blood or other potentially infectious materials shall be examined prior to servicing or shipping and decontaminated as necessary, unless the site supervisor determines that decontamination of such equipment is not feasible. A readily observable biohazard label shall be attached to the equipment stating which portions remain contaminated. The site supervisor shall insure that this information is conveyed to all affected employees, the servicing representative and/or manufacturer as appropriate,

prior to handling, servicing or shipping so that appropriate precautions may be taken.

- Personal protective equipment - appropriate personal protective equipment will be provided, such as gloves and mouthpieces in the first aid kit.
- All emergency first aid kits will contain red biohazard bags to contain waste created in first aid/emergency situations.
  - Gloves will be worn at all times.
  - Containers will not be overfilled.
  - Containers will be tightly closed or sealed prior to transportation.
  - Pools of blood, bodily fluid, tissue, or spills from biohazard waste containers shall be cleaned up with sodium hypochlorite or Chlorox bleach, 1 part to 10 parts water.

Employees who have had an exposure incident will be referred for a confidential post-exposure evaluation and followup. This will be made available within a reasonable time and location, and performed by or under the supervision of a licensed physician or licensed healthcare professional.

When an exposure incident is reported, the SSHO will record the information and immediately refer the employee for a confidential medical evaluation, followup, and possible Hepatitis vaccination.

3.5.4.5.1 Decontamination of Equipment

1. Clean spills from around equipment immediately.
2. Employees engaged in cleaning equipment shall use personal protective equipment that will insure that there is no contact of potentially contaminated material with skin or personal clothing.

3. Clean large equipment with a germicidal detergent or bleach (1 part to 10 parts water), avoiding splatter or dripping. If dripping is reasonably anticipated, use a drop cloth under the equipment being cleaned.

4. Wipe contamination from small, reusable equipment. Label the equipment with warning labels indicating which parts are contaminated before sending it to an appropriate location for reprocessing.

5. All cleaning materials and personal protective equipment shall be disposed of as infectious waste or properly prepared for transport to a laundry as potentially infectious laundry.

6. Wash hands after removal of personal protective equipment.

3.5.4.6 Fire or Explosion. In the event of a fire or explosion, personnel shall immediately evacuate and the local fire department should be notified immediately. The SSHO or a designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials onsite.

In general, firefighting should be left to professional firemen; however, in the event of a very minor fire that may easily be controlled, site personnel may:

- Use fire fighting equipment, such as a fire extinguisher, available onsite to control or extinguish the fire.
- Remove or isolate flammable or other hazardous materials that may contribute to the fire.

3.5.4.7 Spills or Leaks. Containers shall be inspected and their integrity assured prior to being moved. Operations on-site will be organized so as to minimize the amount of container movement. Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment (absorbent pillows, absorbent soils, recovery drums, etc.) will be stationed in the immediate area. The spill containment program must be sufficient to contain and isolate the entire volume of hazardous substances being transferred. Drums or containers that cannot be moved without failure shall be emptied into a sound

container. Fire extinguishing equipment shall be on hand and ready to use if needed to control incipient fires.

In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately.
- Locate the source of the spillage and stop the flow if it can be done safely.
- Begin containment and recovery of the spilled materials.

3.6 CHEMICAL AND PHYSICAL PROPERTIES OF HAZARDOUS SUBSTANCES

The exposure limits, recognition qualities, acute and chronic effects, and first aid treatments for hazardous chemicals found at the site are presented in Table 3-1 (Exposure Limits and Recognition qualities) and Table 3-2 (Health Hazards and First Aid). These tables were compiled from information found in Material Safety Data Sheets in Section 16.0 and the following references:

- OSHA 29 CFR Part 1910.1000 et seq., "Air Contaminants," U.S. Department of Labor, Washington, D.C., July 1, 1992 (1979 Permissible Exposure Limits).
- National Institute of Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards, Department of Health and Human Services (DHHS) Publication No. 90-117, June 1994.
- Threshold Limit Values and Biological Exposure Indices for 1995-96, American Conference of Governmental Industrial Hygienists (ACGIH).
- Amoore, John E., and Earl Hautala, 1983. "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, Vol. 3, No. 6.

TABLE 3-1

Exposure Limits and Recognition Qualities

	EXPOSURE STANDARDS				RECOGNITION QUALITIES		
COMPOUND	TLV/PEL(a)	STEL(b)	IDLH(c)	SKIN DESIGNATION	ODOR/ THRESHOLD	LEL(d)%	IONIZATION POTENTIAL (ev)
PESTICIDES (mg/m^3)							
2,4-D	10	–	–	Yes	Pheno-like	–	–
2,4,5-TP (Silvex)	–	–	–	No	–	–	–
2,4,5-T	10	–	Carcinogen	Yes	Odorless	–	–
DDE	–	–	Carcinogen	Yes	–	–	–
DDD	–	–	–	Yes	–	–	–
DDT	1	–	Carcinogen	Yes	Aromatic	–	–
SEMI-VOLATILE COMPOUNDS (mg/m^3)							
PCBs	0.500	–	5	Yes	Mild hydrocarbon	–	–

a) The most stringent of either the 1989 OSHA PEL or the ACGIH TLV.
b) Short Term Exposure Limit - 15 minute exposure.
c) Immediately Dangerous to Life and Health.
d) Lower Explosive Limit.

TABLE 3-2

Health Hazards and First Aid

COMPOUND	ROUTES OF ENTRY	EYE IRRITATION	SYMPTOMS	TARGET ORGANS
PESTICIDES (mg/m^3)				
2,4-D	Inhalation Absorption Ingestion Contact	Yes	Cardiovascular/liver injury, respiratory & skin irritation, gastrointestinal disturbance	Cardiovascular system, liver, skin, gastrointestinal system
2,4,5-TP (Silvex)	Inhalation Ingestion	Yes	Skin irritation	Skin, eyes, digestive tract
2,4,5-T	Inhalation Absorption Ingestion Contact	Yes	Tremors, dizziness, confusion, convulsions, vomiting, irritated skin	Central nervous system, liver, skin
DDE	Inhalation Absorption Ingestion Contact	Yes	Skin & mucous membrane irritation, teratogenic, carcinogenic	Uterus, cervix, vagina
DDD	Inhalation Absorption Ingestion Contact	Yes	Carcinogenic	Nervous system, liver
DDT	Inhalation Absorption Ingestion Contact	Yes	Tremors, dizziness, confusion, headache, fatigue, convulsions, vomiting, irritated skin, carcinogenic	Central nervous system, kidneys, liver, skin, peripheral nervous system
SEMI-VOLATILE COMPOUNDS (mg/m^3)				
PCBs	Inhalation Absorption Ingestion Contact	Yes	Irritated skin, dermatitis, carcinogenic	Skin, eyes, liver

4.0 SITE CONTROL

4.1 GENERAL

The purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. Site control is especially important in emergency situations. Several site control procedures will be implemented to reduce worker and public exposure to chemical, physical, biological, and safety hazards.

4.2 SITE WORK ZONES

To prevent the accidental spread of hazardous substances from a contaminated area to a clean area, zones will be delineated on the site where various operations will occur. The site will be divided into a minimum of three zones, as follows:

- The Exclusion Zone--The area where contamination is either known or likely to be present or, because of activity, will potentially harm personnel. Entry into the Exclusion Zone requires the use of PPE. The Exclusion Zone is the area bounded by fencing and straw bales surrounding Building T4002. This area is approximately 26,000 square feet.

- The Contamination Reduction Zone--The area where personnel and equipment are decontaminated. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal protection as defined in Section 6.0. The Personnel Contamination Reduction Zone is located at the north-east corner of the Exclusion Zone adjacent to the Health and Safety Trailer. This zone is a bermed pad approximately 20' by 20'. The Equipment Contamination Reduction Zone is 20' by 60' bermed pad located on the south-east side of the Exclusion Zone.

- The Support Zone--The area situated in clean areas where the chance to encounter hazardous materials or conditions is minimal; therefore, PPE is not required. The Support Zone is located on the north-east corner of project site,

and includes the Health and Safety Trailer and Construction Management Trailer.

- No unauthorized individuals are permitted in the Exclusion Zone, and the SSHO has the authority to deny any person access to the Exclusion Zone if, in their judgement, the person does not meet entry requirements.

4.3 STANDARD SAFE WORK PRACTICES

4.3.1 General

The following general safe work practices apply:

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited in contaminated or potentially contaminated areas, or where there is a possibility for the transfer of contamination.
- Contact with potentially contaminated substances should be avoided. Puddles, pools, mud, etc., should not be walked through. Kneeling, leaning, or sitting on equipment or the ground should be avoided, whenever possible. Monitoring equipment should not be placed on a potentially contaminated surface, such as the ground.
- Spillage should be prevented, to the extent possible. In the event that spillage occurs, the liquid should be contained, if possible.
- Splashing of contaminated materials should be prevented.
- Field crew members should use all their senses to alert themselves to potentially dangerous situations (i.e., presence of strong, irritating, or nauseating odors).
- Field crew members should be familiar with the physical characteristics of investigations, including:
  - Wind direction in relation to the ground zero area
  - Accessibility to associates, equipment, and vehicles

- Communications
- Hot zones (areas of known or suspected contamination)
- Site access
- Nearest water sources
- Routes and procedures to be used during emergencies.

- A minimum number of personnel and equipment should be in the contaminated area, but only to the extent consistent with workforce requirements of safe site operations.
- All wastes generated during R&R or subcontractor activities at the site must be disposed of as directed by the Project Manager.
- No one wearing contact lenses or having a beard will be permitted in the work area if Level C or higher protection is required.

4.3.2 Buddy System

Workers will conduct all site activities with a buddy who is able to:

- Provide his or her partner with assistance.
- Observe his or her partner for signs of chemical or heat exposure.
- Periodically check the integrity of his or her partner's protective clothing.
- Notify the site supervisor if emergency help is needed.
- Prearrange hand signals or other emergency communication signals such as:
  - Hand gripping throat: out of air, can't breathe.
  - Gripping partner's wrist or placing both hands around waist: leave area immediately, no debate.
  - Hands on top of head: need assistance.
  - Thumbs up: okay, I'm alright, I understand.
  - Thumbs down: no, negative.

- Arms waving upright: send backup support.

4.4 CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGEMENT

A certificate of worker/visitor acknowledgement shall be completed and submitted for each visitor allowed to enter Contamination Reduction or Exclusion Zones, and for each employee using the form in Section 15.0.

5.0 MONITORING

5.1 GENERAL

Monitoring will be performed for the hazards presented in Table 3-1 to ensure proper selection of engineering controls, work practices, and PPE so that employees are not exposed to levels that exceed permissible exposure limits or published exposure levels for hazardous substances. Air monitoring will be performed to identify Immediately Dangerous to Life and Health (IDLH) conditions, exposure over permissible exposure limits or published exposure levels, or other dangerous conditions such as the presence of flammable atmospheres or oxygen-deficient environments. Periodic monitoring will be conducted in the event of an IDLH condition or flammable atmosphere or when there is an indication that exposure levels may have risen, such as:

- When work begins on a different portion of the site.
- When contaminants other than those previously identified are being handled.
- When a different type of operation is initiated (e.g., building demolition as opposed to soil excavation).
- When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., spill or drum handling).

Third party air monitoring of asbestos abatement activities is the responsibility of the asbestos abatement firm, Allwash of Syracuse, Inc., Syracuse, New York. Results of daily air monitoring, worker exposure monitoring, and clearance air sampling will be delivered to the SSHM and SSHO within 24 hours of sample collection. The SSHM will review the results of all air sampling.

5.2 MONITORING REQUIREMENTS

Equipment necessary for site monitoring consists of an oxygen (O_2) meter, a sound level meter, a photoionization detector (PID), a particulate monitor with data logger, and a combustible gas indicator (CGI). The types of monitoring instruments specified by the

hazard, as well as the action levels to initiate response measures, are shown in Tables 5-1 and 5-2. All ambient measurements taken to evaluate employee exposures must be taken in the individual's breathing zone except combustible gas readings, which must be taken at the point where the explosion hazard is thought to exist and must be fairly constant for at least 30 seconds.

5.2.1 Real-Time Air Monitoring

Real-time air monitoring will be conducted prior to commencement of work to establish baseline conditions for total organic vapors, respirable particulates, explosive gases, and oxygen. For the establishment of baseline conditions, monitoring shall be performed near each anticipated active work zone and at each approved perimeter monitoring location. Baseline conditions for respirable dust will be established based on an 8-hour sample. Total organic vapors, explosive gases, and oxygen baseline will be established based on consistent readings from the photoionization detector. Real-time air monitoring is required during active site work, staging or loading of potentially contaminated debris, and handling of contaminated liquids. A minimum of four real-time monitoring stations (one upwind and three downwind) shall be established along the perimeter of the active work site areas. The locations of these air monitoring stations shall be submitted to the Contracting Officer for daily approval. Real-time air monitoring shall also be performed adjacent to each open soil excavation area, staging and loading area, and any contaminated liquids handling area in the Exclusion Zones. This monitoring shall be performed in the area of the highest exposure risk employee in the Exclusion Zones.

Monitoring for organic vapor concentrations will consist of measurements taken within 10 feet (downwind) of each of the Contamination Reduction Support Zones, along with measurements collected at each of the four perimeter air monitoring stations at the locations designated according to wind direction.

Onsite monitoring frequency for organic vapor concentrations and total/respirable dust shall be every 30 minutes or less during invasive activities. Real-time monitoring at

TABLE 5-1

Hazard Monitoring Methods, Action Levels, and Response Measures at Work Area

Hazard	Monitoring Method	Action Level	Monitoring Schedule	Response Measures
Total organic vapor	PID	Up to 25 ppm above background in the active work area	Every 30 minutes or less during invasive field activities	Level D
		25 ppm above background in active work area	Obtain 2nd sample 5-15 minutes later if 2nd >25 ppm above background	Level C Report readings to Contracting Officer
		25-250 ppm above background	Obtain 2nd sample 5-15 minutes later. Also use chemical detector tubes.	Consult SSHO Report readings to Contracting Officer
		250 ppm above background	2 successive readings within 15 minutes	Shut down and evacuate
Oxygen deficient atmosphere	O_2 meter	20.9%	Continue operations	
		<20.9%	Continuous monitoring	
		<19.5%	Do not enter. Ventilate and determine if supplied air is required. Consider that any low CGI readings are suspect or false.	Level B
		>23.5%	Fire explosion hazard. Withdraw from area immediately.	
Explosion	CGI	<5% LEL	Continue investigation	
		5-10% LEL	Continue monitoring with caution as high levels are encountered	
		> 10% LEL	Explosion hazard, withdraw from area immediately	Shut down, evacuate, consult with CIH, notify Contracting Officer

TABLE 5-1 (cont'd)

Hazard	Monitoring Method	Action Level	Monitoring Schedule	Response Measures
Respirable particulates	Particulate monitor	*Up to 1 mg/m^3 above background in the breathing zone	Every 30 minutes or less during invasive field activities	Level D
		*1-3 mg/m^3 above background in the breathing zone	Every 30 minutes or less during invasive field activities	Level C
		*>3 mg/m^3 above background in the breathing zone	Every 30 minutes or less during invasive field activities	Implement engineering controls

* These action levels may be adjusted downward pending results of baseline and background monitoring as described in Section 5.3.

TABLE 5-2

Hazard Monitoring Methods, Action Levels, and Response Measures at Site Perimeter

Hazard	Monitoring Method	Action Level	Monitoring Schedule	Response Measures
Total organic vapor	PID	1 ppm > background level at site perimieter	Every 30 minutes or less during invasive field activities	Investigate and consult with CIH
		5 ppm > gackground level at site perimeter	Every 30 minutes or less during invasive field activities	Stop work and implement engineering controls (e.g., supression/barriers)
Respirable particulates	Particulate monitor	>1 mg/m^3 >background	Every 30 minutes or less during invasive field activities	Stop work and implement engineering controls (e.g., supression/barriers)

each perimeter air monitoring station shall be performed a minimum of four times per shift.

5.2.2 Results Reporting to Site Personnel

During such time that the organic vapor levels exceed the aforementioned limit in the Support Zone, personnel shall be notified and all personnel within this area shall don respiratory protective equipment as described by the Site Safety and Health Plan.

5.2.3 Monitoring Records

The following real-time monitoring data shall be recorded on the Real-Time Air Monitoring Data Sheet in Section 15.0, Forms:

- Date and time of monitoring.
- Air monitoring location.
- Instrument, model number, serial number.
- Background levels.
- Results of monitoring.
- Interpretation of the data and any further recommendations by the CIH or the SSHO in consultation with the CIH.

These results shall be given verbally to the Contracting Officer following each site scan that indicates concentrations in excess of the action levels, and documented in writing by the end of each work day with three copies provided.

5.2.4 Instrument Calibration

All applicable instruments will be calibrated daily prior to and after use. Readings will be recorded on the Instrument Calibration Checksheet provided in Section 15.0, Forms.

5.2.4.1 HNU PI-101 Calibration.

- Battery check--The function switch should be turned to BATT. The needle should be in the green region; if not, recharge the battery.
- Zero set--The function switch should be turned to STANDBY. In this position, the lamp is OFF and no signal is generated. The zero point should be set with the ZERO set control.
- Gas standard--The standard should be connected to the probe. The function switch should be turned to the range position of the standard and the meter reading should be noted. The SPAN control setting should be adjusted, as required, to read the parts per million (ppm) concentration of the standard. The zero setting should be rechecked.
- Lamp cleaning--If the span setting from calibration is 0.0 or calibration cannot be achieved, then the lamp must be cleaned.
- Lamp replacement--If the lamp output is too low or if the lamp has failed, it must be replaced.

5.2.4.2 MSA Explosimeter Model 2A Calibration. Before the calibration can be checked, the instrument and its aspirator sampling bulb must be in operating condition, as described in the instrument instruction manual.

- The flow control should be attached to the calibration gas tank.
- The hose should be connected to the flow control and to the instrument inlet fitting.
- The control valve should be opened.
- The meter reading should be recorded after it stabilizes. Note: It is not necessary for the aspirator bulb to be operated for the calibration sample to be obtained. If the instrument does not read within the acceptable range, the

detector filament unit should be replaced and the calibration check procedure should be repeated.

- The flow control valve should be closed.
- The hose should be removed from the flow control and from the inlet fitting on the instrument.
- The flow control should be removed from the calibration gas tank.

5.2.4.3 Industrial Scientific Oxygen Meter Calibration. Switch to the OX mode and note the display reading, which should be 20.9% in normal room air. Slowly turn the S OX (OX calibration) adjustment counterclockwise until the low oxygen alarm setting is reached. Slowly turn the adjustment back and forth through the alarm point to verify the setting. After the low alarm setting is located, slowly turn the adjustment in the clockwise direction until the high oxygen alarm setting is found. Slowly turn the adjustment back and forth through the alarm point to verify the setting. Return the display to the original setting. The oxygen alarms are factory-set at 19.5% for the low alarm and 23.0% for the high alarm.

5.2.4.4 Miniram Particulate Monitor Model PDM-3 Calibration Instructions

- Initial condition:
  - Blank display--indicates the Miniram has not been used for 48 hours.
  - OFF display--indicates instrument has been in the off mode for less than 48 hours.
- Start measurement cycle:
  - OFF button should be pressed; wait until the display reads OFF.
  - MEAS button should be pressed to initiate measurement cycle.
- MEAS Button:
  - MEAS button should be pressed to begin monitoring.
  - Readings are updated every 10 seconds.

- Values are reported in mg/m^3.
- The Miniram will run for 8 hours and 20 minutes if the battery is fully charged.

- MEAS and TIME Button:
  - Same as pressing MEAS only, except it will restart automatically after the 8.3-hour cycle and keep restarting until OFF is pushed or batteries run out.
  - Concentration average and timing information for the last seven 8.3-hour runs will remain in storage at any given time.
- OFF Button:
  - When pressed:
    - -- Discontinues whatever mode is underway, then will display OFF for a minimum of 10 minutes or a maximum of 48 hours until another key is pressed.
    - -- During a measurement cycle, the instrument stores concentration average and elapsed monitoring time. In addition, the duration of the OFF period (up to 48 hours) between cycles will be stored for up to seven cycles.
    - -- All data are stored for 6 months without battery recharging.
- TIME Button:
  - If pressed during the measurement cycle, the display will show the elapsed time (in minutes).
- TWA Button:
  - Time-Weighted-Average.
  - During the measurement cycle, if TWA is pressed, the display will indicate the average concentration at that instant.

- SA Button:
  - Shift-Average.
  - Displays aerosol concentration, up to that moment, averaged over an 8-hour shift period or the number of hours the Miniram has been running.
- PBK Button:
  - Playback.
  - If PBK is pressed for more than 1 second, the stored data are automatically played back through the display.
  - The display will show:
    - The identification number.
    - The shift or run number (7 through 1, starting with last run).
    - Sampling time (in minutes).
    - Off-time between last and next run (in tens of minutes).
    - The average concentration (in mg/m^3).
    - An average reading of 9.99 indicates that a significant overload condition occurred.
- ZERO Button (calibration):
  - The background level is referred to as the zero value and is <u>automatically subtracted</u> from the aerosol concentration readings during the measurement mode. (This means the displayed reading is the actual dust concentration present in the sensing chamber.)
  - To update the zero concentration value, ZERO should be pressed once until the display reads off.

- Update before each cycle (8 hours) when monitoring concentrations (75 mg/m^3).
- Updated weekly when monitoring low concentrations.

- IDH Button:
  - Used with other keys for additional programming functions.

5.2.4.5 Model 215 Sound Level Meter Calibration Instructions 215 meter is factory calibrated, and with proper care should retain its accuracy. It is recommended, however, that the meter be checked periodically with the CA-12B or CA-15B Calibrator, preferably in the same environment in which sound level measurements are to be taken. Proceed as follows:

1. First turn on the 215 or 215R Sound Level Meter and check the battery level indicator. Replace batteries if indicator is below green "good battery" level.
2. Push the meter switch to ON and select the 100 dB range position.
3. (CA-12B): Switch on the CA-12B Calibrator and check the battery level indicator. Replace the batteries if the indicator is below the green "good battery" level.

   (CA-15B): Set the Model CA-15B Calibrator OFF-FREQUENCY switch to 1,000 Hz. If a tone is heard, the Calibrator output is accurate and proper.
4. Carefully insert the meter microphone into the calibrator coupler. If the Model 215R Sound Level Meter is used with a microphone extension cable, then calibration is performed with the microphone mounted on the extension cable. Be sure the microphone is inside the coupler resting flush on the inner rim. Turn on the calibrator. The 110-decibel output of the calibrator should produce a full-scale +10 reading on the meter for whichever weighting scale is used. All weighting readings are the same at 100 Hz. Note the correction in calibrator output due to altitude effects explained in the NOTE on page 13 for the CA-12B, or see "Altitude Effects" on page 8 of the CA-15B Instructions.

5. If the reading is off slightly, insert a narrow screwdriver in the small hole on the bottom of the meter and slowly adjust the CAL adjust until the meter reads correctly.
6. Change the selector switch to the 110 dB position on the meter and note that the needle should drop to the zero position on the meter dial.
7. The meter is now calibrated and ready for use.

The small adaptor ring furnished with the CA-12B Calibrator or 212 Meter-Calibrator Kit is used only for checking other sound level meters with 1-inch microphones. This adaptor is not used with the 211A or 211FS or 215 meters.

If a calibrator with a frequency other than 1,000 Hz is used, the equivalent "A" scale sound level must be known to set the 215 meter properly. If the "A" scale level is not known, calibrate the 215 meter with the WEIGHTING switch in the LIN (linear) position.

The cross-hatch adjusting screw located on the face of the meter movement is for the meter tracking adjustment only and should not be confused with the actual calibration adjustment on the bottom of the meter housing.

When the 215 is turned off, the meter needle must rest on the left-most line. If it does not, turn the cross hatch screw slowly until the needle does rest on that line. Recalibrate the meter.

5.2.5 Background Readings

Before any field activities commence, background levels at the site must be read and noted. Daily background readings must be conducted away from and upgradient of areas of potential contamination to obtain accurate results. Monitoring personnel must consider potential interferences such as engine exhaust.

5.2.6 Air Monitoring Frequency

All site readings must be noted on the Air Monitoring Record provided in Section 15.0, Forms, along with the date, time, background level, weather conditions, wind direction and speed, and the location where the background level was recorded.

5.3 TIME WEIGHTED AVERAGE AIR MONITORING

5.3.1 Perimeter Air Sampling

On three separate days prior to initiating onsite activities background ambient air quality monitoring will be conducted for total organic vapors, respirable particulates, explosive gases, oxygen, and 8-hour TWA monitoring for DDD, DDE, DDT, 2,4-D, 2,4,5-T, lead, and respirable dust. Baseline conditions for total organic vapors, explosive gases, and oxygen will be established based on consistent readings from the photoionization detector. Sample collection and analysis of 8-hour TWA samples will be conducted according to the procedures set forth in the current edition of the "NIOSH Manual of Analytical Methods" and summarized in Table 5-3.

During field activities four perimeter air monitoring stations will be established around the active work site and samples will be collected four times per shift as a minimum. The purpose of this perimeter air monitoring program is to assess the potential for personnel in the Support Zone, offsite populations, and the surrounding environment being adversely exposed as a result of field activities. This program will assess the offsite migration of airborne contaminants released during field activities so that appropriate control measures and/or contingency plans may be implemented.

Air sampling shall be conducted daily. As a minimum, one sample per station shall be analyzed per week. The day selected shall represent the day when the heaviest activity occurred. If real-time air monitoring at the site perimeter indicates elevated levels, those TWA samples collected for that day shall be analyzed.

TABLE 5-3

Sample Collection and Analysis

Contaminant	Reference	Sampling Media
DDD, DDE, DDT	NIOSH S-274	Glass Fiber Filter
2,4-D, 2,4,5-T	NIOSH 5001	Glass Fiber Filter
Lead	NIOSH 7082	Mixed Cellulos Ester Filter

A duplicate sample shall be collected at one of the monitoring locations on a daily basis. These samples shall be provided to the Contracting Officer for analysis by a government-based laboratory.

5.3.2 Personal Air Sampling

During initiation of each major site task including building decontamination, building demolition, soil excavation, and well drilling, the personal air samples will be collected and analyzed for the analytes as described in Section 5.3.1. Sampling will be conducted daily at each of the above areas during activities considered to represent a worse-case exposure potential. Daily sampling will continue if contaminant levels are elevated or suspect. If sample data analyses indicate airborne contaminants are at background or non-detectable concentrations during routine procedures at the above sites, personal sampling will be conducted on a periodic basis.

Samples shall be collected in the breathing zone of personnel which can be expected to have the highest exposure or maximum risk. "Maximum risk" employee(s) shall be selected for each operation and work area to determine representative exposure levels. Additional personnel sampling shall be required if maximum risk employees of an operation area at or above Permissible Exposure Levels. Initially, personnel integrative monitoring shall be done on a daily basis with a verbal 24-hour turnaround of analytical results for each new phase of work, or when work begins in a new area of the site. This sampling shall be conducted for a minimum of two days, or until the CIH determines personnel exposures have been adequately characterized.

Once personnel exposures for an operation at a given area have been characterized, the Contractor shall continue to collect TWA samples for maximum risk personnel. AS a minimum, one sample (or set of samples) shall be analyzed each week for every distinct operation and/or work area. Samples shall also be analyzed any time action levels are exceeded or whenever an upgrade/downgrade in a level of protection occurs. Sample collection and daily analysis shall continue until the CIH and the Contracting Officer determine exposures have been adequately characterized and enough information exists

to adequately protect onsite personnel with information obtained from the real-time instrumentation.

The Contractor shall provide verbal analytical results with interpretation of the data and the recommendation of the CIH, if any, to the Contracting Officer within 48 hours of sampling. The results shall be confirmed in a written report with three copies provided to the Contracting Officer within 24 hours of providing the verbal results.

The Contractor, in consultation with the Contracting Officer, may reduce the monitoring frequency if analytical results indicate no hazard. However, analysis of personnel samples shall be performed no less than once a week for each onsite operation while onsite work is being performed.

Analytical services will be provided by Wisconsin Occupational health laboratory (WOHL) of Madison, Wisconsin. This laboratory maintains an inhouse quality assurance/ quality control program and is accredited by the American Industrial Hygiene Association among others.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 GENERAL

PPE that will protect employees from the hazards and potential hazards likely to be encountered during site investigations will be used. PPE selection is based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and duration, and the hazards and potential hazards identified at the site. The level of protection provided is increased when site conditions the SSHO in consultation with the SSHM deems it necessary to reduce employee exposures to below permissible exposure limits and published exposure levels for hazardous substances.

6.2 LEVELS OF PROTECTION

Table 6-1 presents the minimum protective clothing and equipment ensembles to be used during this project:

6.3 INITIAL MINIMUM LEVELS OF PPE

Based on available information, the initial minimum protective equipment requirements for each major task and operation are listed below.

Operation	*Level of Protection*
Site Preparation	Level D
Work Zone Construction	Level D
Demolition	Level D
Containerization of Materials	Level D
Transportation and Disposal of Contaminated Materials	Level D
Demobilization	Level D

TABLE 6-1

Protective Equipment for Onsite Activities

Activity	Level	Protective Equipment
Building decontamination, demolition, foundation and soil removal, monitoring well installation	C	Modified Level D PPE and - Full-facepiece, air purifying respirator equipped with filter cartridges approved by NIOSH for organic vapors, with a HEPA pre-filter Optional - Hearing protection
	D	- Work clothes, as dictated by the weather - Safety (steel toe/shank) shoes or boots - Hard hat - Safety glasses, goggles, or face shield - Hearing protection (where required) - Nitrile, neoprene or natural rubber gloves (when handling contaminated wastes, soils, or water) Optional - Hearing protection
	D Modified	Same as for Level D, and: - Disposable, hooded, one-piece, full-body coveralls constructed of spun-bonded olefin or polypropylene fabrics (e.g., Tyvek, or equivalent). - Disposable boot covers or (minimum) 60 mil rubberized PVC.

6.4 PPE FOR GOVERNMENT PERSONNEL

Three clean sets of personal protective equipment and clothing (excluding air-purifying negative-pressure respirators and safety shoes, which will be provided by individual visitors), as required for entry into the Exclusion Zone and/or Contamination Reduction Zone, will be available for use by the Contracting Officer or official visitors. The items will be cleaned and maintained by R&R and stored and clearly marked: "FOR USE BY GOVERNMENT ONLY." R&R will provide basic training in the use and limitations of the PPE provided, and institute administrative controls to check prerequisites prior to issuance. Such prerequisites include meeting minimum training requirements for the work tasks to be performed and medical clearance for site hazards and respirator use.

6.5 RESPIRATORY PROTECTION

If air purifying respirators are required, full facepiece respirators, with combination organic vapor and high efficiency dust and mist cartridges, will be used. Respirators belong to, and are only used and maintained by, the individual to whom they have been issued. Each R&R and subcontractor employee who anticipates working onsite must be trained, fit tested, and declared medically fit to wear respiratory equipment prior to participating in field activities.

6.6 PERSONAL PROTECTIVE EQUIPMENT PROGRAM

R&R's Personal Protective Equipment Program has been prepared consistent with the requirements of 29 CFR 1910.120 and 29 CFR 1926.65.

7.0 DECONTAMINATION

7.1 PERSONAL HYGIENE AND DECONTAMINATION

Personnel entering the Exclusion or Contamination Reduction Zones or otherwise exposed or subject to exposure to hazardous chemical vapors, liquids, or contaminated solids shall adhere to the following personal hygiene and decontamination provisions. Decontamination shall be performed in the CRZ prior to entering the Support Zone from the Exclusion Zone. Employees shall be trained in the procedures and the procedures shall be enforced throughout site operations. Persons disregarding these provisions of the SSHP shall be barred from the site.

7.2 DECONTAMINATION FACILITIES

A personnel decontamination facility shall be provided in the CRZ. This facility shall be used by both Contractor personnel and Government representatives. The decontamination facility shall provide for separation of street clothing and contaminated PPE and shall be equipped with heating, lighting, ventilation, a change room and lockers, hot and cold water, towels, soap in sufficient quantities for all anticipated personnel, and waste water storage facilities for controlling the disposal of used water. laundry facilities or provisions of laundry service shall be provided. If an offsite laundry service is used, they shall be notified, in writing, of the possibility and nature of contaminants expected on clothing.

7.3 STANDARD PROCEDURES

1. A decontamination area should be located between the Hot Line (upwind boundary of the Exclusion Zone) and the Support Zone boundary.
2. A personnel decontamination station (PDS) should be established.
3. All personnel should proceed through the appropriate contamination reduction sequence upon leaving the contamination area.

4. All protective gear should be left onsite during any lunch break following decontamination procedures.
5. Material Safety Data Sheets for chemicals used during decontamination procedures should be made available to those who are potentially exposed to these chemicals. These are attached to this health and safety plan. See also Section 12.0 "Hazard Communication" (below).
6. See Section 3.5.4.5, Exposure to Bloodborne Pathogens, for decontamination involving body fluids.

In addition, the following conditions and procedures shall be followed by personnel within the Exclusion Zone:

- Provide contained storage and legal disposal of used disposable outerwear.
- Hand and face washing facilities.
- A facility for changing into and out of and storing work clothing separate from street clothing.
- Disposable outerwear shall not be reused, and when removed, shall be placed inside disposal containers provided for that purpose located in the Contamination Reduction Zone.
- Smoking and chewing of tobacco or chewing gum shall be prohibited except in a designated smoking area, provided by the Contractor, in the Support Zone.
- Eating and drinking shall be prohibited except in a designated lunch or break area, provided by the Contractor in the Support Zone.
- All outerwear shall be removed prior to entering the lunch area or smoking area, and prior to washing hands.
- Contractor personnel shall be required to thoroughly clean their hands and other exposed areas before entering the smoking or lunch area.

7.4 DECONTAMINATION OF EQUIPMENT

To the extent possible, measures should be taken to prevent contamination of sampling and monitoring equipment. Sampling devices may become contaminated; however, monitoring instruments, unless they are splashed, usually do not become contaminated. Once contaminated, it is difficult to clean instruments without damaging them. Any delicate instrument that cannot be decontaminated easily should have a bag taped and secured around it. Openings should be made in the bag for sample intake.

7.4.1 Decontamination Facilities

A decontamination station shall be provided within the Contamination Reduction Zone for decontaminating vehicles and equipment leaving the Exclusion Zone. The pad shall be constructed to capture decontamination water, including overspray, and shall allow for collection and removal of the decontamination water using sumps, dikes, and ditches as required.

7.4.2 Sampling Devices

Sampling devices require special cleaning. Decontamination of all sampling equipment should be performed in accordance with approved quality assurance plans.

7.4.3 Tools

Wooden tools are difficult to decontaminate because they absorb chemicals. They should be kept onsite and handled only by protected workers. After use in a contaminated area, wooden tools should be discarded. For decontaminating other tools, refer to quality assurance plans or consult a laboratory.

7.4.4 Respirators

Certain parts of contaminated respirators, such as the harness assembly and cloth components, are difficult to decontaminate. If grossly contaminated, they may have to be discarded. Rubber components can be soaked in soap and water and scrubbed with a brush. Persons responsible for decontaminating respirators should be thoroughly trained in respirator maintenance.

7.4.5 Heavy Equipment

Bulldozers, trucks, backhoes, bulking chambers, and other heavy equipment are difficult to decontaminate. Generally, they are washed with water under high pressure and/or accessible parts are scrubbed with detergent/water solution under pressure, if possible. In some cases, shovels, scoops, and lifts have been sand blasted or steamed. Particular care must be given to those components in direct contact with contaminants, such as tires and scoops.

7.4.6 Sanitizing of Personal Protective Equipment

Respirators, reusable protective clothing, and other personal articles not only must be decontaminated before being reused, but also must be sanitized. The inside of masks and clothing becomes soiled because of exhalation, body oils, and perspiration. The manufacturer's instructions should be followed to sanitize the respirator mask. If practical, protective clothing should be machine washed after a thorough decontamination; otherwise, it must be cleaned by hand.

7.4.7 Persistent Contamination

In some instances, clothing and equipment will become contaminated with substances that cannot be removed by normal decontamination procedures. A strong detergent (industrial grade) may be used to remove such contamination from equipment if it does not destroy or degrade the protective material. If persistent contamination is expected, disposable garments should be used. Testing for persistent contamination of protective clothing and appropriate decontamination must be done by qualified laboratory personnel.

7.4.8 Disposal of Contaminated Materials

All materials and equipment used for decontamination must be disposed of properly. Clothing, tools, buckets, brushes, and all other equipment that is contaminated must be secured in drums or other containers and labeled. Clothing not completely

decontaminated onsite should be secured in plastic bags before being removed from the site.

Contaminated wash and rinse solutions should be contained by using step-in containers (e.g., child's wading pool) to hold spent solutions. Another containment method is to dig a trench about 4 inches deep and line it with plastic. In both cases, the spent solutions should be transferred to drums, which should be labeled and disposed of with other substances onsite.

7.5 MINIMAL DECONTAMINATION

Less extensive procedures for decontamination can be established when disposable clothing and equipment are used, the type and degree of contamination become known, or the potential for transfer is judged to be minimal by the SSHO in consultation with the CIH.

7.6 CLOSURE OF THE PERSONNEL DECONTAMINATION STATION

All disposable clothing and plastic sheeting used during the operation should be double bagged, labeled, and either contained onsite or removed to a client-approved disposal facility. Grossly contaminated protective clothing should be disposed of onsite with the permission of the property owner. Cloth items should be bagged and removed from the site for final cleaning. All wash tubs, pails, containers, etc., should be thoroughly washed, rinsed, and dried prior to removal from the site.

7.7 LEVEL D DECONTAMINATION

The following is a description of the minimum decontamination procedures for activities conducted in Level D:

Level D Decontamination		
Station 1:	Equipment Drop	Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. During hot weather operations, a cool down station may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with either decon solution or detergent water as appropriate. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Boot, Gloves, and Outer Garment Removal	Remove and deposit boots, chemical-resistant splash suit, and inner gloves in separate containers lined with plastic.
Station 5:	Field Wash	Thoroughly wash hands and face.

7.8 LEVEL C DECONTAMINATION

The maximum decontamination layout for Level C is shown conceptually in Figure 7-1. A description is given below.

Level C Decontamination		
Station 1:	Equipment Drop	Deposit equipment used onsite (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. During hot weather operations, a cool down station may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with either decon solution or detergent water as appropriate. Rinse off using copious amounts of water.

Level C Decontamination

Station 3:	Outer Boot and Glove Removal	Rinse outer boots and gloves. Deposit in container with plastic liners.
Station 4:	Canister or Mask Change	If worker leaves EZ to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boots donned, joints taped, and worker returns to duty.
Station 5:	Inner Boot and Outer Garment Removal	Remove inner boot and outer garment and deposit in separate containers lined with plastic.
Station 6:	Facepiece Removal	Remove facepiece. Avoid touching face with fingers. Deposit facepiece on plastic sheets.
Station 7:	Inner Glove Removal	Remove and deposit inner gloves in the container lined with plastic.
Station 8:	Field Wash	Thoroughly wash hands and face.

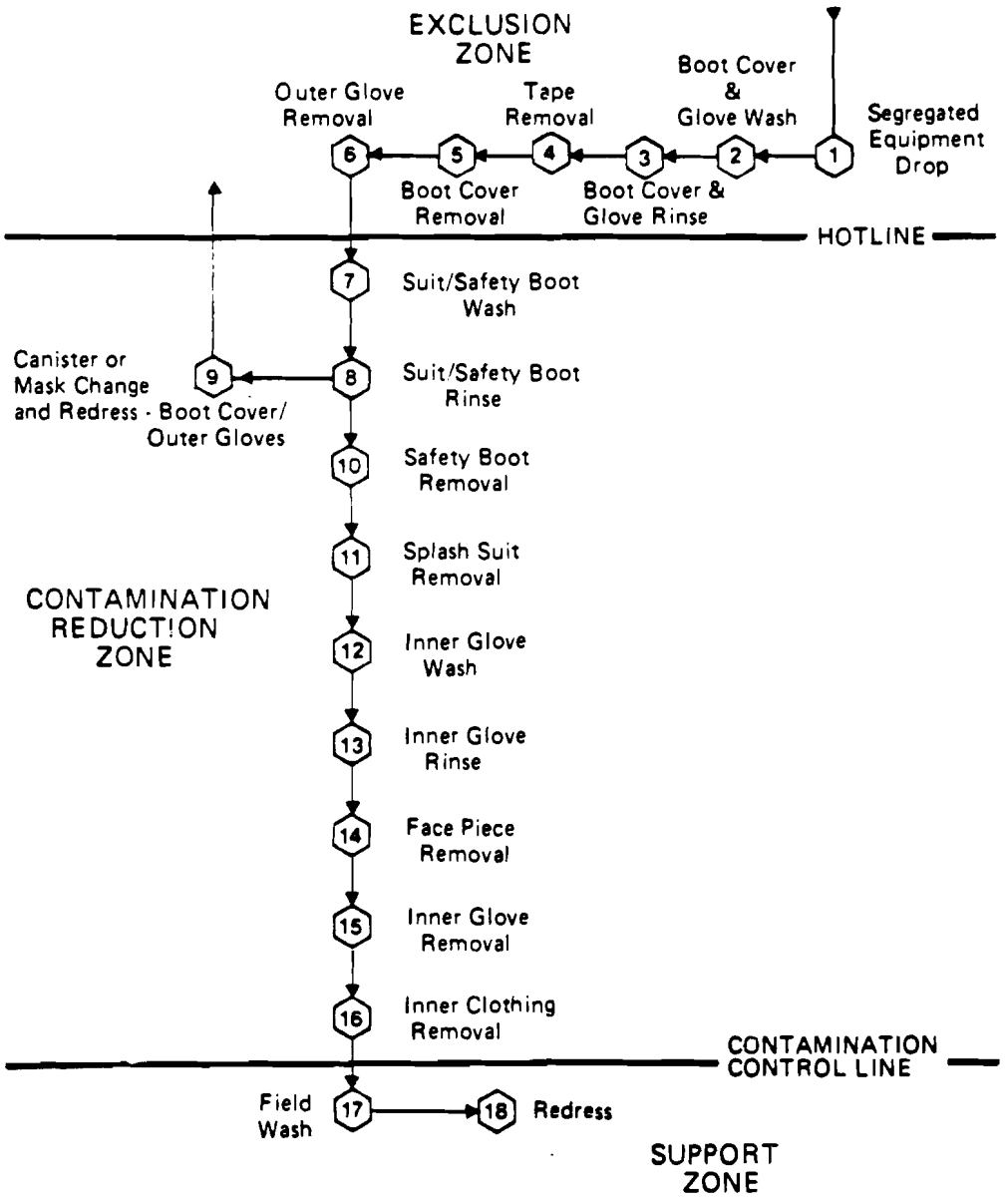

Figure 7-1
Maximum Decontamination Layout
for Level C Protection

8.0 EMPLOYEE TRAINING ASSIGNMENTS

8.1 GENERAL

All employees working onsite who are exposed to hazardous substances, health hazards, or safety hazards; their supervisors; and the management responsible for the site must receive training before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances or safety or health hazards. Employees will not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.

Training certificates for all onsite workers will be provided to the Contracting Officer before site mobilization. Should additional workers be required for site work, their training certificates will be provided to the Contracting Officer before they begin work.

8.2 INITIAL TRAINING

General site workers engaged in hazardous substance removal or other activities that may expose workers to hazardous substances and health hazards will receive a minimum of 40 hours of offsite instruction, and a minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor.

8.3 MANAGEMENT AND SUPERVISOR TRAINING

Onsite management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations will receive 40 hours of initial training, 3 days of supervised field experience, and at least 8 additional hours of specialized supervisory training.

8.4 REFRESHER TRAINING

Employees, managers, and supervisors will receive 8 hours of refresher training annually.

8.5 ADDITIONAL TRAINING REQUIREMENTS

Employees engaged in field activities should also be current in both first aid and cardiopulmonary resuscitation.

The U.S. Department of Transportation (DOT) requires that employees who directly affect the safety of hazardous material transportation receive General Awareness/ Familiarization, Function-Specific, Safety, and (where applicable) Driver training. Those who ship any DOT hazardous materials, such as calibration or decontamination chemicals, preservatives, or samples that are DOT hazardous, must have this training.

9.0 MEDICAL SURVEILLANCE

9.1 GENERAL

The following employees who participate in field activities involving hazardous waste will be included in the R&R Medical Surveillance Program:

- All employees who may be exposed to hazardous substances or health hazards at or above the permissible exposure limits, without regard to the use of respirators, for 30 days or more per year.
- All employees who wear a respirator as required by CFR 1910.134.
- All employees who are injured because of overexposure from an incident involving hazardous substances or health hazards.

9.2 FREQUENCY OF MEDICAL EXAMS

Medical examinations and consultations will be made available to the employees discussed above on the following schedules:

- Prior to assignment.
- At least once every 12 months, unless the physician believes a longer interval (not greater than biennially) is appropriate.
- As soon as possible upon notification that the employee has developed signs or symptoms indicating possible overexposure.

9.3 CONTENT OF MEDICAL EXAMINATIONS

The following elements shall be included in the medical surveillance program. Additional elements may be included at the discretion of the occupational physician responsible for reviewing the medical surveillance protocols.

- Complete medical and occupational history (initial exam only).
- General physical examination of major organ systems.

- Pulmonary function testing including FVC and FEV1.0.
- CBC with differential.
- Blood chemistry screening profile (e.g., SMAC 20/25).
- Urinalysis with microscopic examination.
- Audiometric testing (as required by hearing Conservation Program).
- Visual acuity.
- Chest x-ray. (This test should be performed no more frequently than every four years, unless directed by an occupational physician.)
- Electrocardiogram (as directed by the occupational physician).
- Urine heavy metals (arsenic, cadmium, chromium, and mercury).
- Serum lead.

9.4 INFORMATION PROVIDED TO THE OCCUPATIONAL PHYSICIAN

The physician shall be furnished with the following:

- Site information from Section 3.0, Site Characterization and Hazard Analysis.
- Information on the employee's anticipated or measured exposure.
- A description of any PPE used or to be used.
- A description of the employee's duties as they relate to the employee's exposures (including physical demands on the employee and heat/cold stress).
- A copy of CFR 29 Part 1910, Section 120, or CFR 29 Part 1926, Section 65: HAZWOPER Standard
- Information from previous examinations not readily available to the examining physician.

- A copy of Section 5.0 of NIOSH Pub. No. 85-115, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Chapter 5: Medical Program.
- Information required by CFR 29 Part 1910, Section 134, Respiratory Protection.

9.5 PHYSICIAN'S WRITTEN OPINION

Before work begins a copy of the physician's written opinion for each employee shall be obtained and furnished to the Safety and Health Manager and the employee. The opinion shall address the employee's ability to perform hazardous remediation work and shall contain the following:

- The physician's recommended limitations upon the employee's assigned work and/or PPE usage.
- The physician's opinion about increased risk to the employee's health resulting from work.
- A statement that the employee has been informed and advised about the results of the examination.

9.6 MEDICAL RECORDS

Documentation of medical exams shall be provided as part of the Certificate of Worker or Visitor Acknowledgement. Medical records shall be maintained in accordance with the HAZWOPER Standard.

Medical exam verification for all onsite workers will be provided to the Contracting Officer before site mobilization. Should additional workers be required for site work, their medical exam verification will be provided to the Contracting Officer before they begin work.

10.0 STANDARD OPERATING PROCEDURES

10.1 ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES

The health and safety issue is a project management responsibility. Each Project Manager is fully accountable for carrying out assigned work for each project in compliance with the firmwide Health and Safety Program.

10.1.1 Project Manager

The Project Manager (PM) shall direct onsite investigations and operational efforts but may delegate all or part of these duties to the Site Manager. The PM:

1. Reviews and approves the SSHP.
2. Obtains appropriate monitoring and protective equipment.
3. Monitors safety performance of personnel for compliance with the project HSP.
4. Requires correction of unsafe work practices or conditions.

10.1.2 Site Safety and Health Manager

Mr. Kenneth Fischer, a Professional Engineer (PE) and Certified Industrial Hygienist (CIH) is the designated Site Safety and Health Manager for this project. Ms. Jill Breysse, also a CIH, is his alternate.

Mr. Fischer and Ms. Breysse have the following qualifications:

- A minimum of three years experience in developing and implementing safety and health programs at hazardous waste sites.
- Documented experience in supervising professional and technician level personnel.
- Documented experience in developing worker exposure assessment programs and air monitoring programs and techniques.

- Documented experience in the development of personal protective equipment programs, including programs for working in and around potentially toxic, flammable and combustible atmospheres and confined spaces.
- Working knowledge of state and Federal occupational safety and health regulations.

The CIH shall:

- Be responsible for the development, implementation, oversight, and enforcement of the SSHP.
- Sign and date the SSHP prior to submittal.
- Conduct initial site-specific training.
- Be present onsite during the first three days of remedial activities and at the startup of each new major phase.
- Visit the site as needed and at least once per week for the duration of activities, to audit the effectiveness of the SSHP.
- Be available for emergencies.
- Provide onsite consultation as needed to ensure the SSHP is fully implemented.
- Coordinate any modifications to the SSHP with the Site Manager, the SSHO, and the Contracting Officer.
- Provide continued support for upgrading/downgrading of the level of personal protection.
- Be responsible for evaluation air monitoring data and recommending changes to engineering controls, work practices, and PPE.
- Review accident reports and results of daily inspections.
- Serve as a member of the Contractor's quality control staff.

10.1.3 Occupational Physician

Dr. Gary Krieger is the designated Occupational Physician for this project. Dr. Krieger is board certified in Occupational Medicine and Toxicology. He has over 10 years experience in providing oversight and administration for Medical Surveillance Programs for hazard waste operations, including projects similar to this project.

10.1.4 Site Safety and Health Officer

The primary Site Safety and Health Officer's (SSHO) designated for this project is Joe Reese. The alternate SSHO is Patrick Ledda. Mr. Reese and Mr. Ledda both have the following qualifications:

- A minimum of two years experience in implementing safety and health programs at hazardous waste sites where Level C personal protective equipment was required.
- Documented experience in construction techniques and construction safety procedures.
- Working knowledge of Federal and state occupational safety and health regulations.
- Specific training in personal and respiratory protective equipment program implementation, confined space program oversight, and in the proper use of air monitoring instruments and air sampling methods.

The SSHO shall:

- Assist and represent the CIH in onsite training and the day-to-day onsite implementation and enforcement of the SSHP.
- Be assigned to the site on a full time basis for the duration of field activities. The SSHO shall have no duties other than safety and health related duties. If operations are performed during more than one work shift per day, a second SSHO shall be present.

- Have authority to ensure site compliance with specified safety and health requirements, Federal, state and OSHA regulations and all aspects of the SSHP including, but not limited to, activity hazard analyses, air monitoring, use of PPE, decontamination, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, confined space entry procedures, spill containment program, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log.
- Have authority to stop work if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions.
- Consult with and coordinate any modifications to the SSHP with the SSHM, the Site Superintendent, and the Contracting Officer.
- Serve as a member of the Contractor's quality control staff on matters relating to safety and health.
- Conduct accident investigations and prepare accident reports.
- Review results of daily quality control inspections and document safety and health findings into the Daily Safety Inspection Log.
- In coordination with site management and the SSHM, recommend corrective actions for identified deficiencies and oversee the corrective actions.

10.1.5 Site Personnel

Project personnel involved in onsite investigations and operations are responsible for:

1. Taking reasonable precautions to prevent injury to themselves and to their fellow employees.

2. Performing only those tasks that they believe they can do safely, and immediately reporting any accidents or unsafe conditions to the SSHO and Site Manager.
3. Implementing the procedures set forth in the SSHP, and reporting any deviations from the procedures described in the plan to the Site Manager and CIH for action.
4. Notifying the Site Manager and CIH of any special medical problems (i.e., allergies) and insuring that onsite personnel are aware of any such problems.
5. Must be currently certified in first aid and CPR by the American Red Cross or other approved agency.

10.2 HEAT STRESS/COLD STRESS

If site work is to be conducted during the winter, cold stress is a concern to the health and safety of personnel. Because disposal clothing such as Tyvek does not "breathe," perspiration does not evaporate and the suits can become wet. Wet clothes combined with cold temperatures can lead to hypothermia. If the air temperature is less than 40 degrees Fahrenheit (°F) and an employee perspires, the employee must change to dry clothes. Table 10-1 describes the signs and symptoms of cold stress.

Wearing PPE also puts a worker at a considerable risk of developing heat stress. Table 10-2 describes the signs and symptoms of heat stress. This can result in health effects ranging from heat fatigue to serious illness or death. Consequently, regular monitoring and other precautions are vital.

For workers wearing standard work clothes, recommendations for monitoring and work/rest schedules are those approved by ACGIH and NIOSH. Workers wearing semipermeable PPE or impermeable PPE should be monitored when the temperature in the work area is above 90°F. To monitor the worker, the following should be measured:

- Heart rate--The radial pulse should be counted during a 30-second period as early as possible in the rest period.

TABLE 10-1

Signs and Symptoms of Cold Stress

Incipient frostbite is a mild form of cold stress characterized by sudden blanching or whitening of the skin.

Chillblain is an inflammation of the hands and feet caused by exposure to cold moisture. It is characterized by a recurrent localized itching, swelling, and painful inflammation of the fingers, toes, or ears. Such a sequence produces severe spasms, accompanied by pain.

Second-degree frostbite is manifested by skin which has a white, waxy appearance and is firm to the touch. Individuals with this condition are generally not aware of its seriousness, because the underlying nerves are frozen and unable to transmit signals to warn the body. Immediate first aid and medical treatment are required.

Third-degree frostbite will appear as blue, blotchy skin. The tissue is cold, pale, and solid. Immediate medical attention is required.

Hypothermia develops when body temperature falls below a critical level. In extreme cases, cardiac failure and death may occur. Immediate medical attention is warranted when the following symptoms are observed:

- Involuntary shivering
- Irrational behavior
- Slurred speech
- Sluggishness.

TABLE 10-2

Signs and Symptoms of Heat Stress

Heat rash may result from continuous exposure to heat or humid air.

Heat cramps are caused by heavy sweating with inadequate electrolyte replacement. Signs and symptoms include:

- Muscle spasms
- Pain in the hands, feet, and abdomen.

Heat exhaustion occurs from increased stress on various body organs, including inadequate blood circulation due to cardiovascular insufficiency or dehydration. Signs and symptoms include:

- Pale, cool, and moist skin
- Heavy sweating
- Dizziness, fainting, and nausea.

Heat stroke is the most serious form of heat stress. Temperature regulation fails, and the body temperature rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Competent medical help must be obtained. Signs and symptoms are:

- Red, hot, and unusually dry skin
- Lack of or reduced perspiration
- Dizziness and confusion
- Strong, rapid pulse and coma.

Have workers drink 16 ounces (0.5 liter) of fluid (preferably water or diluted drinks) before beginning work. Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight. Weigh workers before and after work to determine if fluid replacement is adequate.

Encourage workers to maintain an optimal level of physical fitness. Where indicated, acclimatize workers to site work conditions.

Provide cooling devices to aid natural body heat exchange during prolonged work or severe heat exposure.

Train workers to recognize, identify, and treat heat stress.

- If the heart rate exceeds 110 beats per minute at the beginning of the rest period, the next work cycle should be shortened by one third and the rest period should be kept the same.
- If the heart rate still exceeds 110 beats per minute at the next rest period, the following work cycle should be shortened by one third.

- Oral temperature--A clinical thermometer (3 minutes under the tongue) or similar device should be used to measure the oral temperature at the end of the work period (before drinking).
  - If the oral temperature exceeds 99.6°F (37.6 degrees Celsius (°C)), the next work cycle should be shortened by one third, without the rest period being changed.
  - If the oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, the following work cycle should be shortened by one third.
  - A worker should not be permitted to wear a semipermeable or impermeable garment when his/her oral temperature exceeds 100.6°F (38.1°C).
- Body water loss--should be measured on a scale accurate to +/- 0.25 pound at the beginning and end of each work day to see if enough fluids are being taken to prevent dehydration. Weights should be taken while the employee wears similar clothing. The body water loss should not exceed 1.5 percent of total body weight loss in a workday.

Initially, the frequency of monitoring depends on ambient temperature (see Table 10-3). The length of the work cycle is determined by the frequency of physiological monitoring described above.

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important, because once someone

TABLE 10-3

Suggested Frequency of Rest Breaks and Physiological Monitoring for Fit and Acclimatized Workers[b]

Adusted Temperature[a]	Normal Work Ensemble[c]	Impermeable Ensemble
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 minutes of work	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 minutes of work	After each 120 minutes of work

[a] Calculate the adjusted air temperature (ta adj) by using this equation: ta adj °F = °F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent of the time the sun is not covered by clouds that are thick enough to produce a shadow (100% sunshine = no cloud cover and a sharp, distinct shadow; 0% sunshine = no shadows).

[b] For work levels of 250 kilocalories/hour.

[c] A normal work ensemble consists of cotton overalls or other cotton clothing with long sleeves and pants.

suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat injuries. To avoid heat stress, the following steps should be taken:

- Work schedules should be adjusted.
- Shelter (air-conditioned, if possible) or shaded areas should be provided to protect personnel during rest periods.
- Workers' body fluids should be maintained at normal levels to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat--i.e., 8 fluid ounces (0.23 liter) of water must be ingested for approximately every 8 ounces (0.23 kilogram) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, the worker should be encouraged to drink more. The following strategies may be useful:
  - Water temperature should be maintained at 50°F to 60°F (10° to 15.6°C).
  - Small disposable cups that hold about 4 ounces (0.1 liter) should be provided.

10.3 DRILLING SAFETY

10.3.1 Basic Requirements

Employees will not proceed with work on, or in the proximity of, hazardous equipment until they have been properly trained and have received a safety briefing. If drilling is at a hazardous substance site, the site-specific safety plan must be reviewed onsite and discussed in the safety briefing.

Potential hazards (e.g., overhead or underground power, oil, or gas lines in the immediate vicinity of the drilling location) must be removed, avoided by relocating the drill site, or adequately barricaded to eliminate the hazard.

The use of unsafe or defective equipment is not permitted. Equipment must be inspected regularly and, if found to be defective, must be immediately removed from use and either repaired or replaced.

Employees will be familiar with the location of first-aid kits and fire extinguishers. Telephone numbers for emergency assistance must be prominently posted and kept current.

10.3.2 General Requirements at Drilling Operations

10.3.2.1 Housekeeping. Good housekeeping conditions should be observed in and around the work area. Suitable storage places should be provided for all materials and supplies. Pipe, drill rods, etc., must be securely stacked on solid, level sills.

Work surfaces, platforms, stairways, walkways, scaffolding, and accessways will be kept free of obstructions. All debris will be collected and stored in piles or containers for removal and disposal.

10.3.2.2 Salamander Heaters. Salamanders will be used only with approved fuels (e.g., do not use gasoline). Salamander heaters must not be refueled or moved until they have been extinguished and permitted to cool. Heaters will be equipped with exhaust stacks and will not be set on or placed near combustible material. They should be equipped with metal stands that will provide adequate stability and permit at least a 2-inch clearance under the unit.

Burning salamanders must be attended at all times, with suitable fire extinguishers available to each attendant. If tarpaulins or other flexible materials are used to form a heating enclosure, they must be fire resistant and installed to prevent contact with the heater. Worn salamanders that have developed holes or have been otherwise damaged will be replaced and removed from service.

10.3.2.3 Lighting. In addition to providing required or recommended illumination intensities of at least 5 foot-candles, consideration should be given to the selection and

placement of lighting equipment. Proper lighting should provide minimum glare, eliminate harsh shadows, and provide adequate illumination to perform work efficiently and safely.

Light bulbs should be of the heavy duty, outdoor, nonshattering type.

All lighting circuits, including drop cords, will be grounded and have ground fault interrupters. Lighting circuits will be inspected periodically, and defective wiring or fixtures will be removed from service.

10.3.2.4 Flammable Liquids. All highly flammable liquids should be stored and handled only in approved containers. Portable containers must be the approved red safety containers equipped with flame arresters and self-closing lids.

Approved hand pumps will be used to dispense gasoline from barrels. Gasoline must not be used for degreasing or to start fires. Also, gasoline containers should be clearly labeled, and storage areas should be posted with "No Smoking" signs. Fire extinguishers should be installed in all areas that contain flammable liquids.

10.3.2.5 Public Safety. Work areas will be regulated so that the public will be protected from injury or accident. Adequate danger signs, barriers, etc., will be placed to effectively warn the public of hazards as well as to restrict access to dangerous areas.

10.3.3 Off-Road Movement of Drill Rigs

The following rules apply to the off-road movement of drill rigs:

- Before moving a drill rig, an inspection should be made of the route of travel for depressions, slumps, gullies, ruts, and similar obstacles.
- The brakes of a drill rig carrier should always be checked before traveling, particularly on rough, uneven, or hilly ground.
- All passengers should be discharged before a drill rig is moved on rough or hilly terrain.
- The front axle of 4 x 4 or 6 x 6 vehicles or carriers should be engaged when traveling off-road on hilly terrain.

- Caution should be used when traveling on a hillside. The hillside capability of drill rigs should be evaluated conservatively, because the addition of drilling tools may raise the center of mass. When possible, travel should be made directly uphill or downhill.
- Obstacles such as small logs, small erosion channels, or ditches should be crossed squarely, not at an angle.
- When lateral or overhead clearance is close, someone on the ground should act as a guide.
- After the drill rig has been moved to a new drilling site, all brakes or locks should be set. Wheels should be blocked on steep grades.
- The mast (derrick) of the drill rig should not be in the raised or partially raised position during off-road travel.
- Loads on the drill rig and supporting trucks should be tied down during transport.

10.3.4 Drilling Equipment

10.3.4.1 Skid-Mounted Units. Labels clearly indicating the function and direction of control levers should be posted on the lower unit controls of all drills.

An emergency safety power shutoff device should be installed within reach of the operator on all units. The device should be clearly labeled or otherwise made readily identifiable and checked daily to ensure that it is operable. The power unit should be operated only by authorized and qualified personnel.

Equipment will be shut down during manual lubrication and while repairs or adjustments are being made. Equipment such as internal combustion engines will not be refueled while running. Where practical, the gasoline tank should be positioned or shielded to avoid accidental spillage of fuel on the engine or exhaust manifold during refueling operations. Hazardous gears and moving parts also should be shielded to prevent accidental contact.

A dry chemical or carbon dioxide fire extinguisher, rated 5 pounds or larger, should be carried on the unit and removed to a position within 25 feet of the worksite during drilling operations. Extinguishers will be inspected and tagged at least once every 3 months.

Engine exhaust systems should be equipped with spark arresters when operated in areas where sparks constitute a fire hazard.

10.3.4.2 Overhead and Underground Utilities. Special precaution must be taken when using a drill rig on a site within the vicinity of electrical power lines and other utilities. Electricity can shock, burn, and cause death.

Overhead and underground utilities should be located, noted, and emphasized on all boring location plans and assignment sheets. When overhead electrical power lines exist at or near a drilling site, all wires should be considered dangerous.

A check should be made for sagging power lines before a site is entered. Power lines should not be lifted to gain entrance. The appropriate utility company should be contacted and a request should be made that it lift or raise and cut off power to the lines.

The area around the drill rig should be inspected before the drill rig mast (derrick) is raised at a site in the vicinity of power lines. The minimum distance from any point on the drill rig to the nearest power line should be determined when the mast is raised or is being raised. The minimum clearance from overhead power lines will be determined as indicated in Table 10-4. No equipment or any part will come within the minimum clearance specified for a particular line voltage. If system voltage information is required, equipment will not be operated until system voltage is determined through consultation with a utility official.

The existence of underground utilities, such as electric power, gas, petroleum, telephone, sewer, and water lines, should always be suspected. These underground electric lines are as dangerous as overhead lines, so a utility locating service should always be contacted.

TABLE 10-4

Minimum Clearance From Overhead Power Lines

Nominal System Voltage	Minimum Required Clearance
0-50 kV	10 feet
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

There are generally two types of utility locating services. One is a "free" service that is paid for by companies with underground pipes, lines, etc., to protect the public and to prevent costly repairs. However, these services have access only to drawings for primary pipes or lines, typically on public property or right-of-way easements, but not to drawings showing supply or feeder lines from a primary system to the interior of a property. Therefore, they are not required, and in fact hesitate, to locate interior lines. Sites can be cleared for drilling by such services, but without the drill operator's knowledge of the locations of underground feeder or supply lines.

A second type of locating service is provided by a paid subcontractor who physically sweeps or clears interior locations using locating equipment. Locating costs can be minimized by obtaining all available maps, drawings, and employee interview information before contracting with the locating company. This is especially important at large industrial plants or military bases, which can have an intricate network of underground utilities. It is important that every location be cleared, even those for hand-auger borings.

If a sign warning of underground utilities is located on a site boundary, it should not be assumed that underground utilities are located on or near the boundary or property line under the sign; they may be a considerable distance from the sign. The utility company should be contacted to check it out.

The owners of utility lines or the nearest underground utility location service should always be contacted before drilling is started. However, remember that some services provide information on utilities going to, but not within, a site. Metal detectors or other locating equipment may be necessary to determine the presence of shallow (surface) utilities onsite. The utility personnel should mark or flag the location of the underground lines and determine what specific precautions must be taken to ensure safety.

10.3.4.3 Site Selection and Working Platforms. In preparing a worksite located on adverse topography, precautions must be taken against cave-ins, slides, and loose boulders. The drill platform should be stabilized by outriggers or adequate timbering.

Prior to drilling, adequate site clearing and leveling should be performed to accommodate the drill rig and supplies and to provide a safe working area. Drilling should not commence when tree limbs, unstable ground, or site obstructions result in unsafe tool-handling conditions.

Suitable storage locations should be provided that allow for the convenient handling of tools, materials, and supplies without danger that they could fall and injure anyone. Storing or transporting tools, materials, or supplies within or on the drilling mast (derrick) should be avoided. Pipes, drill rods, bits, casings, augers, and similar drilling tools should be securely stacked in an orderly manner on racks or sills.

Penetration hammers or other types of driving hammers should be placed at a safe location on the ground or secured when unattended on a platform. Work areas, platforms, walkways, scaffolding, and other accessways should be kept free of obstructions and substances such as ice, grease, or oil that could create a hazardous surface. All controls, control linkages, and warning and operation lights and lenses also should be kept free of ice, grease, or oil.

In the vicinity of power transmission or distribution lines, drills should be adequately grounded and set with at least a 15-foot clearance between any part of the drill or mast and the power lines.

Toilet facilities will be convenient to drill crews, or transportation will be readily available to nearby toilet facilities. Toilets will be either the chemical type or constructed over ground pits, which will be backfilled when abandoned. They should be fly tight and maintained in a sanitary condition.

Mud pits and drainage excavations should be safely sloped and located to provide minimum interference with work. Where necessary, suitable barricades, catwalks, etc., should be provided to reduce the possibility of personal injury. Ladders will be positioned in pits or excavations that are 5 or more feet deep. Such excavations should be periodically inspected to ensure safe operation and adequate maintenance.

Truck-mounted drills will be equipped with a "safetyline" or with clearly marked and conspicuously located emergency switches. The safetyline emergency stop consists of a taut wire that runs around the back of the machine and connects to a special switch that turns off the power unit when the line is contacted. When emergency switches are used in lieu of a safetyline, there should be a minimum of two switches--one located within easy reach of the operator, and one located within easy reach of workers at ground level near the drill or auger head.

Trucks should not be moved backward unless the driver has personally inspected the area behind the truck. In restricted or congested areas, or areas where workmen are located, the assistance of a "spotter" is mandatory. Also, trucks will be equipped with serviceable automatic backup alarms.

Before the mast is raised, personnel will be cleared from the immediate area--with the exception of the operator and a helper, when necessary. A check should be made to ensure safe clearance from energized power lines or equipment. Unsecured equipment must be removed from the mast, and cables, mud lines, and catline ropes must be adequately secured to the mast before raising. After it is raised, the mast must be secured to the rig in an upright position with steel pins.

Drill equipment will not be moved until a thorough inspection has been made to ensure that the mast, drill rods, tools, and other equipment are secured. A check will also be made of the steering mechanism, brakes, lights, load limits, and proper flagging and lighting of load extensions. Applicable traffic laws will be observed when moving drill equipment over public roads.

10.3.5 Surface Drilling Operations

Before the mast of a drill rig is raised and drilling is commenced, the drill rig must first be leveled and stabilized with leveling jacks and/or solid cribbing. The drill rig should be releveled if it settles after the initial setup. The mast should only be lowered when the leveling jacks are down, and the leveling jack pads should not be raised until the

mast is completely lowered. Before drilling operations start, the mast should be secured or locked, if required by the drill's manufacturer.

Before the power unit is started, all gears should be disengaged, the cable drum brake should be set, and no rope should be in contact with the cathead.

Before the mast is raised, a check should be made for overhead obstructions. Everyone (with the exception of the operator) should be cleared from the areas immediately to the rear and sides of the mast and informed that the mast is being raised. The drill rig should not be driven from hole to hole with the mast in the raised position.

The drill rig should only be operated from the position of the controls. The operator should shut down the drill engine before leaving the vicinity of the drill. "Horsing around" in the vicinity of the drill rig and tool and supply storage areas is strictly prohibited, even when the drill rig is shut down. Caution should be taken when mounting/ dismounting the platform.

Drill operations should be terminated during an electrical storm.

The consumption of alcoholic beverages, depressants, stimulants, or any other chemical substance while on the job is strictly prohibited. All unattended boreholes must be adequately covered or protected to prevent people or animals from stepping or falling into the hole. When the drilling project has been completed, all open boreholes should be adequately covered, protected, or backfilled, according to local or state regulations.

A safety chain and cable arrangement should be used to prevent water swivel and mud line whip. All water swivels and hoisting plugs should be checked for possible frozen bearings and should be properly lubricated before use. A frozen bearing could cause mud line whip, which could injure the operator.

Only drill operators should brake or set the chucks to prevent engagement of the transmission prior to removal of the chuck wrench. Also, the chuck jaws should be periodically checked and replaced as necessary.

A string of drill rods should not be braked by the chuck jaws during lowering into the hole. A catline or hoisting cable and plug should be used for braking prior to tightening of the chuck. Failure to follow this procedure could result in steel slivers on the rods, possible hand injuries, and loss of the rods into the hole. Following braking, drill rods should be allowed to drain completely before removal from the working area.

Drill rods will not be lowered into the hole with a pipe wrench. Serious back and hand injuries may result if the rods are lowered by this method.

When using drilling fluids, a rubber or other suitable wiper should be used to remove the material from the drill rods when removing them from the drill hole. When drilling with air, the exhaust and cuttings should be directed away from workers with devices such as diverter heads, the use of which should be stipulated on drilling agreements where appropriate.

Care must be exercised by the operator to avoid a sudden hoist release of the drill rod while the rod is being carried from the hole. The hoisting capacity and weight of the drill rod must be known to prevent collapse of the mast during drill string removal from the hole. The operating capacity of the mast and hoist also must be known and must not be exceeded.

When tool joints are broken on the ground or on a drilling platform, fingers should be positioned so they will not be caught between the wrench handle and the ground or the platform if the wrench slips or the joint suddenly lets go. Pipe wrench jaws should be checked periodically and replaced as they become worn.

10.3.6 Use of Augers

The use of mismatched auger sections should be avoided. Different brands and different weights should not be used in the same auger flight.

Because some pins lose their temper after very little use, causing the spring or clip section to fail, only tight-fitting pins designed for the auger should be used.

A daily inspection--to include a thorough check of the hydraulic hoses, connections, and valves--will be made before equipment is used. Deficiencies should be corrected or safe condition verified before the equipment is started.

A durable sign containing the following wording should be installed on all equipment in full view of the operator:

- All personnel must be clear before starting this machine
- Stop the auger to clean it
- Stop engine when repairing, lubricating, or refueling
- Do not wear loose-fitting clothing or gauntlet-type gloves.

The following general procedures should be used when advancing a boring with continuous flight or hollow stem augers:

- An auger boring should be started with the drill rig level, the clutch or hydraulic rotation control disengaged, the transmission in low gear, and the engine running at low revolutions per minute (rpm).
- A system of responsibility should be established for the series of activities required for auger drilling, such as connecting or disconnecting auger sections and inserting or removing the auger fork. The operator must be sure that the tool handler is well away from the auger column and that the auger fork has been removed before rotation is started.
- Only the manufacturer's recommended method of securing the auger to the power coupling should be used. The coupling or the auger should not be touched with the hands, a wrench, or any other tool during rotation.
- Tool hoists should be used to handle auger sections whenever possible. Hands or fingers should never be placed under the bottom of an auger section when the auger is being hoisted over the top of the auger section in the ground or other hard surface, such as the drill rig platform. Feet should never be allowed to get under the auger section that is being hoisted.

- Workers should stay clear of the auger and other rotating components of the drill rig. Workers should never reach behind or around a rotating auger for any reason.
- Hands or feet should never be used to remove cuttings from the auger.
- Augers should be cleaned only when the drill rig is in neutral and the augers have stopped rotating. A special paddle should be designed for cleaning auger flights; if available, pressurized water is recommended for jet cleaning.

10.3.7 Use of Hand Tools and Portable Power Tools

Handtools should be kept in good repair and used only for their designed purposes. Proper protective eyewear should be worn when using handtools and portable power tools. Unguarded sharp-edged or pointed tools will not be carried in employees' pockets.

The use of tools with mushroomed heads, split or defective handles, worn parts, or other defects will not be permitted. Tools that have become unsafe will be reconditioned before reissue or discarded.

Throwing or dropping of tools from one level to another will not be permitted; rather, containers and hand lines should be used for transporting tools from one level to another.

Nonsparking tools will be used in atmospheres where sources of ignition may cause fire or explosion.

Electric-powered shop and hand tools will be of the double-insulated, shock-proof type or be effectively grounded. Power tools should be operated only by designated employees who are familiar with their use.

Portable grinding tools will not be used without properly installed safety guards. Guards and tool rests should be maintained in proper adjustment. Grinding wheels should not be operated at speeds in excess of the manufacturer's safe ratings. Cracked or defective wheels will not be used.

Portable circular saws should be equipped with guards that automatically enclose the cutting edges. Cracked or defective blades will not be used. Also, power saws will not be left running when unattended.

Portable pneumatic tools should be inspected periodically to ensure good mechanical condition. Pneumatic impact tools will be operated with safety clips or retainers installed to prevent the tools from accidentally being discharged from the chuck. Airhoses should not be disconnected from equipment until the pressure has been shut off and exhausted from the line. Safety lashing will be provided at all hose and tool connections on air lines over 0.5 inch in diameter. Leaking or defective hoses should be replaced.

When not in use, tools will not be left on scaffolds, ladders, or overhead working spaces. Containers should be provided to hold tools and prevent them from falling.

10.3.8 Use of Ropes, Chains, and Accessories

The use of ropes and chains will be governed by the instructions on usage and safety limits as recommended by the manufacturer. Ropes and chains should be inspected before use, and their loading should not exceed the manufacturer's safety limits.

Hooks used in hoisting personnel or in hoisting loads over or in the immediate vicinity of workers should be made of forged steel and equipped with safety keepers. When shackles are used under these conditions, they should be of the locking type or the pin should be secured to prohibit turning.

Load-lifting accessories, such as sheaves, shackles, hooks, headache balls, etc., should be obtained from a reputable manufacturer. The use of job-fabricated lifting accessories is expressly prohibited. Load-lifting accessories that show excessive wear or have been bent, twisted, or otherwise damaged will be removed from service.

10.3.8.1 Slings. When in use, slings should be inspected daily for signs of overloading, excessive wear, or damage. Defective slings should be removed from service and repaired or replaced before reuse.

Proper storage should be provided for slings to prevent any damage that would impair their strength. They should be protected from sharp, rough, or square corners to prevent cutting or breaking of fibers, strands, or chain links.

10.3.8.2 Wire Rope. The safe performance of wire rope or cables can be ensured by rigid periodic inspection and by proper use and care.

The maximum allowable load for wire hoisting rope must not exceed the safe working load prescribed by the manufacturer or the ultimate strength of the rope divided by the safety factor. Commercial end-fastenings, clips, and zinc sockets must be properly applied to develop maximum strength. Wire rope should be removed from hoisting or load-carrying service when kinked or when any one of the following conditions is observed:

- The existence of 12 randomly distributed broken wires in one rope lay, or four broken wires in a single strand in one rope lay.
- Evidence of corrosion or heat damage.
- One broken wire, rust, or corrosion adjacent to a socket or end-fitting (this requires removal from service or resocketing).
- Distortion, stretching, elongation, or abnormal reduction in diameter.

Wire rope found to be defective for hoisting or load-carrying should be plainly marked as being unfit for such use.

Running lines of hoisting equipment located within 8 feet of the ground or working level will be guarded; or access to the operating area can be restricted.

Rope clips attached with U-bolts should have the U-bolts on the dead end of the rope. When a wedge-socket fastening is used, the dead or short end of the cable should be clipped to the live cable with a U-bolt or another approved fastener.

10.3.8.3 Fiber and Synthetic-Fiber Rope. In selecting fiber and synthetic-fiber ropes for load-carrying purposes, only the best quality rope should be used, with size and

application in accordance with the manufacturer's recommendations. These ropes should be inspected frequently to ensure safe performance.

Proper care must be given to ropes to maintain good condition and high strength capacity. Fiber ropes should not be allowed to freeze after becoming wet, but should be cleaned carefully and dried in loose coils. Ropes should not be stored close to cement, lime, acids, or alkalies. Ropes that have been exposed to these materials should be removed from service.

10.3.8.4 Chains. Extreme care is necessary in the use and maintenance of all load-carrying chains. They should be inspected by a competent person after each installation and regularly thereafter. Chains must not be subjected to a load greater than their rated safe loading, which is determined from capacity tables issued by the chain manufacturer.

Splicing broken chains by inserting a bolt between two links with the heads of the bolt and the nut sustaining the load, or by passing one link through another and inserting a bolt or a nail to hold it, is prohibited.

10.3.8.5 Hoists. If a ball-bearing type hoisting swivel is used to hoist drill rods, swivel bearings should be inspected and lubricated on a daily basis to ensure that the swivel freely rotates under load. If a rod-slipping device is used to hoist drill rods, the drill rods should not be drilled or rotated through the slipping device. No more than 1 foot (0.3 meter) of the drill rod column should be hoisted above the top of the mast (derrick). A rod column with loose tool joints should not be hoisted while the rod column is being supported by a slipping device. If drill rods slip back into the bore-hole, an attempt should not be made to break the fall of the rods with your hands.

Most sheaves on drill rigs are stationary, with a single-part line. The manufacturer of the drill rig should be consulted before the number of line parts is increased. Wire ropes must be properly matched with each sheave.

Tool handling hoists should only be used for vertical lifting of tools (except when angle hole drilling). Tool handling hoists should not be used to pull on objects away from

the drill rig; however, drills may be moved by using the main hoist as the wire rope is spooled through proper sheaves, according to the manufacturer's recommendations.

When tools or similar loads cannot be raised with a hoist, the hoist line should be disconnected and the tools connected directly to the feed mechanism of the drill. Hydraulic leveling jacks should not be used for added pull to the hoist line or the feed mechanism of the drill.

When attempting to pull out a mired vehicle or drill rig carrier, only a winch on the front or rear of the vehicle or drill rig carrier should be used and workers should stay as far away as possible from the wire rope. Tool hoists should not be used to pull out a mired vehicle or a drill rig carrier. The following rules also apply:

- The shock loading of a wire rope can be minimized by smooth and steady application of loads.
- Wire rope should be protected from sharp corners or edges.
- Clutches and brakes of hoists should be periodically inspected and tested.
- Gloves should always be worn when handling wire ropes.
- Following the installation of a new wire rope, a light load should be lifted first to allow the wire rope to adjust.
- A load should never be hoisted over someone's head, body, or feet, or left suspended in the air when the hoist is unattended.
- Hands should be kept away from hoists, wire rope, hoisting hooks, sheaves, and pinch point when the slack is being taken up, and when the load is being hoisted. Hands should not be used to guide wire ropes on hoist drums.

10.4 EXCAVATION

10.4.1 General Requirements

The following general requirements should be followed for excavation:

- Excavations shall be conducted in strict accordance with OSHA 29 CFR 1926.650 Subpart P regulations and Section 25 of EM 385-1-1, which cover open excavations and define excavation to include trenches.
- The SSHP require protection of employees in excavations against cave-ins, except when the excavation is in stable rock, less than 4 feet deep, or deemed safe by a competent person assigned by the Excavation Contractor (R&R, Int.).
- Workers must be protected from loose rock or soil and material or equipment that may fall into the excavation.
- Underground utility installations must be identified and located.
- Inspection of the site by Excavation Contractor is required daily, or following a natural or man-made event that may alter conditions. If there is evidence of possible cave-ins, protective system failure, hazardous atmospheres, or other hazardous conditions, employees at risk must be removed until corrective steps have been taken.
- Safe and accessible means of access and egress must be provided.
- Warning systems for mobile equipment are required, such as barricades, hand or mechanical signals, or stop logs.
- R&R will be responsible for assigning the competent person to perform the inspections required during excavation activities. The competent person assigned by R&R Int. will have the experience and ability to recognize potential hazards and will have the authority to stop work in the excavation and make corrections where necessary.

- Any of four options for sloping and benching systems may be implemented for stability of adjacent structures. These include:
  - A slope of 34 degrees or less in lieu of soil classification.
  - Maximum allowable slopes according to Appendices A and B of the OSHA standard.
  - Sloping or benching designs in accordance with stated criteria.
  - Sloping and benching system designed by a registered professional engineer.
- Any of four options may be implemented for support and shield systems. These include:
  - Designs for timber shoring in trenches in accordance with set criteria.
  - Designs using manufacturers' tabulated data in accordance with set criteria.
  - Designs using other tabulated data.
  - Other designs approved by a registered professional engineer.
- Excavation shall stop during inclement weather, such as high winds, heavy rainfall, lightning, etc.

10.4.1.1 Preliminary Inspection. Prior to excavation, the site should be thoroughly inspected to determine conditions that require special safety measures. The location of underground utilities, such as sewer, telephone, gas, water, and electric lines, must be determined and plainly staked. Necessary arrangements must be made with the utility company or owner for the protection, removal, or relocation of the underground utilities. In such circumstances, excavation will be done in a manner that does not endanger the employees engaged in the work or the underground utility. Utilities left in place should be protected by barricading, shoring, suspension, or other measures, as necessary.

10.4.1.2 Protection of the Public. Necessary barricades, walkways, lighting, and posting should be provided for the protection of the public prior to the start of excavation.

Excavation operations on or near state, county, or city streets, accessways, or other locations where there is extensive interface with the public and/or motorized equipment will not start until all of the following actions have been taken:

- The contractor has contacted the authority having jurisdiction and obtained written permission to proceed with protective measures required.
- The contractor, using the authority's instructions and these standards, has developed an extensive and detailed standard operating plan.
- The plan has been discussed with affected employees, and applicable protective measures are in place and functioning.

10.4.1.3 Access and Lighting. Safe access will be provided for employees, including installation of walkways, stairs, ladders, etc. When operations are conducted during hours of darkness, adequate lighting will be provided at the excavation, borrow pits, and waste areas.

Where employees are required to enter excavations over 4 feet in depth, stairs, ladders, or ramps must be provided, so as to require no more than 25 feet of lateral travel. When access to excavations exceeds 20 feet vertically, ramps, stairs, or personnel hoists should be provided. Ladders must extend at least 3 feet above the top of the excavation when provided for access to the excavation.

10.4.1.4 Personal Protective Equipment. PPE will be provided and used in accordance with the specific requirements set forth in the plan. Drillers and helpers must wear approved safety goggles or safety glasses with side shields, hearing protection, hard hats, and safety shoes.

10.4.1.5 Removal of Trees and Brush. Prior to excavation, trees, brush, boulders, and other surface obstacles that present a hazard to employees should be removed.

10.4.1.6 Slide Prevention and Trenching Requirements. All trench excavations over 4 feet in depth must be sloped to the angle of repose from the bottom of the trench, but never less than 1-1/2 horizontal to 1 vertical (i.e., 34 degrees from horizontal), or

supported by structures designed by a professional engineer. Excavations should be inspected by the Excavation Contractor following rainstorms or other hazardous events. Additional protection against possible slides or cave-ins shall be provided, as necessary.

10.4.1.7 Angle of Repose. The determination of the angle of repose and design of supporting systems should be based on a thorough evaluation of all pertinent factors, including depth of cut; possible variation in water content of the material; anticipated changes in the material from exposure to air, sun, water, or freezing; loading imposed by structures, equipment, or overlying or stored material; and vibrations from sources such as traffic, equipment, and blasting. The angle of repose for all excavations, including trenching, should be determined by a professional engineer, but in no event should the slope be less than 1-1/2 horizontal to 1 vertical (i.e., 34 degrees from vertical) from the bottom of the excavation.

10.4.1.8 Support Systems. Materials used for support systems, such as sheeting, piling, cribbing, bracing, shoring, and underpinning, should be in good serviceable condition, and timbers should be sound and free of large or loose knots. The design of support systems should be based on calculations of the forces and their directions, with consideration for surcharges, the angle of internal friction of materials, and other pertinent characteristics of the material to be retained.

When tight sheeting or sheet piling is used, full loading due to the groundwater table should be assumed unless relieved by weep holes, drains, or other means. Cross braces and trench jacks should be placed in true horizontal position and secured to prevent sliding, falling, or kickouts. Additional stringers, ties, and bracing should be provided to allow for any necessary temporary removal of individual supports. Support systems should be planned and designed by a professional engineer competent in the field.

Backfilling and removal of trench support systems should progress together from the bottom of the trench. Jacks or braces should be released slowly. In unstable soil, ropes or other safe means will be used to remove the braces from the surface after workers have left the trench.

Special precaution must be taken in sloping or shoring the sides of excavations adjacent to a previously backfilled excavation or fill area. The use of compacted backfill as backforms on slopes that are steeper than the angle of repose of the compacted material in its natural state is prohibited.

10.4.1.9 Structural Foundations and Footings. Except in hard rock, excavations below the level of the base of any foundation, footing, or retaining wall will not be permitted unless the wall is underpinned and all necessary precautions are taken to ensure the stability of adjacent walls. If the excavation endangers the stability of adjacent buildings or structures, shoring, bracing, or underpinning designed by a qualified person will be installed. Such supporting systems must be inspected at least daily by qualified persons to ensure that protection is adequate and effectively maintained.

Small diameter footings that workers are required to enter, including bell-bottomed footings over 4 feet deep, must be provided with a steel casing or support system of sufficient strength to support the earth walls and prevent cave-ins. The casing or support system shall be provided for the full depth, except for the bell portion of bell footings.

Fixed or portable ladders must be provided for access. A lifeline, securely attached to a shoulder harness, should be worn by every employee entering the footing. The lifeline should be manned from above and should be separate from any line used to raise or lower materials.

10.4.1.10 Vertical Cuts and Slopes. Before a slope or vertical cut is undercut, the residual material must be adequately supported and the undercutting method and support system must be inspected.

When exposed to falling, rolling, or sliding rocks, earth, or other materials, employees working below or on slopes or cuts should be protected in the following manner:

- By effective scaling performed prior to exposure and at intervals necessary to eliminate the danger.

- By the installation of rock bolting, wire mesh, or equivalent support if the material continues to ravel and fall after scaling.
- By the installation of protective timber or wire mesh barricades at the slope of the cut and at necessary intervals down the slope. Wherever practical, benching sufficient to retain falling material may be used in lieu of barricades.
- By ensuring that personnel do not work above one another where there is danger of falling rock or earth. Personnel performing work on vertical cuts or slopes where balance depends on a supporting system must wear appropriate safety equipment.

10.4.1.11 Groundwater. Groundwater should be controlled. Freezing, pumping, draining, and other major control measures should be planned and directed by a competent professional engineer. Full consideration should be given to the existing moisture balance in surrounding soil and the effects on foundations and structures if it is disturbed. When continuous operation of groundwater control equipment is necessary, an emergency power source should be provided.

10.4.1.12 Surface Water. The accumulation of surface water in excavations must not be permitted and should be controlled by diversion ditches, dikes, dewatering sumps, or other effective means.

10.4.1.13 Excavated Materials. Excavated materials should be placed and retained at least 2 feet from the depth of the excavation, or at a greater distance when required to prevent hazardous loading on the face of the excavation.

10.4.1.14 Protective Devices. Guardrails, fences, barricades, and warning lights or other illumination systems will be maintained from sunset to sunrise on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Walkways or bridges that are protected by standard guardrails should be provided where employees are required or permitted to cross over excavations.

Wells, calyx holes, pits, shafts, and all similar hazardous excavations must be effectively barricaded or covered and posted. All temporary excavations of this type should be backfilled as soon as possible. When mobile equipment is permitted adjacent to excavations with steep slopes or cuts, substantial stoplogs or barricades should be installed.

10.4.1.15 Equipment Operation. Equipment that is operated on loading or waste areas must be equipped with an automatic backup alarm. Additionally, when employees are on foot or otherwise endangered by equipment in dumping or waste areas, a competent signalman should be used to direct traffic. The signalman must have no other assignment that interferes with signaling duties. If the equipment or truck cab is not shielded, the operator should stand clear of the vehicle during loading. Excavating or hoisting equipment should not be allowed to raise, lower, or swing loads over workers unless effective overhead protection is provided.

10.4.1.16 Drilling Operations. When drilling in rock or other dust-producing material, the dust should be controlled within the OSHA Permissible Exposure Limits (PELs). Except in shaft and tunnel excavation, dust control devices are not required on jackhammers as long as the operators wear approved dust respirators.

11.0 HAZARD COMMUNICATION

11.1 GENERAL

The R&R Hazard Communication Program complies with the OSHA Hazard Communication Standard (HCS) found in 29 CFR 1910.1200 and 29 CFR 1926.59, which applies to any chemical present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency. Although waste materials are excluded from the OSHA requirement, decontamination chemicals for sampling apparatus or protective clothing (such as acetone or trisodium phosphate), calibration standards (such as isobutylene gas), and wetting agents for dust suppression require Material Safety Data Sheets (MSDS).

The principle of communicating the hazards of materials used in the workplace to employees applies broadly to firmwide activities, from informational programs on the conduct of hazardous waste activities to the firm's insistence upon adequate safety and health training. It is also important for personnel to have an awareness of client concern for Hazard Communication due to Federal, state, and local regulations directly affecting certain client activities.

11.2 COMPLIANCE REQUIREMENTS

In order to comply with OSHA's Hazard Communication Standard, R&R has determined that:

- All containers of hazardous chemicals must be appropriately labeled or tagged to identify the hazard and provide information on effects and appropriate protective measures.
- Labels, tags, or signs must be properly affixed and visible at all times while a hazard is present and removed promptly when the hazard no longer exists.
- Written information (MSDS) on hazardous chemicals in the workplace must be available to employees working with the substance.

- Appropriate MSDS will be available to any contractor or subcontractor employees working in R&R offices) or laboratories or at construction, excavation, or other sites under R&R's control.
- Hazard Communication Training should be provided to R&R employees.

Any MSDS required for this project are attached to this health and safety plan in Section 16.0 (below).

12.0 POSTING OF NOTICE

Under provisions of Title 29, CFR Part 1903.2(a)(1), employers must post a notice, furnished by OSHA, informing employees of the protection and obligations provided for in the OSHA Act of 1970. This notice will be posted in a conspicuous place or places where notices to employees are customarily posted.

13.0 TOXIC SNAKE AND OTHER BITES AND PLANTS

13.1 POISONOUS SNAKEBITES

Reactions from snakebite are aggravated by acute fear and anxiety. Other factors that affect the severity of local and general reaction from poisonous snakebite include: the amount of venom injected and the speed of absorption of venom into the victim's circulation; the size of the victim; protection from clothing, including shoes and gloves; quick antivenin therapy; and location of the bite.

First Aid Procedure

The objective of first aid is to reduce the circulation of blood through the bite area, to delay absorption of venom, to prevent aggravation of the local wound, and to sustain respiration.

The most important step is to get the snakebite victim to the hospital quickly. Meanwhile, take the following first aid measures:

1. Keep the victim from moving around.
2. Keep the victim as calm as possible and preferably in a lying position.
3. Immobilize the bitten extremity and keep it at or below heart level. If the victim can reach a hospital within 4 to 5 hours and if no symptoms develop, no further first aid measures need be applied.
4. If mild-to-moderate symptoms develop, apply a constricting band 2 to 4 inches above the bite, but not around a joint (the elbow, knee, wrist, or ankle) and not around the head, neck, or trunk. The band should be 3/4 to 1 1/2 inches wide, not thin like a rubber band. The band should be snug but loose enough for a finger to be slipped underneath. Watch out for swelling. Loosen the band if it becomes too tight, but do not remove it. Periodically check the pulse in the extremity beyond the bite to insure that the blood flow has not stopped.

5. If severe symptoms develop, make an incision and apply suction immediately. Apply a constricting band, if this has not already been done, and make a cut in the skin through the fang mark(s). Use a sharp, sterilized knife. Cuts should be 1/2 inch long, extending over the suspected venom deposit point. (Because a snake strikes downward, the deposit point is usually lower than the fang mark.) Cuts should be made along the long axis of the limb. Do not make cross-cut incisions. Do not make cuts on the head or trunk. Apply suction with a suction cup for 30 minutes. If a suction cup is not available, use the mouth. There is little risk to the rescuer who uses his mouth, but it is recommended that the venom not be swallowed and that the mouth be rinsed out.

If the hospital is not close, that is, if it cannot be reached in 4 or 5 hours, take the following measures:

- Keep trying to obtain professional care, either by transporting the victim to a place where medical care is available or by using an emergency communications system to obtain medical advice.
- If no symptoms develop, keep trying to reach the hospital and give the general first aid described above.
- If any symptoms at all develop, apply a constricting band, make incisions, and apply suction immediately, as described above in steps 4 and 5.

Several other factors must be considered in cases of snakebite:

- Shock. Keep the victim lying down and comfortable, and maintain his or her body temperature.
- Breathing and heartbeat. If breathing stops, give mouth-to-mouth resuscitation. If breathing stops and there is no pulse, perform cardiopulmonary resuscitation (CPR) if you have been trained to do so.

- Identifying the snake. If you can kill the snake without risk or delay, bring it to the hospital for identification, but exercise extreme caution in handling the snake.
- Cleaning the bitten area. You may wash the bitten area with soap and water and blot it dry with sterile gauze. You may apply dressings and bandages, but only for a short period of time.
- Medicine to relieve pain. Do not give the victim alcohol, sedatives, aspirin, or any medicine containing aspirin. Some painkillers, however, may be given. Consult a doctor or other medical personnel for specific medications that may be used.
- Snakebite kits. Keep a kit accessible for all outings in primitive areas or areas known or suspected to snake infested.

It is not recommended that cold compresses, ice, dry ice, chemical ice packs, spray refrigerants, or other methods of cold therapy be used in the first aid treatment of snakebite.

13.2 OTHER POISONOUS BITES

Spiders

Spiders in the United States are generally harmless, with two notable exceptions: the Black Widow spider (Latrodectus Mactans) and the Brown Recluse or violin spider (Lox Osceles Reclusa).

The symptoms of such a spider bite are: slight local reaction, severe pain produced by nerve toxin, profuse sweating, nausea, painful cramps in abdominal muscles, and difficulty in breathing and speaking. Victims recover in almost all cases, but an occasional death is reported. The bite of a Black Widow spider is the more painful and often the more deadly of the two.

Field personnel should exercise caution when lifting covers off manholes or sumps or rummaging se spiders are typically found in these areas.

Scorpions

Scorpions inject venom through a stinger in the tail. In bites from the more dangerous species, there are marked systemic effects within 1 to 2 hours. Fatalities have been recorded.

The symptoms of a scorpion bite are: excruciating pain at the site of the sting, nausea and vomiting, abdominal pain, shock, and possible development of convulsions and coma.

General First Aid for Poisonous Insect Bites:

1. Minor Bites and Stings

   - Cold applications.
   - Soothing lotions, such as calamine.

2. Severe Reactions

   - Give artificial respiration if indicated.
   - Apply a constricting band above the injection site on the victim's arm or leg (between the site and the heart). Do not apply tightly. You should be able to slip your index finger under the band when it is in place.
   - Keep the affected part down, below the level of the victim's heart.
   - If medical care is readily available, leave the band in place; otherwise, remove it after 30 minutes.
   - Apply ice contained in a towel or plastic bag, or cold cloths, to the site of the sting or bite.
   - Give home medicine, such as aspirin, for pain.
   - If the victim has a history of allergic reactions to insect bites or is subject to attacks of hay fever or asthma, or if he or she is not promptly relieved of symptoms, call a physician or take the victim immediately to the nearest

location where medical treatment is available. In a highly sensitive person, do not wait for symptoms to appear, since delay can be fatal.

- In case of a bee sting, remove and discard the stinging apparatus and venom sac.

13.3 TICKBORNE DISEASES

Lyme Disease

Lyme disease is an illness caused by a bacterium which may be transmitted by the bite of a tick (Ixodes Dammini), commonly referred to as the "Deer Tick." The tick is about the size of a sesame seed, as distinguished from the Dog Tick, which is significantly larger. The Deer Tick is principally found along the Atlantic coast, living in grassy and wooded areas, and feeds on mammals such as mice, shrews, birds, raccoons, opossums, deer, and humans. Not all ticks are infected with the bacterium, however. When an infected tick bites, the bacterium is passed into the bloodstream of the host, where it multiplies. The various stages and symptoms of the disease are well recognized and, if detected early, can be treated with antibiotics.

Removal of ticks is best accomplished using small tweezers. Do not squeeze the tick's body. Grasp it where the mouth parts enter the skin and tug gently, but not firmly, until it releases its hold on the skin. Save the tick in a jar labelled with the date, body location of the bite, and the place where it may have been acquired. Wipe the bite thoroughly with an antiseptic and seek medical attention as soon as possible.

The illness typically occurs in the summer and is characterized by a slowly expanding red rash, which develops a few days to a few weeks after the bite of an infected tick. This may be accompanied by flu-like symptoms along with headache, stiff neck, fever, muscle aches, and/or general malaise. At this stage treatment by a physician is usually effective; but, if left alone, these early symptoms may disappear and more serious problems may follow. The most common late symptom of the untreated disease is arthritis. Other problems which may occur include meningitis and neurological and cardiac abnormalities. It is important to note that some people do not get the

characteristic rash but progress directly to the later manifestations. Treatment of later symptoms is more difficult than early symptoms and is not always successful.

When in an area suspected of harboring ticks (grassy, bushy, or woodland area) the following precautions can minimize the chances of being bitten by a tick:

1. Wear long pants and long-sleeved shirts that fit tightly at the ankles and wrists.
2. Wear light colored clothing so ticks can be easily spotted.
3. Wearing tick repellents may be useful.
4. Inspect clothing frequently while in tick habitat.
5. Inspect your head and body thoroughly when you return from the field.
6. Remove any attached ticks by tugging with tweezers where the tick's mouth parts enter the skin. Do not squeeze or crush it.

Rocky Mountain Spotted Fever

In the eastern and southern United States this tickborne disease is transmitted by the infected Dog Tick (Dermacentor Variabilis). It is important to note that the Dog Tick is significantly larger than the Deer Tick. Nearly all cases of infection occur in the spring and summer, generally several days after exposure to infected ticks. The onset of illness is abrupt and often accompanied by high fever, headache, chills, and severe weakness. After the fourth day of fever, victims develop a spotted pink rash that usually starts on the hands and feet and gradually extends to most of the body. As with Lyme disease, early detection and treatment significantly reduces the severity of illness. The disease responds to antibiotic therapy with tetracycline or chloramphenicol.

Other Tickborne Diseases

Ticks transmit several other diseases, most of which are rare and occur only in specific areas. Babesiosis occurs mainly in the Cape Cod area and eastern Long Island. Colorado tick fever is similarly regional and occurs only among those who live or work at altitudes above 4,000 feet.

13.4 POISONOUS PLANTS

Characteristic Reactions

The majority of skin reactions following contact with offending plants are allergic in nature and are characterized by general symptoms of headache and fever, itching, redness, and a rash.

Some of the most common and most severe allergic reactions result from contact with plants of the Poison Ivy group including Poison Oak and Poison Sumac. The most distinctive features of Poison Ivy and Poison Oak are their leaves, which are composed of three leaflets each. Both plants also have greenish-white flowers and berries that grow in clusters. Such plants produce a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim can also develop a high fever and become very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

First Aid Procedure

1. Remove contaminated clothing.
2. Wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol.
3. Apply calamine or other soothing skin lotion if the rash is mild.
4. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.

14.0 HAZARDOUS MATERIALS SHIPPING

14.1 BASIC REQUIREMENTS

The U.S. Department of Transportation (DOT) regulates the packaging, marking, labeling, and transport of hazardous materials in commerce. R&R personnel may become involved in transporting hazardous materials through laboratory, sampling, decontamination, or other activities. For example, concentrated acid may be taken to a field site to fix a sample; samples gathered for laboratory analysis could contain concentrations adequate to fulfill one or more hazard class definitions and therefore be considered hazardous; or calibration gas may have to be shipped to a field location. DOT allows the use of International Civil Aviation Organization (ICAO) technical instructions, or International Air Transportation Association (IATA) air shipping regulations; some air carriers (e.g., Federal Express) follow IATA regulations instead of DOT domestic regulations.

Note that EPA hazardous waste regulations do not apply to samples taken from hazardous waste sites due to the exclusion in the Resource Conservation and Recovery Act (40 CFR 261.4) that exempts samples taken for laboratory analysis from EPA manifesting, transportation, and storage requirements. However, classification and packaging of the samples as hazardous material, if such is the case, is still required.

Whether the hazardous materials are samples, reagents, or other materials, DOT hazardous materials regulations apply, and civil and criminal penalties are possible for noncompliance. In particular, the person who offers hazardous materials for shipment or transports non-exempt quantities of hazardous materials must sign a manifest declaring that the materials are properly packaged, marked, and labeled.

Personnel involved in the transportation of any hazardous materials, whether preservatives, decontamination or calibration chemicals, or DOT hazardous samples, must be trained. Section 8.5 above, Additional Training Requirements, summarizes this DOT requirement.

14.2 SHIPPING IDENTIFIED HAZARDOUS MATERIALS

The Hazardous Materials Transportation Table (49 CFR 172.101) or the IATA List of Dangerous Goods is the starting point for handling hazardous materials properly. By following the instructions in the appropriate table and accompanying regulations, the proper container, packaging, marking, labeling, and manifesting requirements will be met. Those who will be packaging or transporting hazardous materials should obtain a copy of the pertinent regulations. What follows is information specifically on samples, since sample shipping decisions can be difficult unless sample constituents are identified through DOT-related testing in a laboratory.

Samples that fulfill hazard class definitions have the same transportation requirements as other hazardous materials; however, a problem arises when samples are presumed hazardous but the constituents are unknown. For such cases the following guidance has been developed. Any manifest, whether for identified hazardous materials or for samples considered hazardous, should have:

- The emergency response phone number.
- The emergency response guide number next to each Proper Shipping Name.
- The letters "RQ" at the beginning of the Proper Shipping Name, when applicable.

14.3 SHIPPING SAMPLES

The following general guidelines have been developed to aid in determining whether a sample should be considered hazardous for compliance with the Department of Transportation (DOT) and International Air Transport Association (IATA) shipping regulations. Samples may not frequently meet the DOT or IATA definition of a hazardous material; however, the following guidelines should be considered when shipping samples to prevent inadvertent shipment of hazardous samples as non-hazardous.

Samples should be considered hazardous when any of the following conditions have been met:

- Samples of neat chemicals collected from drums or containers, of free product, or of hazardous waste streams that are listed in the hazardous materials tables and meet the DOT or IATA definition of a hazardous material.
- Liquid samples that have a pH of less than 2 or greater than 12.5. Samples preserved in accordance with SW-846 or 40 CFR 136 that are preserved with acids or bases are not considered to be DOT hazardous by reason of low or high pH; but this does not preclude the sample from being hazardous due to its other characteristics.
- Samples that are believed to contain hydrocarbons (including chlorinated hydrocarbons) and exhibit a head space reading of 10 ppm or greater.
- Samples that contain radioactive materials with an activity of greater than 0.002 microCuries/gram.
- Samples containing pesticides in concentrations that may potentially approach the percentage concentrations listed in Table 3.6.D of the IATA regulations. Note that most pesticides listed in this table must be at a concentration of 10,000 ppm or greater to be considered hazardous.

Samples that do not meet the criteria of a hazard class or division are not considered hazardous and do not have to be shipped as a hazardous material.

It is believed most contaminated soil and water samples that exhibit headspace readings in excess of the above criteria will have Proper Shipping Names of "Environmentally hazardous substance, liquid, n.o.s. UN 3082" or "Environmentally hazardous substance, solid, n.o.s. UN 3077." The packing group associated with this Proper Shipping Name is always Packing Group III. This will not be the case when samples collected exhibit significant amounts of free product, the sample is saturated with product, or immiscible liquids are present that meet the definition of a hazardous material. Such samples should be called "Flammable liquid, n.o.s. UN 1993" or whatever Proper Shipping Name best applies to the specific conditions. The packing group for these materials will generally fall into the Packing Group II category, or whichever Packing

Group is associated with that Proper Shipping Name, unless that material does not meet the criteria of the assigned Packing Group.

15.0 FORMS

The following forms will be provided to the SSHO during final preparations for departure to the job site:

- Federal Safety Poster
- Instrument Calibration Checksheet
- Real-Time Air Monitoring Data Sheet
- Health and Safety Inspection Form
- Plan Acceptance Form
- Plan Feedback Form
- U.S. Army Corps of Engineers Accident Investigation Report, Form 3394
- Site Safety Briefing Form
- Worker/Visitor Acknowledgement Form.

The Plan Acceptance Form will be filled out by all employees working on the site. The Plan Feedback Form will be filled out by the SSHO and any other onsite employee who wishes to fill one out. The Accident Report Form will be filled out by the Project Manager if an accident occurs. The Site Safety Briefing Form will be filled out by the SSHO and signed by all persons who received the site safety briefing.

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Provisions of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discriminatory action.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory civil penalties against employers of up to $7,000 for each serious violation and for optional penalties of up to $7,000 for each nonserious violation. Penalties of up to $7,000 per day may be proposed for failure to correct violations within the proposed time period and for each day the violation continues beyond the prescribed abatement date. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $70,000 for each such violation. A minimum penalty of $5,000 may be imposed for each willful violation. A violation of posting requirements can bring a penalty of up to $7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable by a fine of up to $250,000 (or $500,000 if the employer is a corporation), or by imprisonment for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment. Falsifying records, reports, or applications is punishable by a fine of $10,000 or up to six months in jail or both.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

OSHA has published Safety and Health Program Management Guidelines to assist employers in establishing or perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free assistance in identifying and correcting hazards and in improving safety and health management is available to employers, without citation or penalty, through OSHA-supported programs in each State. These programs are usually administered by the State Labor or Health department or a State university.

Posting Instructions

Employers in States operating OSHA approved State Plans should obtain and post the State's equivalent poster.

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or facsimile) in a conspicuous place where notices to employees are customarily posted.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, GA	404) 347-3573
Boston, MA	617) 565-7164
Chicago, IL	312) 353-2220
Dallas, TX	214) 767-4731
Denver, CO	(303) 844-3061
Kansas City, MO	816) 426-5861
New York, NY	212) 337-2378
Philadelphia, PA	215) 596-1201
San Francisco, CA	415) 744-6670
Seattle, WA	206) 553-5930

To report suspected fire hazards, imminent danger safety and health hazards in the workplace, or other job safety and health emergencies, such as toxic waste in the workplace, call OSHA's 24-hour hotline: 1-800-321-OSHA.

Washington, DC
1992 Reprinted
OSHA 2203

Robert B. Reich, Secretary of Labor

U.S. Department of Labor

Occupational Safety and Health Administration

This information will be made available to sensory impaired individuals upon request. Voice phone: (202) 219-8615; TDD message referral phone: 1-800-326-2577

GPO : 1993 O - 355-763 QL

INSTRUMENT CALIBRATION CHECK SHEET
Building T4002
Fort Drum, New York

Instrument(s): _____

Serial No.(s): _____

Technician's Signature: _____

Date	Pure Air (Y/N)	Calibration Gas (ppm)	Battery Check (Good/Bad)	Calibrated by	Remarks

Proper calibration of instruments shall be conducted immediately prior to site activities.

REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Page __ of __

Date: _____

Field Activities: _____

Wind Direction: _____

Instrument, Model & Serial No.: _____

Estimated Wind Speed: _____

Technician Signature: _____

Background Level: _____

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations

* See Calibration Check Sheet for calibration data.

PROJECT HEALTH & SAFETY PLAN
PLAN ACCEPTANCE FORM

INSTRUCTIONS: This form is to be completed by each person to work on the subject project work site and returned to the Site Safety & Health Manager prior to site activities.

Project Name: Building T4002, Fort Drum, New York

Date: _____

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

Signed	Signed
Print Name	Print Name
Company	Company
Date	Date
Signed	Signed
Print Name	Print Name
Company	Company
Date	Date

HEALTH & SAFETY INSPECTION FORM

Project/Number: Building T4002, Fort Drum, New York Date: _____

Inspector: _____

Site Conditions, Weather: _____

	YES	NO	NA
ADMINISTRATIVE			
Site Control			
Site map available to personnel?			
Site security and control measures evident in the field?			
Site work zones clearly defined on-site?			
Communication systems (walkie talkies, air horns) to alert personnel in the event of a site evacuation?			
Site perimeter marked (existing fenceline, boundary markings) and labeled appropriately with warning signs to alert nearby residents of the potential on-site hazards?			
Emergency phone numbers conspicuously posted at site?			
Informational Programs			
Site health and safety briefings held and documented?			
OSHA poster (where required)			
Have accident reports been properly completed in a timely fashion?			
Is OSHA 200 log posted (as applicable) and does it match accident reports?			
Does written inventory of chemicals match those that are present?			
Are MSDSs available for every chemical listed/used?			
EXPOSURE MONITORING			
Health and safety instrumentation available and in use per HSP?			

Additional Information

_____

_____

_____

HEALTH & SAFETY INSPECTION FORM (cont'd)

Air monitoring instrumentation maintenance and calibration logs available and current?			
Air monitoring log available and current?			
Does monitoring log reflect excursions above action levels?			
Has personal sampling been performed?			
Have any exposure symptoms been reported?			
HEAT STRESS MONITORING			
Has heat stress monitoring been implemented?			
Are work/rest regimens established/followed?			
Are pulse rate and oral temperature taken?			
Monitoring log available and current?			
Any heat stress incidents?			
Are personnel aware of symptoms/first aid?			
Are ambient temperature readings logged?			
Are emergency medical treatment and first aid available to personnel?			
PERSONAL PROTECTIVE EQUIPMENT			
All PPE called for in HSP available?			
Is there sufficient PPE available for the personnel involved in the performance of site operations?			
Is PPE used in accordance with SHP?			
Has PPE been upgraded or downgraded?			
Is the PPE in place adequate for the chemical and physical hazards on-site?			
Is there a need to modify the PPE requirements?			
All personnel appropriately taped-up?			

Additional Information

_____

_____

_____

HEALTH & SAFETY INSPECTION FORM (cont'd)

If ambient noise levels may be greater than or equal to 86 dBA, are ear muffs or ear plugs worn by personnel on-site?			
If there are overhead hazards on-site, do personnel war hard hat in these work areas?			
CONTAINER HANDLING PROCEDURES			
Drums and containers used for the clean-up on-site? If yes, do they meet appropriate OSHA regulations for the wastes they contain?			
All drums and containers inspected for structural integrity before moving?			
Personnel warned of the potential hazards associated with the contents of containers prior to movement?			
Containers moved using appropriate mechanical devices to avoid injury?			
Is there a potential for a major spill during transfer of drums or containers? If yes, is there a spill containment program in place to contain and isolate the entire volume of the spill?			
DECONTAMINATION PROCEDURES			
Decontamination areas situated to minimize contamination potential of uncontaminated personnel or equipment?			
Site safety and health supervisor monitor decontamination procedures?			
SSHP decontamination procedures observed?			
Do established equipment drop-off decontamination and protective clothing doffing procedures minimize personnel exposures?			
Are personnel, clothing, and equipment decontaminated properly prior to leaving a contaminated area?			
Protective clothing and equipment decontaminated, cleaned, laundered, maintained or replaced as needed to maintain effectiveness?			
Is the proper order to PPE removal observed?			
Where decontamination procedures indicate a need for showers and change rooms, are soap, hot and cold water, individual clean towels, and separate storage facilities for street and work clothes available?			

Additional Information

_____

_____

_____

HEALTH & SAFETY INSPECTION FORM (cont'd)

Are unauthorized personnel denied access to decontamination areas, decontamination equipment and change rooms?			
Are washing facilities away from hazardous substances and adequate to permit personnel to remove hazardous substances from their bodies?			
Are decontamination solution(s), equipment and clothing properly marked and left on-site or disposed of?			
DRILLING			
Have proper underground utility clearances been obtained?			
Have overhead utility clearances been considered?			
Flammable liquids in approved containers?			
Emergency rig shutoff within reach of the operator?			
Appropriate fire shutoff within reach of the operator?			
Drilling platform properly stabilized?			
Ropes and chains in good condition?			
EXCAVATION			
Have proper utility clearances been obtained?			
Has the On-site Competent Person been identified and is present?			
Are daily trench inspections being conducted (or more frequently, as conditions warrant)?			
Support systems (piling, cribbing, shoring) appropriate for the job?			
Is there suitable access by stairs, ladders, ramps, hoists?			
Appropriate guardrails, fences, barricades and warning lights?			
MISCELLANEOUS SAFETY PROCEDURES			
If site work is anticipated in dimly lighted areas, is additional lighting provided?			
Is potable water labeled as safe for drinking?			

Additional Information

_____

_____

_____

HEALTH & SAFETY INSPECTION FORM (cont'd)

Are nonpotable water sources labeled as unfit for drinking, washing and cooking?			
If there are fewer than 20 people on-site, is there a minimum of one toilet available?			
If there are greater than 20 people on-site, have additional toilets and urinals been provided for each additional 40 people?			
Is food handled in accordance with local food handling regulations?			
If temporary sleeping quarters are present, are they heated, ventilated and lighted?			
Compressed gas cylinders in safe condition?			
Electrical equipment intrinsically safe? (for potential explosive atmospheres)			
OVERALL			
Any gross unsafe activities observed?			
Any unsafe deviations from SSHP? If yes, have they been properly documented and investigated?			

Additional Information

_____

_____

_____

PLAN FEEDBACK FORM

Project Name: Building T4002, Fort Drum, New York

Date: _____

PROBLEMS WITH PLAN REQUIREMENTS:

_____

_____

_____

_____

_____

UNEXPECTED SITUATIONS ENCOUNTERED:

_____

_____

_____

_____

_____

RECOMMENDATIONS FOR FUTURE REVISIONS:

_____

_____

_____

_____

_____

_____

(For Safety Staff only)	REPORT NO	EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT (For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)	REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)

1. ACCIDENT CLASSIFICATION

a GOVERNMENT	(1) INJURY/ILLNESS/FATAL	(2) PROPERTY DAMAGE	(3) MOTOR VEHICLE INVOLVED	(4) DIVING
☐ CIVILIAN ☐ MILITARY →	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
b CONTRACTOR →	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
c PUBLIC →	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a NAME (Last,First,MI)

b AGE

c SEX ☐ MALE ☐ FEMALE

f JOB SERIES/TITLE

g DUTY STATUS AT TIME OF ACCIDENT (1) ☐ ON DUTY (2) ☐ TDY (3) ☐ OFF DUTY

3. GENERAL INFORMATION

a DATE OF ACCIDENT (month/day/year) / /

b TIME OF ACCIDENT (Military time) / /

c EXACT LOCATION OF ACCIDENT

d CONTRACTOR'S NAME (1) PRIME (2) SUBCONTRACTOR

e CONTRACT NUMBER # ☐ CIVIL WORKS ☐ MILITARY ☐ OTHER

f TYPE OF CONTRACT ☐ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER (Specify)

g HAZARDOUS/TOXIC WASTE ACTIVITY ☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER (Specify)

4. CONSTRUCTION ACTIVITIES ONLY (Fill in line and corresponding code number in box from list - see instructions)

a CONSTRUCTION ACTIVITY (CODE) #

b TYPE OF CONSTRUCTION EQUIPMENT (CODE) #

5. INJURY/ILLNESS INFORMATION (Include name on line and corresponding code number in box for items a, f & g - see instructions)

a. SEVERITY OF INJURY (1) ☐ FATAL (2) ☐ LOST-TIME (3) ☐ NON LOST-TIME (4) ☐ FIRST AID

b. ESTIMATED DAYS LOST

c. ESTIMATED DAYS HOSPITALIZED

d. ESTIMATED DAYS RESTRICTED DUTY

e. BODY PART AFFECTED (CODE) #
PRIMARY
SECONDARY (CODE) #

f. NATURE OF INJURY (CODE) #

g TYPE AND SOURCE OF INJURY
TYPE (CODE) #
SOURCE (CODE) #

6. PUBLIC FATALITY (Fill in line and corresponding code number in box - see instructions)

a ACTIVITY AT TIME OF ACCIDENT (CODE) #

b PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ NA

7. MOTOR VEHICLE ACCIDENT

a TYPE OF VEHICLE ☐☐ PICKUP/VAN ☐☐ AUTOMOBILE ☐☐ TRUCK ☐☐ OTHER (Specify)

b TYPE OF COLLISION ☐ HEAD ON ☐ REAR END ☐ BACKING ☐ BROADSIDE ☐ SIDE SWIPE ☐ ROLL OVER ☐ OTHER

c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
(1) FRONT SEAT			
(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	b OWNERSHIP	c $ AMOUNT OF DAMAGE
(1)		
(2)		
(3)		

9. VESSEL/FLOATING PLANT ACCIDENT (Fill in line and corresponding code number in box from list - see instructions)

a TYPE OF VESSEL/FLOATING PLANT (CODE) #

b TYPE OF COLLISON/MISHAP (CODE) #

10. ACCIDENT DESCRIPTION (Use additional paper, if necessary)

11. CAUSAL FACTOR(S) *(Read Instruction Before Completing)*

a *(Explain YES answers in item 13)*

	YES	NO
DESIGN Was design of facility, workplace or equipment a factor?	☐	☐
INSPECTION/MAINTENANCE Were inspection & maintenance procedures a factor?	☐	☐
PERSON'S PHYSICAL CONDITION In your opinion, was the physical condition of the person a factor?	☐	☐
OPERATING PROCEDURES Were operating procedures a factor?	☐	☐
JOB PRACTICES Were any job safety/health practices not followed when the accident occurred?	☐	☐
HUMAN FACTORS Did any human factors such as, size or strength of person, etc., contribute to accident?	☐	☐
ENVIRONMENTAL FACTORS Did heat, cold, dust, sun, glare, etc., contribute to the accident?	☐	☐

a *(CONTINUED)*

	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS Did exposure to chemical agents such as dust, fumes, mists, vapors or physical agents, such as, noise, radiation, etc., contribute to accident?	☐	☐
OFFICE FACTORS Did office setting such as, lifting office furniture, carrying, stooping, etc., contribute to the accident?	☐	☐
SUPPORT FACTORS Were inappropriate tools/resources provided to properly perform the activity/task?	☐	☐
PERSONAL PROTECTIVE EQUIPMENT Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?	☐	☐
DRUGS/ALCOHOL In your opinion, was drugs or alcohol a factor to the accident?	☐	☐

b WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?

☐ YES *(If yes, attach a copy)* ☐ NO

12. TRAINING

a WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? ☐ YES ☐ NO

b TYPE OF TRAINING ☐ CLASSROOM ☐ ON JOB ☐ NONE

c DATE OF MOST RECENT FORMAL TRAINING / / *(Month) (Day) (Year)*

13 FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT, INCLUDE DIRECT AND INDIRECT CAUSES *(See Instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a DIRECT CAUSE

b INDIRECT CAUSE(S)

14 ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S)

DESCRIBE FULLY

15 DATES FOR ACTIONS IDENTIFIED IN BLOCK 14

a BEGINNING *(Month/Day/Year)* / /

b ANTICIPATED COMPLETION *(Month/Day/Year)* / /

c SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT	d DATE *(Mo/Da/Yr)*	e ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f OFFICE SYMBOL
CORPS _____	___ / ___ / ___		
CONTRACTOR _____	___ / ___ / ___		

16 MANAGEMENT REVIEW *(1st)*

a ☐ CONCUR b ☐ NON CONCUR c COMMENTS

SIGNATURE	TITLE	DATE

17. MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a ☐ CONCUR b ☐ NON CONCUR c COMMENTS

SIGNATURE	TITLE	DATE

18 SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a ☐ CONCUR b ☐ NON CONCUR c ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE

19. COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

GENERAL. Complete a separate report for each person who was *injured, caused, or contributed* to the accident (excluding uninjured personnel and witnesses). Use of this form for reporting USACE employee first-aid type injuries *NOT* to be submitted to the Department of Labor (DOL), Office of Workers' Compensation Programs (OWCP) shall be at the discretion of the FOA Commander. Please type or print legibly. Appropriate items shall be marked with an "X" in the box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16 and 17.

INSTRUCTIONS FOR SECTION 1 – ACCIDENT CLASSIFICATION. *(Mark All Boxes That Are Applicable.)*

a. GOVERNMENT. Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.

(1) INJURY/ILLNESS/FATALITY – Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of Office of Workers Compensation Programs (OWCP) Forms CA-1 (injury), CA-2 (illness), or CA-6 (fatality), to the Department of Labor OWCP, or military personnel lost-time or fatal injury.

(2) PROPERTY DAMAGE – Mark the appropriate box if accident resulted in any damage of $1000 or more to government property (including motor vehicles).

(3) VEHICLE INVOLVED – Mark if accident involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY – Mark if the accident involved an in-house USACE diving activity.

b. CONTRACTOR.

(1) INJURY/ILLNESS/FATALITY – Mark if accident resulted in any contractor lost-time injury/illness or fatality.

(2) PROPERTY DAMAGE – Mark the appropriate box if accident resulted in any damage of $1000 or more to contractor property (including motor vehicles).

(3) VEHICLE INVOLVED – Mark if accident involved a motor vehicle, regardless of whether "INJURY/ILLNESS" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY – Mark if the accident involved a USACE Contractor diving activity.

c. PUBLIC.

(1) INJURY/ILLNESS/FATALITY – Mark if accident resulted in public fatality. (The "OTHER" box will be marked when requested by the FOA to report an unusual non-fatal public accident that could result in claims against the government or as otherwise directed by the FOA Commander).

(2) VOID SPACE – Make no entry.

(3) VEHICLE INVOLVED – Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, *regardless* of whether "INJURY/ILLNESS" is marked.

(4) VOID SPACE – Make no entry.

INSTRUCTIONS FOR SECTION 2 – PERSONAL DATA

a. NAME – (MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS). Enter last name, first name, middle initial of person involved.

b. AGE – Enter age.

c. SEX – Mark appropriate box.

d. SOCIAL SECURITY NUMBER – (FOR GOVERNMENT PERSONNEL ONLY) Enter the social security number (or other personal identification number if no social security number issued).

e. GRADE – (FOR GOVERNMENT PERSONNEL ONLY) Enter pay grade. Example: O-6; E-7; WG-8; WS-12; GS-11; etc.

f. JOB SERIES/TITLE – For *government civilian employees* enter the pay plan, full series number, and job title, e.g. GS-0810/Civil Engineer. For *military personnel* enter the primary military occupational specialty (PMOS), e.g., 15A30 or 11G50. For *contractor employees* enter the job title assigned to the injured person, e.g. carpenter, laborer, surveyor, etc.,

g. DUTY STATUS – Mark the appropriate box.

(1) ON DUTY – Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.

(2) TDY – person was on official business, away from the duty station and with travel orders, at time of accident.

(3) OFF DUTY – person was not on official business at time of accident.

h. EMPLOYMENT STATUS – (FOR GOVERNMENT PERSONNEL ONLY) Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3 – GENERAL INFORMATION

a. DATE OF ACCIDENT – Enter the month, day, and year of accident.

b. TIME OF ACCIDENT – Enter the local time of accident in military time. Example: 1430 hrs (not 2:30 p.m.).

c. EXACT LOCATION OF ACCIDENT – Enter facts needed to locate the accident scene. (installation/project name, building number, street, direction and distance from closest landmark, etc.,).

d. CONTRACTOR NAME

(1) PRIME – Enter the exact name (title of firm) of the prime contractor.

(2) SUBCONTRACTOR – Enter the name of any subcontractor involved in the accident.

e. CONTRACT NUMBER – Mark the appropriate box to identify if contract is civil works, military, or other. If "OTHER" is marked, specify contract appropriation on line provided. Enter complete contract number of prime contract, e.g., DACW 09-85-C-0100.

f. TYPE OF CONTRACT – Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.

g. HAZARDOUS/TOXIC WASTE ACTIVITY (HTW) – Mark the box to identify the HTW activity being performed at the time of the accident. For Superfund, DERP, and Installation Restoration Program (IRP) HTW activities include accidents that occurred during inventory, predesign, design, and construction. For the purpose of accident reporting DERP Formerly Used DoD Site (FUDS) activities and IRP activities will be treated separately. For Civil Works O&M HTW activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4 – CONSTRUCTION ACTIVITIES

a. CONSTRUCTION ACTIVITY – Select the *most appropriate* construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

1. MOBILIZATION
2. SITE PREPARATION
3. EXCAVATION/TRENCHING
4. GRADING (EARTHWORK)
5. PIPING/UTILITIES
6. FOUNDATION
7. FORMING
8. CONCRETE PLACEMENT
9. STEEL ERECTION
10. ROOFING
11. FRAMING
12. MASONRY
13. CARPENTRY
14. ELECTRICAL
15. SCAFFOLDING/ACCESS
16. MECHANICAL
17. PAINTING
18. EQUIPMENT/MAINTENANCE
19. TUNNELING
20. WAREHOUSING/STORAGE
21. PAVING
22. FENCING
23. SIGNING
24. LANDSCAPING/IRRIGATION
25. INSULATION
26. DEMOLITION

b. TYPE OF CONSTRUCTION EQUIPMENT – Select the equipment involved in the accident from the list below. Enter the name and place the corresponding code number identified in the box. If equipment is not included below, use code 24, "OTHER", and write in specific type of equipment.

CONSTRUCTION EQUIPMENT

1. GRADER
2. DRAGLINE
3. CRANE (ON VESSEL/BARGE)
4. CRANE (TRACKED)
5. CRANE (RUBBER TIRE)
6. CRANE (VEHICLE MOUNTED)
7. CRANE (TOWER)
8. SHOVEL
9. SCRAPER
10. PUMP TRUCK (CONCRETE)
11. TRUCK (CONCRETE/TRANSIT MIXER)
12. DUMP TRUCK (HIGHWAY)
13. DUMP TRUCK (OFF HIGHWAY)
14. TRUCK (OTHER)
15. FORKLIFT
16. BACKHOE
17. FRONT-END LOADER
18. PILE DRIVER
19. TRACTOR (UTILITY)
20. MANLIFT
21. DOZER
22. DRILL RIG
23. COMPACTOR/VIBRATORY ROLLER
24. OTHER

INSTRUCTIONS FOR SECTION 5 – INJURY/ILLNESS INFORMATION

a. SEVERITY OF INJURY – Mark the appropriate box

(1) FATAL – injured person died or is missing and presumed dead.

(2) LOST TIME – a non-fatal injury that causes any loss of time from work beyond the day or shift in which it occurred or a non-fatal illness/disease that causes disability at any time.

(3) NO LOST TIME – a non-fatal, traumatic injury that does not cause loss of time from work beyond the day or shift in which it occurred

(4) FIRST AID – One time treatment (and/or one follow visit for observation) for minor scratches, cuts and similar injuries that do not ordinarily require medical attention.

b. ESTIMATED DAYS LOST – Enter the estimated number of workdays the person will lose from work.

c. ESTIMATED DAYS HOSPITALIZED – Enter the estimated number of workdays the person will be hospitalized

d. ESTIMATED DAYS RESTRICTED DUTY – Enter the estimated number of workdays the person, as a result of the accident, will not be able to perform all of their regular duties.

e. BODY PART AFFECTED – Select the most appropriate primary and when applicable, secondary body part affected from the list below. Enter body part name on line and place the corresponding code letters identifying that body part in the box.

GENERAL BODY AREA	CODE	BODY PART NAME
ARM/WRIST	AB	ARM AND WRIST
	AS	ARM OR WRIST
TRUNK, EXTERNAL MUSCULATURE	B1	SINGLE BREAST
	B2	BOTH BREASTS
	B3	SINGLE TESTICLE
	B4	BOTH TESTICLES
	BA	ABDOMEN
	BC	CHEST
	BL	LOWER BACK
	BP	PENIS
	BS	SIDE
	BU	UPPER BACK
	BW	WAIST
	BZ	TRUNK OTHER
HEAD, INTERNAL	C1	SINGLE EAR INTERNAL
	C2	BOTH EARS INTERNAL
	C3	SINGLE EYE INTERNAL
	C4	BOTH EYES INTERNAL
	CB	BRAIN
	CC	CRANIAL BONES
	CD	TEETH
	CJ	JAW
	CL	THROAT, LARYNX
	CM	MOUTH
	CN	NOSE
	CR	THROAT, OTHER
	CT	TONGUE
	CZ	HEAD OTHER INTERNAL
ELBOW	EB	BOTH ELBOWS
	ES	SINGLE ELBOW
FINGER	F1	FIRST FINGER
	F2	BOTH FIRST FINGERS
	F3	SECOND FINGER
	F4	BOTH SECOND FINGERS
	F5	THIRD FINGER
	F6	BOTH THIRD FINGERS
	F7	FOURTH FINGER
	F8	BOTH FOURTH FINGERS
TOE	G1	GREAT TOE
	G2	BOTH GREAT TOES
	G3	TOE OTHER
	G4	TOES OTHER
HEAD, EXTERNAL	H1	EYE EXTERNAL
	H2	BOTH EYES EXTERNAL
	H3	EAR EXTERNAL
	H4	BOTH EARS EXTERNAL
	HC	CHIN
	HF	FACE
	HK	NECK/THROAT
	HM	MOUTH/LIPS
	HN	NOSE
	HS	SCALP
KNEE	KB	BOTH KNEES
	KS	KNEE
LEG, HIP, ANKLE, BUTTOCK	LB	BOTH LEGS/HIPS/ ANKLES/BUTTOCKS
	LS	SINGLE LEG/HIP ANKLE/BUTTOCK
HAND	MB	BOTH HANDS
	MS	SINGLE HAND
FOOT	PB	BOTH FEET
	PS	SINGLE FOOT
TRUNK, BONES	R1	SINGLE COLLAR BONE
	R2	BOTH COLLAR BONES
	R3	SHOULDER BLADE
	R4	BOTH SHOULDER BLADES
	RB	RIB
	RS	STERNUM (BREAST BONE)
	RV	VERTEBRAE (SPINE, DISC)
	RZ	TRUNK BONES OTHER
SHOULDER	SB	BOTH SHOULDERS
	SS	SINGLE SHOULDER
THUMB	TB	BOTH THUMBS
	TS	SINGLE THUMB
TRUNK, INTERNAL ORGANS	V1	LUNG, SINGLE
	V2	LUNGS, BOTH
	V3	KIDNEY, SINGLE
	V4	KIDNEYS, BOTH
	VH	HEART
	VL	LIVER
	VR	REPRODUCTIVE ORGANS
	VS	STOMACH
	VV	INTESTINES
	VZ	TRUNK, INTERNAL; OTHER

f. NATURE OF INJURY – Select the most appropriate nature of injury from the list below. This nature of injury shall correspond to the *primary body part* selected in 5 e above. Enter the nature of injury name on the line and place the corresponding CODE letters identifying the nature of injury in the box provided.

* The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
*TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION
	TB	BACK STRAIN
	TC	CONTUSION, BRUISE, ABRASION
	TD	DISLOCATION
	TF	FRACTURE
	TH	HERNIA
	TK	CONCUSSION
	TL	LACERATION, CUT
	TP	PUNCTURE
	TS	STRAIN, MULTIPLE
	TU	BURN, SCALD, SUNBURN
	TI	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TR	TRAUMATIC RESPIRATORY DISEASE
	TQ	TRAUMATIC FOOD POISONING
	TW	TRAUMATIC TUBERCULOSIS
	TX	TRAUMATIC VIROLOGICAL/ INFECTIVE/PARASITIC DISEASE
	T1	TRAUMATIC CEREBRAL VASCULAR CONDITION/STROKE
	T2	TRAUMATIC HEARING LOSS
	T3	TRAUMATIC HEART CONDITION
	T4	TRAUMATIC MENTAL DISORDER, STRESS, NERVOUS CONDITION
	T8	TRAUMATIC INJURY – OTHER (EXCEPT DISEASE, ILLNESS)

**A nontraumatic physiological harm or loss of capacity produced by systemic infection, continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc., or other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational illness/disease or disability is any reported condition which doses not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
**NON-TRAUMATIC ILLNESS DISEASE OR DISABILITY		
RESPIRATORY DISEASE	RA	ASBESTOSIS
	RB	BRONCHITIS
	RE	EMPHYSEMA
	RP	PNEUMOCONIOSIS
	RS	SILICOSIS
	R9	RESPIRATORY DISEASE, OTHER
VIROLOGICAL INFECTIVE & PARASITIC DISEASES	VB	BRUCELLOSIS
	VC	COCCIDIOMYCOSIS
	VF	FOOD POISONING
	VH	HEPATITIS
	VM	MALARIA
	VS	STAPHYLOCOCCUS
	VT	TUBERCULOSIS
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC – OTHER
DISABILITY, OCCUPATIONAL	DA	ARTHRITIS, BURSITIS
	DB	BACK STRAIN, BACK SPRAIN
	DC	CEREBRAL VASCULAR CONDITION; STROKE
	DD	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	DE	EFFECT OF ENVIRONMENTAL CONDITION
	DH	HEARING LOSS
	DK	HEART CONDITION
	DM	MENTAL DISORDER, EMOTIONAL STRESS NERVOUS CONDITION
	DR	RADIATION
	DS	STRAIN, MULTIPLE
	DU	ULCER
	DV	OTHER VASCULAR CONDITIONS
	D9	DISABILITY, OTHER
SKIN DISEASE OR CONDITION	SB	BIOLOGICAL
	SC	CHEMICAL
	S9	DERMATITIS, UNCLASSIFIED

g. TYPE AND SOURCE OF INJURY (CAUSE) – Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the *initiating* source of the incident (see example 1, below). Examples

(1) An employee tripped on carpet and struck his head on a desk.
TYPE: 210 (Fell on Same Level) SOURCE: 0110 (walking/ working surface)

NOTE: This example would NOT be coded 120 (struck against) and 0140 (furniture)

(2) A Park Ranger contracted dermatitis from contact with poison ivy/ oak.
TYPE: 510 (contact) SOURCE: 0920 (plant)

(3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.
TYPE: 410 (punctured by) SOURCE: 0830 (metal)

(4) An employee was driving a government vehicle when it was struck by another vehicle.
TYPE: 800 (traveling in) SOURCE: 0421 (government owned vehicle, as driver)

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to collect data on the type of vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME
	STRUCK
0110	STRUCK BY
0111	STRUCK BY FALLING OBJECT
0120	STRUCK AGAINST
	FELL, SLIPPED, TRIPPED
0210	FELL ON SAME LEVEL
0220	FELL ON DIFFERENT LEVEL
0230	SLIPPED, TRIPPED (NO FALL)
	CAUGHT
0310	CAUGHT ON
0320	CAUGHT IN
0330	CAUGHT BETWEEN
	PUNCTURED, LACERATED
0410	PUNCTURED BY
0420	CUT BY
0430	STUNG BY
0440	BITTEN BY
	CONTACTED
0510	CONTACTED WITH (INJURED PERSON MOVING)
0520	CONTACTED BY (OBJECT WAS MOVING)
	EXERTED
0610	LIFTED, STRAINED BY (SINGLE ACTION)
0620	STRESSED BY (REPEATED ACTION)
	EXPOSED
0710	INHALED
0720	INGESTED
0730	ABSORBED
0740	EXPOSED TO
0800	TRAVELING IN

CODE	SOURCE OF INJURY NAME
0100	BUILDING OR WORKING AREA
0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC)
0120	STAIRS, STEPS
0130	LADDER
0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0150	BOILER, PRESSURE VESSEL
0160	EQUIPMENT LAYOUT (ERGONOMIC)
0170	WINDOWS, DOORS
0180	ELECTRICITY

CODE	SOURCE OF INJURY NAME
0200	ENVIRONMENTAL CONDITION
0210	TEMPERATURE EXTREME (INDOOR)
0220	WEATHER (ICE, RAIN, HEAT, ETC.)
0230	FIRE, FLAME, SMOKE (NOT TOBACCO)
0240	NOISE
0250	RADIATION
0260	LIGHT
0270	VENTILATION
0271	TOBACCO SMOKE
0280	STRESS (EMOTIONAL)
0290	CONFINED SPACE
0300	MACHINE OR TOOL
0310	HAND TOOL (POWERED SAW, GRINDER, ETC.)
0320	HAND TOOL (NONPOWERED)
0330	MECHANICAL POWER TRANSMISSION APPARATUS
0340	GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK)
0350	VIDEO DISPLAY TERMINAL
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL
0370	HEATING EQUIPMENT
0380	WELDING EQUIPMENT
0400	VEHICLE
0411	AS DRIVER OF PRIVATELY OWNED/RENTAL VEHICLE
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE
0421	DRIVER OF GOVERNMENT VEHICLE
0422	PASSENGER OF GOVERNMENT VEHICLE
0430	COMMON CARRIER (AIRLINE, BUS, ETC.)
0440	AIRCRAFT (NOT COMMERCIAL)
0450	BOAT, SHIP, BARGE
0500	MATERIAL HANDLING EQUIPMENT
0510	EARTHMOVER (TRACTOR, BACKHOE, ETC.)
0520	CONVEYOR (FOR MATERIAL AND EQUIPMENT)
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST
0540	HOIST, SLING CHAIN, JACK
0550	CRANE
0551	FORKLIFT
0560	HANDTRUCK, DOLLY
0600	DUST, VAPOR, ETC.
0610	DUST (SILICA, COAL, ETC.)
0620	FIBERS
0621	ASBESTOS
0630	GASES
0631	CARBON MONOXIDE
0640	MIST, STEAM, VAPOR, FUME
0641	WELDING FUMES
0650	PARTICLES (UNIDENTIFIED)
0700	CHEMICAL, PLASTIC, ETC.
0711	DRY CHEMICAL—CORROSIVE
0712	DRY CHEMICAL—TOXIC
0713	DRY CHEMICAL—EXPLOSIVE
0714	DRY CHEMICAL—FLAMMABLE
0721	LIQUID CHEMICAL—CORROSIVE
0722	LIQUID CHEMICAL—TOXIC
0723	LIQUID CHEMICAL—EXPLOSIVE
0724	LIQUID CHEMICAL—FLAMMABLE
0730	PLASTIC
0740	WATER
0750	MEDICINE
0800	INANIMATE OBJECT
0810	BOX, BARREL, ETC.
0820	PAPER
0830	METAL ITEM, MINERAL
0831	NEEDLE
0840	GLASS
0850	SCRAP, TRASH
0860	WOOD
0870	FOOD
0880	CLOTHING, APPAREL, SHOES
0900	ANIMATE OBJECT
0911	DOG
0912	OTHER ANIMAL
0920	PLANT
0930	INSECT
0940	HUMAN (VIOLENCE)
0950	HUMAN (COMMUNICABLE DISEASE)
0960	BACTERIA, VIRUS (NOT HUMAN CONTACT)

CODE	SOURCE OF INJURY NAME
1000	PERSONAL PROTECTIVE EQUIPMENT
1010	PROTECTIVE CLOTHING, SHOES, GLASSES, GOGGLES
1020	RESPIRATOR, MASK
1021	DIVING EQUIPMENT
1030	SAFETY BELT, HARNESS
1040	PARACHUTE

INSTRUCTIONS FOR SECTION 6 — PUBLIC FATALITY

a. ACTIVITY AT TIME OF ACCIDENT—Select the activity being performed at the time of the accident from the list below. Enter the activity name on the line and the corresponding number in the box. If the activity performed is not identified on the list, select from the *most* appropriate primary activity area (water related, non-water related or other activity), the code number for "Other", and write in the activity being performed at the time of the accident.

WATER RELATED RECREATION

1. Sailing
2. Boating—powered
3. Boating—unpowered
4. Water skiing
5. Fishing from boat
6. Fishing from bank dock or pier
7. Fishing while wading
8. Swimming/supervised area
9. Swimming/designated area
10. Swimming/other area
11. Underwater activities (skin diving, scuba, etc.)
12. Wading
13. Attempted rescue
14. Hunting from boat
15. Other

NON-WATER RELATED RECREATION

16. Hiking and walking
17. Climbing (general)
18. Camping/picnicking authorized area
19. Camping/picnicking unauthorized area
20. Guided tours
21. Hunting
22. Playground equipment
23. Sports/summer (baseball, football, etc.)
24. Sports/winter (skiing, sledding, snowmobiling etc.)
25. Cycling (bicycle, motorcycle, scooter)
26. Gliding
27. Parachuting
28. Other non-water related

OTHER ACTIVITIES

29. Unlawful acts (fights, riots, vandalism, etc.)
30. Food preparation/serving
31. Food consumption
32. Housekeeping
33. Sleeping
34. Pedestrian struck by vehicle
35. Pedestrian other acts
36. Suicide
37. "Other" activities

b. PERSONAL FLOTATION DEVICE USED—If fatality was water-related was the victim wearing a person flotation device? Mark the appropriate box.

INSTRUCTIONS FOR SECTION 7—MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE—Mark appropriate box for each vehicle involved. If more than one vehicle of the same type is involved, mark both halves of the appropriate box. USACE vehicle(s) involved shall be marked in left half of appropriate box.

b. TYPE OF COLLISION—Mark appropriate box.

c. SEAT BELT—Mark appropriate box.

INSTRUCTIONS FOR SECTION 8—PROPERTY/ MATERIAL INVOLVED

a. NAME OF ITEM—Describe all property involved in accident. Property/material involved means material which is damaged or whose use or misuse contributed to the accident. Include the name, type, model; also include the National Stock Number (NSN) whenever applicable.

b. OWNERSHIP—Enter ownership for each item listed. (Enter one of the following: *USACE; OTHER GOVERNMENT; CONTRACTOR; PRIVATE)*

c. $ AMOUNT OF DAMAGE—Enter the total estimated dollar amount of damage (parts and labor), if any.

INSTRUCTIONS FOR SECTION 9 – VESSEL/ FLOATING PLANT ACCIDENT

a. TYPE OF VESSEL/FLOATING PLANT – Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in specific type of vessel/ floating plant.

VESSEL/FLOATING PLANTS

1. ROW BOAT
2. SAIL BOAT
3. MOTOR BOAT
4. BARGE
5. DREDGE/HOPPER
6. DREDGE/SIDE CASTING
7. DREDGE/DIPPER
8. DREDGE/CLAMSHELL BUCKET
9. DREDGE/PIPE LINE
10. DREDGE/DUST PAN
11. TUG BOAT
12. OTHER

b. COLLISION/MISHAP – Select from the list below the object(s) that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

1. COLLISION W/OTHER VESSEL
2. UPPER GUIDE WALL
3. UPPER LOCK GATES
4. LOCK WALL
5. LOWER LOCK GATES
6. LOWER GUIDE WALL
7. HAULAGE UNIT
8. BREAKING TOW
9. TOW BREAKING UP
10. SWEPT DOWN ON DAM
11. BUOY/DOLPHIN/CELL
12. WHARF OR DOCK
13. OTHER

INSTRUCTIONS FOR SECTION 10 – ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT – Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11 – CAUSAL FACTORS

a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider, as a minimum, the following:

(1) DESIGN – Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?

(2) INSPECTION/MAINTENANCE – Did inadequately or improperly maintained equipment, tools, workplace, etc. create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?

(3) PERSON'S PHYSICAL CONDITION – Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was over exertion a factor?

(4) OPERATING PROCEDURES – Did a lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?

(5) JOB PRACTICES – Were any of the provisions of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?

(6) HUMAN FACTORS – Was the person under undue stress (either internal or external to the job)? Did the task tend tow overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? the task require reach, strength, endurance, agility, etc., at beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person neec more training, experience, or practice in doing the task? Wa the person inadequately rested to perform safely?

(7) ENVIRONMENTAL FACTORS – Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, hea sun, temperature changes, wind, tides, floods, currents, dus mud, glare, pressure changes, lightning, etc., play a part in t accident?

(8) CHEMICAL AND PHYSICAL AGENT FACTORS – Did exposure to chemical agents (either single shift exposure or long-term exposure) such as dusts, fibers (asbestos, etc.), silica, gases (carbon monoxide, chlorine, etc.,), mists, stean vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, t products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation create during welding, etc.) contribute to the accident/incident?

(9) OFFICE FACTORS – Did the fact that the accident occurred an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

(10) SUPPORT FACTORS – Was the person using an improper tool for the job? Was inadequate time available or utilized tc safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized, and adequat to provide proper tools, equipment, personnel, site preparatic etc?

(11) PERSONAL PROTECTIVE EQUIPMENT – Did the person fa to use appropriate personal protective equipment (gloves, ey protection, hard-toed shoes, respirator, etc.) for the task or environment? Did protective equipment provided or worn fail provide adequate protection from the hazard(s)? Did lack of inadequate maintenance of protective gear contribute to the accident?

(12) DRUGS/ALCOHOL – Is there any reason to believe the person's mental or physical capabilities, judgement, etc., wer impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".

b. WRITTEN JOB/ACTIVITY HAZARD ANALYSIS – Was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. *one was performed, attach a copy of the analysis to the report.*

INSTRUCTIONS FOR SECTION 12 – TRAINING

a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK? – For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-jo (OJT) training) to competently perform the activity/task in a safe and healthful manner.

b. TYPE OF TRAINING – Mark the appropriate box that best indicates the type of training; (classroom or on-the-job) that the injured person received before the accident happened.

c. DATE OF MOST RECENT TRAINING – Enter the month, day, anc year of the last *formal* training completed that covered the activity task being performed at the time of the accident.

INSTRUCTIONS FOR SECTION 13 – CAUSES

a. DIRECT CAUSES – The direct cause is that single factor which most directly lead to the accident. See examples below.

b. INDIRECT CAUSES – Indirect causes are those factors which contributed to but did not directly initiate the occurrence of the accident.

Examples for section 13:

a. Employee was dismantling scaffold and fell 12 feet from unguarded opening.
Direct cause: failure to provide fall protection at elevation.
Indirect causes: failure to enforce USACE safety requirements; improper training/motivation of employee (possibility that employee was not knowledgeable of USACE fall protection requirements or was lax in his attitude towards safety); failure to ensure provision of positive fall protection whenever elevated; failure to address fall protection during scaffold dismantling in phase hazard analysis.

b. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by USACE vehicle. (note USACE vehicle was in proper/safe working condition).
Direct cause: failure of USACE driver to maintain control of and stop USACE vehicle within safe distance.
Indirect cause: Failure of employee to pay attention to driving (defensive driving).

INSTRUCTIONS FOR SECTION 14 – ACTION TO ELIMINATE CAUSE(S)

DESCRIPTION – Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent reoccurrence of similar accidents/illnesses. Continue on blank sheets of paper if necessary to fully explain and attach to the completed report form.

INSTRUCTIONS FOR SECTION 15 – DATES FOR ACTION

a. BEGIN DATE – Enter the date when the corrective action(s) identified in Section 14 will begin.

b. COMPLETE DATE – Enter the date when the corrective action(s) identified in Section 14 will be completed.

c. TITLE AND SIGNATURE – Enter the title and signature of supervisor completing the accident report. For a GOVERNMENT employee accident/illness the immediate supervisor will complete and sign the report. For PUBLIC accidents the USACE Project Manager/Area Engineer responsible for the USACE property where the accident happened shall complete and sign the report. For CONTRACTOR accidents the Contractor's project manager shall complete and sign the report and provide to the USACE supervisor responsible for oversight of that contractor activity. This USACE Supervisor shall also sign the report. Upon entering the information required in 15.d, 15.e and 15.f below, the responsible USACE supervisor shall forward the report for management review as indicated in Section 16.

d. DATE SIGNED – Enter the month, day, and year that the report was signed by the responsible supervisor.

e. ORGANIZATION NAME – For GOVERNMENT employee accidents enter the USACE organization name (Division, Branch, Section, etc.) of the injured employee. For PUBLIC accidents enter the USACE organization name for the person identified in block 15.c. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

f. OFFICE SYMBOL – Enter the latest complete USACE Office Symbol for the USACE organization identified in block 15.e.

INSTRUCTIONS FOR SECTION 16 – MANAGEMENT REVIEW (1st)

1ST REVIEW – Each USACE FOA shall determine who will provide 1st management review. The responsible USACE supervisor in section 15.c shall forward the completed report to the USACE office designated as the 1st Reviewer by the FOA. Upon receipt, the Chief of the Office shall review the completed report, mark the appropriate box, provide substantive comments, sign, date, and forward to the FOA Staff Chief (2nd review) for review and comment.

INSTRUCTIONS FOR SECTION 17 – MANAGEMENT REVIEW (2nd)

2ND REVIEW – The FOA Staff Chief (i.e., FOA Chief of Construction, Operations, Engineering, Planning, etc.) shall mark the appropriate box, review the completed report, provide substantive comments, sign, date, and return to the FOA Safety and Occupational Health Office.

INSTRUCTIONS FOR SECTION 18 – SAFETY AND OCCUPATIONAL HEALTH REVIEW

3RD REVIEW – The FOA Safety and Occupational Health Office shall review the completed report, mark the appropriate box, ensure that any inadequacies, discrepancies, etc, are rectified by the responsible supervisor and management reviewers, provide substantive comments, sign, date and forward to the FOA Commander for review, comment, and signature.

INSTRUCTION FOR SECTION 19 – COMMAND APPROVAL

4TH REVIEW – The FOA Commander shall (to include the person designated Acting Commander in his absence) review the completed report, comment if required, sign, date, and forward the report to the FOA Safety and Occupational Health Office. Signature authority shall not be delegated

SITE SAFETY BRIEFING

Building T4002 Demolition, USACE Contract DACW41-94-9009 D.O. 0002

Date: Start Time: Completion Time:

Location:

Meeting Conducted by:

SAFETY ISSUES

Tasks:

Protective Clothing/Equipment:

Chemical Hazards:

Physical Hazards:

Control Methods:

Special Equipment/Techniques:

Other:

Print Name	Sign Name

WORKER/VISITOR ACKNOWLEDGEMENT FORM

PROJECT NAME: Interim Remedial Action, Building T4002, Fort Drum, New York
CONTRACT NO.: DACW41-94-9009, D.O. 0002
CONTRACTOR'S NAME: R&R International, Inc.
[EMPLOYEE'S] [VISITOR'S] NAME: _____

The contract for the above project requires that you be provided with and complete formal and site-specific training; that you be supplied with proper personnel protective equipment including respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE

Name	Date
_____	_____

FORMAL TRAINING: I have completed the following formal training courses that meet OSHA's requirements:

	Date Completed
40 hour	_____
8 hour supervisory	_____
8 hour refresher	_____
First Aid	_____
Cardiopulmonary Resuscitation	_____

SITE-SPECIFIC TRAINING: I have been provided and have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training. _____

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in [the Contractor's] [my Employer's] Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy. _____

CERTIFICATE (cont'd)

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the R&R International's [my employer's] Respiratory Program and have received a satisfactory fit. [I have been assigned my individual respirator.] I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time. _____

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months which was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

___ were no limitation to performing the required work tasks;

___ were identified physical limitations to performing the required work tasks.

Date medical exam completed: _____

[Employee's] [Visitor's] Signature: _____ Date: _____

Printed Name: _____ Social Security Number: _____

Contractor's Site Safety and health Officer Signature: _____

Date: _____ Printed Name: _____

Social Security Number: _____

16.0 MATERIAL SAFETY DATA SHEETS

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

:: 6810
NIIN: 00F018396
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: PS-41 2,4D, 98% PURE

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General Information

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Item Name: REFERENCE STANDARD
Manufacturer's Name: CHEM SERVICE INC
Manufacturer's Street: N/K
Manufacturer's P. O. Box: 3108
Manufacturer's City: WEST CHESTER
Manufacturer's State: PA
Manufacturer's Country:
Manufacturer's Zip Code: 19381
Manufacturer's Emerg Ph #: (215) 386-2100
Manufacturer's Info Ph #: (215) 692-3026
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
stributor/Vendor # 4:
stributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: F
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status:
Date MSDS Prepared: 10JUL90
Safety Data Review Date: 10SEP90
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: N/K
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381
Other MSDS Number:
MSDS Serial Number: BKXVS
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code:
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number:
Net Explosive Weight:
t Propellant Weight-Ammo:
ast Guard Ammunition Code:

Ingredients/Identity Information

Proprietary: NO
Ingredient: 2,4-D (DICHLORYLPHENOXYACETIC ACID) (SARA III)
Ingredient Sequence Number: 01
Percent: 98%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: AG6825000
CAS Number: 94-75-7
OSHA PEL: 10 MG/M3
ACGIH TLV: 10 MG/M3; 9192
Other Recommended Limit: N/K

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, CRYSTALLINE SOLID W/PHENOL LIKE ODOR.
Boiling Point: 725F
Melting Point: 285F
Vapor Pressure (MM Hg/70 F): 0.4
Vapor Density (Air=1): N/K
Specific Gravity: N/K
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: SLIGHT
Percent Volatiles By Volume: N/K
Viscosity:
pH: N/K
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: N/K
Flash Point Method: N/K
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: CO2, DRY CHEMICAL POWDER OR SPRAY.
Special Fire Fighting Proc: N/K
Unusual Fire And Expl Hazrds: CORROSIVE

Reactivity Data

Stability: YES
Cond To Avoid (Stability): LIGHT
Materials To Avoid: STRONG OXIDIZING AGENTS
Hazardous Decomp Products: TOXIC FUMES
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): N/K

Health Hazard Data

50-LC50 Mixture: LD50 (RAT OR MOUSE): 370 MG/KG.
..ute Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: EYES: IRRITATION. SKIN: IRRITATION & HARMFUL IF ABSORBED. INHALATION: MUCOUS MEMBRANE & RESPIRATORY TRACT IRRITATION, HARMFUL, CARDIOVASCULAR SYSTEM & LIVER INJURY. INGESTION: GASTROINTESTINAL DISTURBANCES & FATAL.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: EYES: IRRITATION. SKIN: IRRITATION & HARMFUL IF ABSORBED. INHALATION: MUCOUS MEMBRANE & RESPIRATORY TRACT IRRITATION, HARMFUL, CARDIOVASCULAR SYSTEM & LIVER INJURY. INGESTION: GASTROINTESTINAL DISTURBANCES & FATAL.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: EYES/SKIN: FLUSH W/WATER FOR 15-20 MINS. USE SOAP/WATER TO CLEANSE SKIN IF NO BURNS. INHALATION: REMOVE TO FRESH AIR, GIVE OXYGEN IF BREATHING DIFFICULTY. ADMINISTER CPR IF CARDIAC ARREST OCCURS. IF EXHIBITING SIGNS OF SHOCK, KEEP WARM & QUIET. INGESTION: DON'T INDUCE VOMITING. DON'T ADMINISTER LIQUIDS/INDUCE VOMITING TO AN UNCONSIOUS/ CONVULSING PERSON. OBTAIN MEDICAL ATTN IN ALL CASES. SEE SUPP.

Precautions for Safe Handling and Use

ɔteps If Matl Released/Spill: EVACUATE AREA. WEAR APPROPRIATE EQUIPMENT. VENTILATE AREA. SWEEP UP & PLACE IN AN APPROPRIATE CONTAINER. HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Neutralizing Agent: N/K
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER. DISPOSE OF IN ACCORDANCE W/FEDERAL, STATE, & LOCAL REGULATIONS.
Precautions-Handling/Storing: KEEP CLOSED IN A COOL DRY PLACE. STORE ONLY W/COMPATIBLE CHEMICALS. FOR LABORATORY USE ONLY. DON'T WEAR CONTACT LENSES.
Other Precautions: DON'T USE AS DRUGS, COSMETICS, AGRICULTURAL OR PESTICIDAL PRODUCTS, FOOD ADDITIVES OR AS HOUSEHOLD CHEMICALS. AVOID DIRECT PHYSICAL CONTACT. AVOID CONTACT W/SKIN, EYES & CLOTHING. PRODUCT IS CORROSIVE.

Control Measures

Respiratory Protection: USE APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: HANDLE ONLY IN A HOOD
Protective Gloves: AS REQUIRED
Eye Protection: EYE SHIELDS
Other Protective Equipment: N/K
Work Hygienic Practices: REMOVE/WASH CONTAMINATED CLOTHING BEFORE REUSE. ONLY TRAINED PERSONNEL SHOULD HANDLE THIS CHEMICAL OR ITS CONTAINER.
Suppl. Safety & Health Data: FIRST AID; INGESTION: IF PATIENT IS VOMITING TCH CLOSELY TO MAKE SURE AIRWAY DOESN'T BECOME OBSTRUCTED BY VOMIT.

Transportation Data

ansportation Action Code:
ransportation Focal Point:
Trans Data Review Date:
DOT PSN Code:
DOT Symbol:
DOT Proper Shipping Name:
DOT Class:
DOT ID Number:
DOT Pack Group:
DOT Label:
DOT/DoD Exemption Number:
IMO PSN Code:
IMO Proper Shipping Name:
IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code:
I Symbols:
I Prop. Shipping Name:
AFI Class:
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
d EPA Haz Wst Char New:
d EPA Acute Hazard New:
3rd EPA Haz Wst Code New:

3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

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Label Data

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Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: PS-41 2,4D, 98% PURE
Chronic Hazard:
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: EYES: IRRITATION. SKIN: IRRITATION & HARMFUL IF ABSORBED. INHALATION: MUCOUS MEMBRANE & RESPIRATORY TRACT IRRITATION, HARMFUL, CARDIOVASCULAR SYSTEM & LIVER INJURY. INGESTION: GASTROINTESTINAL DISTURBANCES & FATAL. EYES: IRRITATION. SKIN: IRRITATION & HARMFUL IF ABSORBED. INHALATION: MUCOUS MEMBRANE & RESPIRATORY TRACT IRRITATION, HARMFUL, CARDIOVASCULAR SYSTEM & LIVER INJURY. INGESTION: GASTROINTESTINAL DISTURBANCES & FATAL.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: CHEM SERVICE INC
Label Street: N/K
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381
Label Country:
Label Emergency Number: (215) 386-2100
Year Procured:

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

C: 6810
IN: 00F031133
Manufacturer's CAGE: 0MU35
Part No. Indicator: A
Part Number/Trade Name: PST-911, SILVEX

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General Information

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Item Name: 2-(2,4,5-TRICHLOROPHENOXY) PROPIONIC ACID
Manufacturer's Name: ULTRA SCIENTIFIC
Manufacturer's Street: 250 SMITH STREET
Manufacturer's P. O. Box: N/K
Manufacturer's City: NORTH KINGSTOWN
Manufacturer's State: RI
Manufacturer's Country: US
Manufacturer's Zip Code: 02852
Manufacturer's Emerg Ph #: 401-294-9400
Manufacturer's Info Ph #: 401-294-9400
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
stributor/Vendor # 4 Cage:
fety Data Action Code:
Safety Focal Point: F
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 20DEC89
Safety Data Review Date: 09NOV93
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company: ULTRA SCIENTIFIC
Preparer's St Or P. O. Box: 250 SMITH STREET
Preparer's City: NORTH KINGSTOWN
Preparer's State: RI
Preparer's Zip Code: 02852
Other MSDS Number:
MSDS Serial Number: BSMRM
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code:
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number:
Net Explosive Weight:
Net Propellant Weight-Ammo:
ast Guard Ammunition Code:

Ingredients/Identity Information

ɔprietary: NO
ɹngredient: SILVEX, 2-(2,4,5-TRICHLOROPHENOXY) PROPIONIC ACID
Ingredient Sequence Number: 01
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: UF8225000
CAS Number: 93-72-1
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: N/K

Physical/Chemical Characteristics

Appearance And Odor: WHITE SOLID
Boiling Point: N/K
Melting Point: N/K
Vapor Pressure (MM Hg/70 F): N/K
Vapor Density (Air=1): N/K
Specific Gravity: 182C
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: N/K
Percent Volatiles By Volume: N/K
ˈscosity:
: N/K
ʀadioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: N/K
Flash Point Method: N/K
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: CO2, DRY CHEMICAL POWDER, WATER SPRAY
Special Fire Fighting Proc: N/K
Unusual Fire And Expl Hazrds: N/K

Reactivity Data

Stability: YES
Cond To Avoid (Stability): N/K
Materials To Avoid: STRONG OXIDIZERS
Hazardous Decomp Products: N/K
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): N/K

Health Hazard Data

`0-LC50 Mixture: ORAL LD50 (RAT): 650 MG/KG
ıte Of Entry - Inhalation: NO
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: TOXIC, IRRITANT. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS, DIRECT PHYSICAL CONTACT SHOULD BE AVOIDED.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: N/K
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: EYES/SKIN: FLUSH W/PLENTY OF WATER. INHALATION: REMOVE TO FRESH AIR, GIVE OXYGEN IF NECESSARY. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: A LEAKING BOTTLE MAY BE PLACED IN A PLASTIC BAG & NORMAL DISPOSAL PROCEDURES SHOULD BE FOLLOWED. LIQUID SAMPLES MAY BE ABSORBED ON VERMICULITE OR SAND.
Neutralizing Agent: N/K
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER. DISPOSE OF IN ACCORDANCE W/FEDERAL, STATE & LOCAL REGULATIONS.
cautions-Handling/Storing: USE APPROPRIATE OSHA/MSHA APPROVED SAFTEY EQUIPMENT. AVID CONTACT W/EYES, SKIN OR CLOTHING. KEEP TIGHTLY CLOSED & STORE IN A COOL, DRY PLACE.
Other Precautions: THIS MATERIAL SHOULD BE USED ONLY BY THOSE PERSONS TRAINED IN THE SAFE HANDLING OF HAZARDOUS CHEMICALS.

Control Measures

Respiratory Protection: APPROPRIATE OSHA/MSHA APPROVED EQUIPMENT.
Ventilation: N/K
Protective Gloves: N/K
Eye Protection: N/K
Other Protective Equipment: N/K
Work Hygienic Practices: N/K
Suppl. Safety & Health Data: N/K

Transportation Data

Transportation Action Code:
Transportation Focal Point:
Trans Data Review Date:
DOT PSN Code:
DOT Symbol:
DOT Proper Shipping Name:
DOT Class:
DOT ID Number:
DOT Pack Group:
Label:
DOT/DoD Exemption Number:

IMO PSN Code:
IMO Proper Shipping Name:
IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code:
AFI Symbols:
AFI Prop. Shipping Name:
AFI Class:
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

Label Data

Label Required: YES
Technical Review Date: 09NOV93
Label Date: 09NOV93
MFR Label Number: N/R
Label Status: D
Common Name: SILVEX
Chronic Hazard: NO
Signal Word: WARNING

Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate: X
Acute Health Hazard-Severe:
Contact Hazard-None: X
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None: X
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None: X
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: TOXIC, IRRITANT. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS, DIRECT PHYSICAL CONTACT SHOULD BE AVOIDED. EYES/SKIN: IRRITATION. INGESTION: IRRITATION, GASTROINTESTINAL DISTURBANCES. INHALATION: IRRITATION, NARCOSIS. TARGET ORGANS: EYES/SKIN, DIGESTIVE TRA
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: ULTRA SCIENTIFIC
Label Street: 250 SMITH STREET
Label P.O. Box: N/K
Label City: NORTH KINGSTOWN
Label State: RI
Label Zip Code: 02852
Label Country: US
Label Emergency Number: 401-294-9400
Year Procured: UNK

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

:: 6810
.IN: 00F018397
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: PS-45 2,4,5-T 98% PURE

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General Information

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Item Name: REFERENCE STANDARD
Manufacturer's Name: CHEM SERVICE INC
Manufacturer's Street: N/K
Manufacturer's P. O. Box: 3108
Manufacturer's City: WEST CHESTER
Manufacturer's State: PA
Manufacturer's Country:
Manufacturer's Zip Code: 19381
Manufacturer's Emerg Ph #: (215) 386-2100
Manufacturer's Info Ph #: (215) 692-3026
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
stributor/Vendor # 4 Cage:
afety Data Action Code:
Safety Focal Point: F
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status:
Date MSDS Prepared: 10JUL90
Safety Data Review Date: 03SEP90
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: N/K
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381
Other MSDS Number:
MSDS Serial Number: BKXVT
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code:
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number:
Net Explosive Weight:
t Propellant Weight-Ammo:
ast Guard Ammunition Code:

Ingredients/Identity Information

oprietary: NO
.igredient: 2,4,5-T (2,4,5-TRICHLOROPHENOXYACETIC ACID) (SARA III)
Ingredient Sequence Number: 01
Percent: 98%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: AJ8400000
CAS Number: 93-76-5
OSHA PEL: 10 MG/M3
ACGIH TLV: 10 MG/M3; 9192
Other Recommended Limit: N/K

Physical/Chemical Characteristics

Appearance And Odor: COLORLESS, CRYSTALLINE SOLID, ODORLESS
Boiling Point: N/K
Melting Point: 307-313F
Vapor Pressure (MM Hg/70 F): N/R
Vapor Density (Air=1): 1.80
Specific Gravity: N/K
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: SLIGHT
Percent Volatiles By Volume: N/K
"iscosity:
: N/K
..adioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: N/K
Flash Point Method: N/K
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: CO2, DRY CHEMICAL POWDER OR SPRAY.
Special Fire Fighting Proc: N/K
Unusual Fire And Expl Hazrds: N/K

Reactivity Data

Stability: YES
Cond To Avoid (Stability): N/K
Materials To Avoid: STRONG BASES, STRONG OXIDIZING AGENTS
Hazardous Decomp Products: TOXIC FUMES
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): N/K

Health Hazard Data

50-LC50 Mixture: LD50 (RAT OR MOUSE): 300 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: SKIN: IRRITATION, BURNS, ALLERGIC REACTION, FATAL IF ABSORBED. EYES: IRRITATION. INHALATION: IRRITATION TO MUCOUS MEMBRANES & RESPIRATORY TRACT, GASTRO-INTESTINAL DISTURBANCES, NERVOUS SYSTEM INJURY, & FATAL. INGESTION: FATAL, LIVER INJURY.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: SKIN: IRRITATION, BURNS, ALLERGIC REACTION, FATAL IF ABSORBED. EYES: IRRITATION. INHALATION: IRRITATION TO MUCOUS MEMBRANES & RESPIRATORY TRACT, GASTRO-INTESTINAL DISTURBANCES, NERVOUS SYSTEM INJURY & FATAL. INGESTION: FATAL, LIVER INJURY.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: EYES/SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NO BURNS HAVE OCCURED-USE SOAP & WATER TO CLEANSE SKIN. INHALATION: REMOVE TO FRESH AIR. ADMINISTER OXYGEN IF BREATHING DIFFICULTY. ADMINISTER CPR IF CARDIAC ARREST OCCURS. INGESTION: INDUCE VOMITING. GIVE 1 TO 2 GLASSES OF WATER. DON'T ADMINISTER LIQUIDS & INDUCE VOMITING IF UNCONSCIOUS OR CONVULSION. OBTAIN MEDICAL ATTENTION IN ALL CASES (SEE SUPP.).

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPROPRIATE EQUIPMENT. VENTILATE AREA. SWEEP UP & PLACE IN AN APPROPRIATE CONTAINER. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Neutralizing Agent: N/K
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER. DISPOSE OF IN ACCORDANCE W/FEDERAL, STATE, & LOCAL REGULATIONS.
Precautions-Handling/Storing: KEEP TIGHTLY CLOSED IN A COOL DRY PLACE. STORE ONLY W/COMPATIBLE CHEMICALS. FOR LABORATORY USE ONLY. DON'T WEAR CONTACT LENSES.
Other Precautions: DON'T USE A S DRUGS, COSMETICS, AGRICULTURAL OR PESTICIDAL PRODUCTS, FOOD ADDITIVES OR AS HOUSEHOLD CHEMICALS. AVOID DIRECT PHYSICAL CONTACT. AVOID CONTACT W/SKIN, EYES & CLOTHING.

Control Measures

Respiratory Protection: USE APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: HANDLE ONLY IN A HOOD
Protective Gloves: AS REQUIRED
Eye Protection: EYE SHIELDS
Other Protective Equipment: N/K
Work Hygienic Practices: REMOVE/WASH CONTAMINATED CLOTHING BEFORE REUSE.
Suppl. Safety & Health Data: FIRST AID: IF PATIENT EXHIBITS SHOCK, KEEP WARM & QUIET.

Transportation Data

ansportation Action Code:
ransportation Focal Point:
Trans Data Review Date:
DOT PSN Code:
DOT Symbol:
DOT Proper Shipping Name:
DOT Class:
DOT ID Number:
DOT Pack Group:
DOT Label:
DOT/DoD Exemption Number:
IMO PSN Code:
IMO Proper Shipping Name:
IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code:
I Symbols:
I Prop. Shipping Name:
AFI Class:
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
d EPA Haz Wst Char New:
d EPA Acute Hazard New:
3rd EPA Haz Wst Code New:

3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

Label Data

Label Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: PS-45 2,4,5-T 98% PURE
Chronic Hazard:
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: SKIN: IRRITATION, BURNS, ALLERGIC REACTION, FATAL IF ABSORBED. EYES: IRRITATION. INHALATION: IRRITATION TO MUCOUS MEMBRANES & RESPIRATORY TRACT, GASTRO-INTESTINAL DISTURBANCES, NERVOUS SYSTEM INJURY, & FATAL. INGESTION: FATAL, LIVER INJURY. SKIN: IRRITATION, BURNS, ALLERGIC REACTION, FATAL IF ABSORBED. EYES: IRRITATION. INHALATION: IRRITATION TO MUCOUS MEMBRANES & RESPIRATORY TRACT, GASTRO- INTESTINAL DISTURBANCES, NERVOUS SYSTEM INJURY & FATAL. INGESTION: FATAL, LIVER INJURY.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: CHEM SERVICE INC
Label Street: N/K
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381
Label Country:
Label Emergency Number: (215) 386-2100
Year Procured:

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

'C: 6810
.IN: 00N047395
Manufacturer's CAGE: 58378
Part No. Indicator: A
Part Number/Trade Name: 510C-3, 2,2-BIS(CHLOROPHENYL)-1, 1-DICHLORO-
(SUPDAT)

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General Information

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Item Name:
Manufacturer's Name: POLYSCIENCE
Manufacturer's Street: 7800 MERRIMAC AVE
Manufacturer's P. O. Box:
Manufacturer's City: NILES
Manufacturer's State: IL
Manufacturer's Country: US
Manufacturer's Zip Code: 60648
Manufacturer's Emerg Ph #: 321-965-0611
Manufacturer's Info Ph #: 321-965-0611
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
stributor/Vendor # 4:
stributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: N
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 00MAR92
Safety Data Review Date: 24JAN94
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BSTJF
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code: NK
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number:
t Explosive Weight:
t Propellant Weight-Ammo:

Coast Guard Ammunition Code:

Ingredients/Identity Information

.oprietary: NO
Ingredient: ETHYLENE, 1,1-DICHLORO-2, 2-BIS(P-CHLOROPHENYL)-; (2,2-BIS(CHLOROPHENYL)-1,1-DICHLORO-ETHYLENE (DDE); (DDE))
Ingredient Sequence Number: 01
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: KV9450000
CAS Number: 72-55-9
OSHA PEL: N/K (FP N)
ACGIH TLV: N/K (FP N)
Other Recommended Limit: N/K

Physical/Chemical Characteristics

Appearance And Odor: WHITE CRYSTALS
Boiling Point: N/K
Melting Point: >190F,>88C
Vapor Pressure (MM Hg/70 F): N/K
Vapor Density (Air=1): N/K
Specific Gravity: N/K
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
lubility In Water: N/K
cent Volatiles By Volume: N/K
.iscosity:
pH: N/K
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: N/K
Flash Point Method: N/K
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: WATER SPRAY. CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.
Materials To Avoid: STRONG OXIDIZING AGENTS. STRONG BASES.
ɜardous Decomp Products: TOXIC FUMES OF: CARBON MONOXIDE, CARBON ɔXIDE.
Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: LD50:(ORAL,RAT)880 MG/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THRU SKIN. MAY CAUSE IRRITATION. CHRONIC: CARCINOGEN. MAY ALTER GENETIC MATERIAL.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: ING 1: IARC MONO ON EVAL OF CARCIN RISK OF CHEMS TO MAN, VOL 53, PG 179, 1991: GRP 2B. ANIMAL LIVER.
Signs/Symptoms Of Overexp: SEE HEALTH HAZARD.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: EYES: IMMED FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SKIN: IMMED FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMD CLTHG AND SHOES. DISCARD CONTAMD CLTHG AND SHOES. INHAL: REMOVE TO FRESH AIR. IF NOT BRTHG GIVE ARTF RESP. IF BRTHG IS DFCLT, GIVE OXYGEN. INGEST: WASH OUT MOUTH W/ WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN.

Precautions for Safe Handling and Use

eps If Matl Released/Spill: EVAC AREA. WEAR NIOSH/MSHA APPROVED SCBA JBBER BOOTS & HEAVY RUBBER GLOVES. WEAR DISPOSABLE COVERALLS AND DISCARD THEM AFTER USE. SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISP. VENT AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: DISSOLVE/MIX MATL WITH A COMBUSTIBLE SOLV & BURN IN A CHEM INCIN EQUIPPED W/AN AFTERBURNER AND SCRUBBER. OBSERVE ALL FEDERAL, STATE, AND LOCAL LAWS.
Precautions-Handling/Storing: DO NOT BREATHE DUST. AVOID ALL CONTACT. CARCINOGEN. MUTAGEN. HARMFUL SOLID. KEEP TIGHTLY CLSD. STORE IN A COOL DRY PLACE. MAY CAUSE CANCER.
Other Precautions: MAY CAUSE HERITABLE GENETIC DAMAGE.

Control Measures

Respiratory Protection: WEAR APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR.
Ventilation: USE ONLY IN A CHEMICAL FUME HOOD.
Protective Gloves: CHEMICAL-RESISTANT GLOVES.
Eye Protection: ANSI APPROVED CHEMICAL WORKER (SUPP)
Other Protective Equipment: OTHER PROTECTIVE CLOTHING. SAFETY SHOWER AND EYE BATH.
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: MFR TRADE NAME/PART #: ETHYLENE(DDE). EYE PROT: GOGGLES WITH FULL LENGTH FACESHIELD (FP N).

Transportation Data

ansportation Action Code:
ransportation Focal Point:
Trans Data Review Date:

DOT PSN Code:
DOT Symbol:
DOT Proper Shipping Name:
DOT Class:
DOT ID Number:
DOT Pack Group:
DOT Label:
DOT/DoD Exemption Number:
IMO PSN Code:
IMO Proper Shipping Name:
IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code:
AFI Symbols:
AFI Prop. Shipping Name:
AFI Class:
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

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Disposal Data

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Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

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Label Data

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Label Required: YES
Technical Review Date: 19JAN94
Label Date: 19JAN94
MFR Label Number:
Label Status: B
Common Name: 510C-3, 2,2-BIS(CHLOROPHENYL)-1, 1-DICHLORO-
(SUPDAT)
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe: X
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe: X
Fire Hazard-None:
Fire Hazard-Slight: X
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None: X
Reactivity Hazard-Slight:
activity Hazard-Moderate:
activity Hazard-Severe:
Special Hazard Precautions: HARMFUL SOLID. MUTAGEN. STORE IN COOL DRY PLACE. ACUTE: HARMFUL IF SWALLOWED, INHALED OR ABSORBED THRU SKIN. MAY CAUSE IRRITATION. CHRONIC: CANCER HAZARD. CONTAINS MATERIAL WHICH IS REPORTED TO CAUSE ANIMAL LIVER CANCER (FP N). TARGET ORGANS: MATERNAL EFFECTS (UTERUS, CERVIX, VAGINA). MAY ALTER GENETIC MATERIAL.
Protect Eye: X
Protect Skin: X
Protect Respiratory: X
Label Name: POLYSCIENCE
Label Street: 7800 MERRIMAC AVE
Label P.O. Box:
Label City: NILES
Label State: IL
Label Zip Code: 60648
Label Country: US
Label Emergency Number: 321-965-0611
Year Procured:

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

C: 6810
NIIN: 00F018393
Manufacturer's CAGE: 8Y898
Part No. Indicator: A
Part Number/Trade Name: PS-72 TDE, 96.5% PURE

General Information

Item Name: REFERENCE STANDARD
Manufacturer's Name: CHEM SERVICE INC
Manufacturer's Street: N/K
Manufacturer's P. O. Box: 3108
Manufacturer's City: WEST CHESTER
Manufacturer's State: PA
Manufacturer's Country:
Manufacturer's Zip Code: 19381
Manufacturer's Emerg Ph #: (215) 386-2100
Manufacturer's Info Ph #: (215) 692-3026
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: F
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status:
Date MSDS Prepared: 10JUL90
Safety Data Review Date: 10SEP90
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company: CHEM SERVICE INC
Preparer's St Or P. O. Box: N/K
Preparer's City: WEST CHESTER
Preparer's State: PA
Preparer's Zip Code: 19381
Other MSDS Number:
MSDS Serial Number: BKXVP
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code:
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number:
Net Explosive Weight:
Propellant Weight-Ammo:
Coast Guard Ammunition Code:

Ingredients/Identity Information

:oprietary: NO
Ingredient: DDD (SARA III)
Ingredient Sequence Number: 01
Percent: 96.5%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: KI0700000
CAS Number: 72-54-8
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: 1 MG/CUM

Physical/Chemical Characteristics

Appearance And Odor: CRYSTALLINE SOLID
Boiling Point: N/K
Melting Point: 228-230F
Vapor Pressure (MM Hg/70 F): N/K
Vapor Density (Air=1): N/K
Specific Gravity: N/K
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: INSOLUBLE
Percent Volatiles By Volume: N/K
scosity:
.: N/K
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: N/K
Flash Point Method: N/K
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: CO_2, DRY CHEMICAL POWDER OR SPRAY.
Special Fire Fighting Proc: N/K
Unusual Fire And Expl Hazrds: N/K

Reactivity Data

Stability: YES
Cond To Avoid (Stability): N/K
Materials To Avoid: STRONG OXIDIZING AGENTS
Hazardous Decomp Products: TOXIC FUMES
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): N/K

Health Hazard Data

50-LC50 Mixture: LD50 (RAT OR MOUSE): 113 MG/KG.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: SKIN: FATAL IF ABSORBED. INGESTION: FATAL. INHALATION: NERVOUS SYSTEM & LIVER INJURY, FATAL.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: TDE IS A SUSPECTED A2 ANIMAL CARCINOGEN.
Signs/Symptoms Of Overexp: SKIN: FATAL IF ABSORBED. INGESTION: FATAL. INHALATION: NERVOUS SYSTEM & LIVER INJURY, FATAL.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: EYES/SKIN: FLUSH W/WATER FOR 15-20 MINS. USE SOAP & WATER TO CLEANSE SKIN IF NO BURNS. INHALATION: REMOVE TO FRESH AIR, GIVE OXYGEN IF BREATHING DIFFICULTY. ADMINISTER CPR IF CARDIAC ARREST OCCURS. IF EXHIBITING SIGNS OF SHOCK- KEEP WARM & QUIET. INGESTION: INDUCE VOMITING. DON'T ADMINISTER LIQUIDS/INDUCE VOMITING TO AN UNCONSIOUS/ CONVULSING PERSON. OBTAIN MEDICAL ATTENTION IN ALL CASES. SEE SUPP.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE AREA. WEAR APPROPRIATE EQUIPMENT. VENTILATE AREA. SWEEP UP & PLACE IN AN APPROPRIATE CONTAINER. HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Neutralizing Agent: N/K
Waste Disposal Method: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER & SCRUBBER. DISPOSE OF IN ACCORDANCE W/FEDERAL, STATE, & LOCAL REGULATIONS.
Precautions-Handling/Storing: KEEP CLOSED IN A COOL DRY PLACE. STORE ONLY W/COMPATIBLE CHEMICALS. FOR LABORATORY USE ONLY. DON'T WEAR CONTACT LENSES.
Other Precautions: DON'T USE AS DRUGS, COSMETICS, AGRICULTURAL OR PESTICIDAL PRODUCTS, FOOD ADDITIVES OR AS HOUSEHOLD CHEMICALS. AVOID DIRECT PHYSICAL CONTACT. AVOID CONTACT W/SKIN, EYES & CLOTHING.

Control Measures

Respiratory Protection: USE APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: HANDLE ONLY IN A HOOD
Protective Gloves: AS REQUIRED
Eye Protection: EYE SHIELDS
Other Protective Equipment: N/K
Work Hygienic Practices: REMOVE/WASH CONTAMINATED CLOTHING BEFORE REUSE. ONLY TRAINED PERSONNEL SHOULD HANDLE THIS CHEMICAL OR ITS CONTAINER.
Suppl. Safety & Health Data: FIRST AID; INGESTION: IF PATIENT IS VOMITING WATCH CLOSELY TO MAKE SURE AIRWAY DOESN'T BECOME OBSTRUCTED BY VOMIT.

Transportation Data

Transportation Action Code:
Transportation Focal Point:
Trans Data Review Date:
DOT PSN Code:

DOT Symbol:
DOT Proper Shipping Name:
DOT Class:
DOT ID Number:
DOT Pack Group:
DOT Label:
DOT/DoD Exemption Number:
IMO PSN Code:
IMO Proper Shipping Name:
IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code:
AFI Symbols:
AFI Prop. Shipping Name:
AFI Class:
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref:
AFI AC Code:
N.O.S. Shipping Name:
Additional Trans Data:

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Disposal Data

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Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

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Label Data

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›el Required: YES
Technical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: PS-72 TDE, 96.5% PURE
Chronic Hazard:
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
cial Hazard Precautions: SKIN: FATAL IF ABSORBED. INGESTION: FATAL. ıALATION: NERVOUS SYSTEM & LIVER INJURY, FATAL. SKIN: FATAL IF ABSORBED. INGESTION: FATAL. INHALATION: NERVOUS SYSTEM & LIVER INJURY, FATAL.
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: CHEM SERVICE INC
Label Street: N/K
Label P.O. Box: 3108
Label City: WEST CHESTER
Label State: PA
Label Zip Code: 19381
Label Country:
Label Emergency Number: (215) 386-2100
Year Procured:

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

,C: 6850
NIIN: 00N021852
Manufacturer's CAGE: 54968
Part No. Indicator: A
Part Number/Trade Name: 4,4'-DDT 20UG/ML 1ML, 48678

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General Information

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Item Name:
Manufacturer's Name: SUPELCO INC
Manufacturer's Street: SUPELCO PARK
Manufacturer's P. O. Box:
Manufacturer's City: BELLEFONTE
Manufacturer's State: PA
Manufacturer's Country: US
Manufacturer's Zip Code: 16823-0048
Manufacturer's Emerg Ph #: 814-359-3441
Manufacturer's Info Ph #: 814-359-3441
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
stributor/Vendor # 4:
stributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: N
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SMJ
Date MSDS Prepared: 13SEP91
Safety Data Review Date: 18NOV91
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BLRZG
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code: N/
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number:
et Explosive Weight:
t Propellant Weight-Ammo:
oast Guard Ammunition Code:

Ingredients/Identity Information

oprietary: NO
Ingredient: DDT (DICHLORODIPHENYLTRICHLOROETHANE) (SARA III)
Ingredient Sequence Number: 01
Percent: 0.02
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: KJ3325000
CAS Number: 50-29-3
OSHA PEL: S, 1 MG/M3
ACGIH TLV: 1 MG/M3; 9192
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: METHYL ALCOHOL (METHANOL) (SARA III)
Ingredient Sequence Number: 02
Percent: 99.98
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: PC1400000
CAS Number: 67-56-1
OSHA PEL: S,200PPM/250STEL
ACGIH TLV: S,200PPM/250STEL; 93
Other Recommended Limit: N/K

Physical/Chemical Characteristics

Appearance And Odor: CLEAR COLORLESS LIQUID
Boiling Point: 149F,65C
Melting Point: -144F,-98C
Vapor Pressure (MM Hg/70 F): 100 MM
Vapor Density (Air=1): 1.1
Specific Gravity: 0.79
Decomposition Temperature: N/K
Evaporation Rate And Ref: >1 (ETHER=1)
Solubility In Water: 100
Percent Volatiles By Volume: 100
Viscosity:
pH: N/K
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: 50.0F,10.0C
Flash Point Method: N/K
Lower Explosive Limit: 6%
Upper Explosive Limit: 36.5%
Extinguishing Media: CO*2, DRY CHEMICAL, ALCOHOL FOAM.
ecial Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA & FULL
ROTECTIVE EQUIPMENT (FP N).
Unusual Fire And Expl Hazrds: NOT APPLICABLE

Reactivity Data

ıbility: YES
ɔnd To Avoid (Stability): NOT APPLICABLE
Materials To Avoid: OXIDIZING AGENTS, CHRONIC ANHYDRIDE, LEAD PERCHLORATE, PERCHLORIC ACIDS.
Hazardous Decomp Products: NOT APPLICABLE
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: SEE INGREDIENTS 1 & 2.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: HARMFUL IF INHALED. MAY BE FATAL IF SWALLOWED. CONTAINS LOW CONCENTRATIONS OF MATLS KNOWN TO STATE OF CALIF TO CAUSE CANCER. HEADACHE, NAUSEA, GASTROINTESTINAL DISTURBANCES, BLINDNESS.
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: 4,4-DDT:GROUP 2B(IARC), GROUP 2(NTP).
Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: EYES:FLUSH W/H*2O FOR @ LST 15 MIN. CALL MD. ˙IN:FLUSH W/LG VOLS OF H*2O. INHAL:IMMED MOVE TO FRESH AIR. IF BRTHG ɔPS, GIVE ARTF RESP. CALL MD. INGEST:NEVER GIVE ANYTHING BY MOUTH TO uNCON PERS. NEVER TRY TO MAKE UNCON PERS VOMIT. GIVE 2 TABLESPOONS OF BAKING SODA IN GLASS OF H*2O, PRESS FINGERS TO BACK OF TONGUE TO INDUCE VOMIT. IMMED CALL MD.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: TAKE UP WITH ABSORBENT MATERIAL. VENTILATE AREA. ELIMINATE ALL IGNITION SOURCES.
Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Method: COMPLY WITH ALL APPLICABLE FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: STORE IN SEALED CNTNR IN COOL, DRY LOCATION. KEEP AWAY FROM OXIDIZERS. KEEP AWAY FROM IGNITION SOURCES.
Other Precautions: AVOID EYE/SKIN CONTACT. AVOID BREATHING VAPORS. SUBJ TO REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 313.

Control Measures

Respiratory Protection: WEAR NIOSH/MSHA APPROVED FACE MASK WITH ORGANIC VAPOR CANISTER.
Ventilation: USE ONLY IN WELL VENTILATED AREA.
Protective Gloves: WEAR RUBBER GLOVES.
Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).
Other Protective Equipment: NOT APPLICABLE
Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.
ɔpl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

Transportation Data

ansportation Action Code:
Transportation Focal Point: N
Trans Data Review Date: 92028
DOT PSN Code: JEZ
DOT Symbol:
DOT Proper Shipping Name: METHANOL, OR METHYL ALCOHOL
DOT Class: 3
DOT ID Number: UN1230
DOT Pack Group: II
DOT Label: FLAMMABLE LIQUID, POISON
DOT/DoD Exemption Number:
IMO PSN Code: JQR
IMO Proper Shipping Name: METHYL ALCOHOL
IMO Regulations Page Number: SEE 3251
IMO UN Number: 1230
IMO UN Class: 3.2
IMO Subsidiary Risk Label: POISON
IATA PSN Code: QHQ
IATA UN ID Number: 1230
IATA Proper Shipping Name: METHANOL (METHYL ALCOHOL)
IATA UN Class: 3
IATA Subsidiary Risk Class: 6.1
IATA Label: FLAMMABLE LIQUID & POISON
AFI PSN Code: QHQ
T Symbols:
I Prop. Shipping Name: METHANOL OR METHYL ALCOHOL
AFI Class: 3
AFI ID Number: UN1230
AFI Pack Group: II
AFI Label: FLAMMABLE LIQUID, POISON
AFI Special Prov:
AFI Basic Pac Ref: 7-7
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:

3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

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Label Data

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Label Required: YES
Technical Review Date: 18NOV91
Label Date: 31OCT91
MFR Label Number:
Label Status: B
Common Name: 4,4'-DDT 20UG/ML 1ML, 48678
Chronic Hazard: YES
Signal Word: DANGER!
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe: X
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe: X
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe: X
Reactivity Hazard-None: X
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: ACUTE:FLAMMABLE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAN CAUSE HEADACHE, NAUSEA, GASTROINTESTINAL DISTURBANCES. MAY CAUSE BLINDNESS. CHRONIC EFFECTS:THIS PRODUCT CONTAINS 4, 4-DDT WHICH MAY CAUSE CANCER.
Protect Eye: X
Protect Skin: X
Protect Respiratory: X
Label Name: SUPELCO INC
Label Street: SUPELCO PARK
Label P.O. Box:
Label City: BELLEFONTE
Label State: PA
Label Zip Code: 16823-0048
Label Country: US
Label Emergency Number: 814-359-3441
Year Procured:

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

: 4530
NIIN: 00F025659
Manufacturer's CAGE: UNISO
Part No. Indicator: A
Part Number/Trade Name: POLYCHLORINATED BIPHENYLS

General Information

Item Name:
Manufacturer's Name: UNISON TRANSFORMER SERVICES INC
Manufacturer's Street: 1338 HUNDRED OAKS DRIVE
Manufacturer's P. O. Box: N/K
Manufacturer's City: CHARLOTTE
Manufacturer's State: NC
Manufacturer's Country: US
Manufacturer's Zip Code: 28217
Manufacturer's Emerg Ph #: 800-544-0030
Manufacturer's Info Ph #: 800-544-0030
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
stributor/Vendor # 3 Cage:
tributor/Vendor # 4:
stributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: F
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 15OCT87
Safety Data Review Date: 08DEC92
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company: UNISON TRANSFORMER SERVICES INC
Preparer's St Or P. O. Box: 1338 HUNDRED OAKS DRIVE
Preparer's City: CHARLOTTE
Preparer's State: NC
Preparer's Zip Code: 28217
Other MSDS Number:
MSDS Serial Number: BPSMG
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code:
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number:
Explosive Weight:
Propellant Weight-Ammo:
Coast Guard Ammunition Code:

Ingredients/Identity Information

oprietary: NO
ngredient: PCB-POLYCHLORINATED BIPHENYLS (ANIMAL & SUSPECTED HUMAN CARCINOGEN BY NTP, IARC & ACGIH)
Ingredient Sequence Number: 01
Percent: 100%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: TQ1350000
CAS Number: 1336-36-3
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: 1 MG/CUM

Physical/Chemical Characteristics

Appearance And Odor: CLEAR, NEARLY COLORLESS LIQUID, SLIGHT AROMATIC ODOR.
Boiling Point: >325C
Melting Point: <10C
Vapor Pressure (MM Hg/70 F): <1
Vapor Density (Air=1): >1
Specific Gravity: 1.38
Decomposition Temperature: N/K
Evaporation Rate And Ref: (BU AC = 1): <1
Solubility In Water: INSOLUBLE
ercent Volatiles By Volume: N/K
scosity:
pH: N/K
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

Fire and Explosion Hazard Data

Flash Point: >350F
Flash Point Method: PMCC
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: WATER SPRAY, CO2, DRY CHEMICAL, ALCOHOL-TYPE OR UNIVERSAL-TYPE FOAMS APPLIED BY MANUFACTURER'S RECOMMENDED TECHNIQUE.
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS & STANDARD FIRE-FIGHTER WEARING APPAREL: TOXIC & IRRITATING VAPORS CAN BE EVOLVED.
Unusual Fire And Expl Hazrds: N/K

Reactivity Data

Stability: YES
Cond To Avoid (Stability): TEMPERATURES >300F, OPEN FLAME & ELECTRIC ARC
Materials To Avoid: OXIDIZING AGENTS
zardous Decomp Products: CO, CO2, & HYDROGEN CHLORIDE. UNDER HIGH MPERATURE CONDITIONS, PCBS CAN OXIDIZE TO PRODUCE DIOXINS & DIBENZOFURANS.

Hazardous Poly Occur: NO
Conditions To Avoid (Poly): N/K

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: INGESTION: THROAT IRRITATION. LETHARGY, NAUSEA & VOMITING & HARMFUL. SKIN: MODERATELY TOXIC, IRRITATION. INHALATION: NOSE, THROAT & LUNG IRRITATION. HARMFUL. EYES: MINOR TO SEVERE IRRITATION.
Carcinogenicity - NTP: YES
Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: SEE INGREDIENT
Signs/Symptoms Of Overexp: INGESTION: LIVER INJURY. SKIN: CHLORACNE, LESIONS & SENSITIZATION. ABSORPTION OF POTENTIALLY HARMFUL AMOUNTS OF MATERIAL.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: INGESTION: GIVE TWO GLASSES OF WATER & INDUCE VOMITING. SKIN: WIPE EXCESS MATERIAL FROM SKIN. WASH THOROUGHLY W/ SOAP & WATER. INHALATION: REMOVE TO FRESH AIR. EYES: WASH W/WATER FOR AT LEAST 15 MINS. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Precautions for Safe Handling and Use

aps If Matl Released/Spill: COLLECT SPILLS W/ABSORBENT SOLIDS OR CONTAIN & PUMP TO DRUMS FOR DISPOSAL. IF FROZEN, SHOVEL INTO DRUMS.
Neutralizing Agent: N/K
Waste Disposal Method: INCINERATE IN FACILITIES DESIGNED TO HANDLE HALOGENATED EMISSIONS GASES & APPROVED FOR PCB WASTE WHICH ARE OPERATED IN ACCORDANCE W/FEDERAL, STATE & LOCAL REGULATIONS.
Precautions-Handling/Storing: AVOID TEMPERATURES >300F. KEEP CONTAINER CLOSED. USE W/ADEQUATE VENTILATION.
Other Precautions: AVOID CONTACT W/SKIN, EYES, & CLOTHING. AVOID BREATHING VAPORS. DON'T SWALLOW. FOR INDUSTRIAL USE ONLY.

Control Measures

Respiratory Protection: FULL FACE OR HALF FACE RESPIRATOR W/ORGANIC CANISTER.
Ventilation: GENERAL (MECHANICAL) ROOM VENTILATION IS EXPECTED TO BE SATISFACTORY.
Protective Gloves: VITON, MILLED NITRILE OR MILLED NEOPRENE
Eye Protection: MONOGOGGLES
Other Protective Equipment: SHOWER, EYEBATH. SARANEX LAMINATED TYVEK CLOTHING AS APPROPRIATE.
Work Hygienic Practices: REMOVE & WASH CONTAMINATED CLOTHES BEFORE REUSE. WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: NOTE TO PHYSICIAN: THERE IS NO SPECIFIC ANTIDOTE. TREATMENT OF OVEREXPOSURE SHOULD BE DIRECTED TO THE CONTROL OF SYMPTOMS & THE CLINICAL CONDITION.

Transportation Data

nsportation Action Code:
nsportation Focal Point:
Trans Data Review Date:
DOT PSN Code:
DOT Symbol:
DOT Proper Shipping Name:
DOT Class:
DOT ID Number:
DOT Pack Group:
DOT Label:
DOT/DoD Exemption Number:
IMO PSN Code:
IMO Proper Shipping Name:
IMO Regulations Page Number:
IMO UN Number:
IMO UN Class:
IMO Subsidiary Risk Label:
IATA PSN Code:
IATA UN ID Number:
IATA Proper Shipping Name:
IATA UN Class:
IATA Subsidiary Risk Class:
IATA Label:
AFI PSN Code:
AFI Symbols:
Prop. Shipping Name:
AFI Class:
AFI ID Number:
AFI Pack Group:
AFI Label:
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code:
N.O.S. Shipping Name:
Additional Trans Data:

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
EPA Haz Wst Char New:
EPA Acute Hazard New:
3rd EPA Haz Wst Code New:

3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
d EPA Acute Hazard New:

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Label Data

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Label Required: YES
Technical Review Date: 08DEC92
Label Date: 18NOV92
MFR Label Number: N/R
Label Status: D
Common Name: POLYCHLORINATED BIPHENYLS
Chronic Hazard: YES
Signal Word: DANGER|
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe: X
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate: X
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight: X
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
activity Hazard-Slight: X
activity Hazard-Moderate:
Reactivity Hazard-Severe:
Special Hazard Precautions: INGESTION: THROAT IRRITATION. LETHARGY, NAUSEA & VOMITING & HARMFUL. SKIN: MODERATELY TOXIC, IRRITATION.INHALATION: NOSE, THROAT & LUNG IRRITATION. HARMFUL. EYES: MINOR TO SEVERE IRRITATION. TARGET ORGANS: LIVER & LUNGS. ANIMAL & SUSPECTED HUMAN CARCINOGEN.
Protect Eye: X
Protect Skin: X
Protect Respiratory: X
Label Name: UNISON TRANSFORMER SERVICES INC
Label Street: 1338 HUNDRED OAKS DRIVE
Label P.O. Box: N/K
Label City: CHARLOTTE
Label State: NC
Label Zip Code: 28217
Label Country: US
Label Emergency Number: 800-544-0030
Year Procured: UNK

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF August 1994
Proprietary Version - For U.S. Government Use Only

: 6810
.N: 012209193
Manufacturer's CAGE: 71984
Part No. Indicator: B
Part Number/Trade Name: CALCIUM CHLORIDE PELLETS 90 (BULK)

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General Information

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Item Name: CALCIUM CHLORIDE
Manufacturer's Name: DOW CHEMICAL USA
Manufacturer's Street: SOUTH SAGINAW ROAD
Manufacturer's P. O. Box:
Manufacturer's City: MIDLAND
Manufacturer's State: MI
Manufacturer's Country: US
Manufacturer's Zip Code: 48674
Manufacturer's Emerg Ph #: 517-636-4400
Manufacturer's Info Ph #: 517-636-4400
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
tributor/Vendor # 4 Cage:
fety Data Action Code:
Safety Focal Point: G
Record No. For Safety Entry: 003
Tot Safety Entries This Stk#: 003
Status: FM
Date MSDS Prepared: 18JUN90
Safety Data Review Date: 11DEC92
Supply Item Manager: GSA
MSDS Preparer's Name: N/K
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BPVJF
Specification Number: A-A-169
Spec Type, Grade, Class: GR 2; CL B; TY S
Hazard Characteristic Code: N/
Unit Of Issue: BG
Unit Of Issue Container Qty: 50 LB BG
Type Of Container: FIBER
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
t Propellant Weight-Ammo: N/K
ist Guard Ammunition Code: N/K

Ingredients/Identity Information

Proprietary: NO
Ingredient: CALCIUM CHLORIDE
Ingredient Sequence Number: 01
Percent: 90-92
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: EV9800000
CAS Number: 10043-52-4
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: DOW 1HG: 10 MG/M3

Proprietary: NO
Ingredient: SODIUM CHLORIDE
Ingredient Sequence Number: 02
Percent: 1-2
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: VZ4725000
CAS Number: 7647-14-5
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: DOW 1 HG: 10 MG/M3

Proprietary: NO
Ingredient: POTASSIUM CHLORIDE
Ingredient Sequence Number: 03
Percent: 2-3
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: TS8050000
CAS Number: 7447-40-7
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: DOW 1 HG: 10 MG/M3

Proprietary: NO
Ingredient: STRONTIUM CHLORIDE
Ingredient Sequence Number: 04
Percent: 1
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: WK8400000
CAS Number: 10476-85-4
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: DOW 1 HG: 10 MG/M3

Proprietary: NO
Ingredient: WATER
Ingredient Sequence Number: 05
Percent: BAL
Ingredient Action Code:
Ingredient Focal Point: G

NIOSH (RTECS) Number: ZC0110000
CAS Number: 7732-18-5
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: WHITE TO OFF WHITE, SOLID - PELLETS, ODORLESS
Boiling Point: 388F,198C
Melting Point: 446F,230C
Vapor Pressure (MM Hg/70 F): .009 @ 20C
Vapor Density (Air=1): N/K
Specific Gravity: 2.2
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: VERY SOLUBLE
Percent Volatiles By Volume: N/K
Viscosity: N/K
pH: N/K
Radioactivity: N/K
Form (Radioactive Matl): N/K
Magnetism (Milligauss): N/K
Corrosion Rate (IPY): N/K
Autoignition Temperature: N/K

Fire and Explosion Hazard Data

Flash Point: N/K
Flash Point Method: N/K
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: NON-COMBUSTIBLE
Special Fire Fighting Proc: NONE
Unusual Fire And Expl Hazrds: WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS

Reactivity Data

Stability: YES
Cond To Avoid (Stability): DECOMPOSES >350F
Materials To Avoid: CALCIUM CHLORIDE: CORRODE MOST AIR EXPOSED METALS/ ATTACK ALUMINUM (& ALLOYS)/YELLOW BRASS/REACT W/SULFURIC ACID TO FORM*
Hazardous Decomp Products: N/K*HYDROGEN CHLORIDE-CORRODE/IRRITATE/ REACT/GIVE EXOTHERMIC REACTION W/WATER-REACTIVE MATERIALS-SODIUM/RESULT IN RUN-**
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): N/K**AWAY POLYMERIZATION REACTION W/METHYL VINYL ETHER/IN SOLUTION FORM REACT W/ZINC TO YIELD HYDROGEN GAS-EXPLOSIVE.

Health Hazard Data

LD50-LC50 Mixture: ABSORB LD50 (RABBIT): >5000 MG/M3; ORAL
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: EYE: MODERATE-SEVERE IRRITATE/CORNEAL

INJURY-SLOW TO HEAL. DISSOLVING; THERMAL BURNS. SKIN: PROLONG/REPEAT EXPOSE; IRRITATE/BURN. DAMP/ABRADED/CONFINED TO SKIN; SEVERE RESPONSE. SSOLVING: MORE INTENSE EFFECTS/THERMAL BURNS. INGEST: GASTROINTESTINAL ITATE/ULCERATION. INHALE DUST: UPPER RESPIRATORY TRACT IRRITATE.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: N/K LD50 (RAT) IN RANGE; 900-2100 MG/M3 FOR CALCIUM CHLORIDE ON 100% BASIS.
Signs/Symptoms Of Overexp: N/K
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: EYE: IRRIGATE W/WATER IMMED/CONTIN 15 MIN. GET MED AID. SKIN: WASH OFF W/FLOW WATER/SHOWER. INGEST: INDUCE VOMIT IMMED-2 GLASSES WATER/FINGER DOWN THROAT. CALL DR. NEVER GIVE ANYTHING BY MOUTH/ATTEMPT TO INDUCE VOMIT IN UNCONSCIOUS PERSON. INHALE: MOVE-FRESH AIR. CONSULT DR. NOTE TO PHYSICIAN: BURN; TREAT AS THERMAL BURN AFTER DECOMTAM. NO SPECIFIC ANTIDOTE. SUPPORTIVE CARE. TREATMENT BASED ON

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: APPROP SAFETY APPAREL DURING CLEAN-UP. AVOID ENTRY INTO SEWERS/NATURAL WATERS/DRINKING WATER SOURCES. AVOID CONTACT W/ VEGETATION/ANIMALS/FISH LIFE. RECOVER QUICKLY INTO SUITABLE/DRY/SEALABLE CONTAINERS IF REUSING. SMALL QUANT MAY BE FLUSHED W/WATER.&
Neutralizing Agent: N/K
Waste Disposal Method: COMPLY W/LOCAL, STATE AND FEDERAL LAWS/ REGULATIONS/PROCEDURES. CONTACT MFR/AUTHORITIES FOR DETAILED INFORMATION. DUCT AS SOLD IS NOT A RCRA LISTED/CHARACTERISTIC HAZARDOUS WASTE.
Precautions-Handling/Storing: AVOID EYE/SKIN CONTACT.USE COOL WATER, LESS THAN 80F WHEN DISSOLVING CALCIUM CHLORIDE. HEAT DEVELOPED BY SOLUTIONS IS HIGH DURING DISSOLVING/MIXING &&
Other Precautions: JUDGEMENT OF PHYSICIAN IN RESPONSE TO REACTIONS OF PATIENT. &&WHEN EXPOSED TO ATMOSPHERE, CALCIUM CHLORIDE WILL PICK UP WATER/ FORM SOLUTION. LEATHER CLOTHING/SHOES DAMAGED.

Control Measures

Respiratory Protection: ATMOSPHERIC LEVELS SHOULD BE MAINTAINED BELOW THE EXPOSURE GUIDELINES. WHEN RESPIRATION PROTECTION IS REQUIRED FOR CERTAIN OPERATIONS, USE APPROVED AIR-PURIFYING RESPIRATOR. IN DUSTY ATMOSPHERES, USE APPROVED DUST RESPIRATORS.
Ventilation: PROVIDE GENERAL AND/OR LOCAL EXHAUST VENTILATION TO CONTROL AIRBORNE LEVELS BELOW THE EXPOSURE GUIDELINES.
Protective Gloves: PROTECTIVE GLOVES
Eye Protection: SAFETY GLASSES/CHEMICAL GOGGLES
Other Protective Equipment: CLEAN IMPERVIOUS BODY-COVERING CLOTHING/BOOTS/ APRON. EYE WASH FOUNTAIN LOCATED IN IMMEDIATE WORK AREA.
Work Hygienic Practices: IF SKIN COMES IN CONTACT W/CONTAMINATED CLOTHING/ REMOVE IMMED/WASH SKIN W/SOAP/WATER/LAUNDER CLOTHING BEFORE REUSE.
Suppl. Safety & Health Data: & WALKING SURFACES MAY REMAIN WET LONGER DUE TO MOISTURE BEING HELD BY SPILLED PRODUCT--AVOID BY THOROUGHLY WATER WASHING SURFACES.

Transportation Data

Transportation Action Code:
Transportation Focal Point: G

Trans Data Review Date: 92346
DOT PSN Code: ZZZ
DOT Symbol:
DOT Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
DOT Class: N/R
DOT ID Number: N/R
DOT Pack Group:
DOT Label: N/R
DOT/DoD Exemption Number: N/K
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
IMO Regulations Page Number: N/R
IMO UN Number: N/R
IMO UN Class: N/R
IMO Subsidiary Risk Label: N/R
IATA PSN Code: ZZZ
IATA UN ID Number: N/R
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
IATA UN Class: N/R
IATA Subsidiary Risk Class: N/R
IATA Label: N/R
AFI PSN Code: ZZZ
AFI Symbols:
AFI Prop. Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
AFI Class: N/R
AFI ID Number: N/R
AFI Pack Group:
AFI Label: N/R
AFI Special Prov:
AFI Basic Pac Ref:
MMAC Code: NK
N.O.S. Shipping Name: N/K
Additional Trans Data: N/K

Disposal Data

Disposal Data Action Code:
Disposal Data Focal Point:
Disposal Data Review Date:
Rec # For This Disp Entry:
Tot Disp Entries Per NSN:
Landfill Ban Item:
Disposal Supplemental Data:
1st EPA Haz Wst Code New:
1st EPA Haz Wst Name New:
1st EPA Haz Wst Char New:
1st EPA Acute Hazard New:
2nd EPA Haz Wst Code New:
2nd EPA Haz Wst Name New:
2nd EPA Haz Wst Char New:
2nd EPA Acute Hazard New:
3rd EPA Haz Wst Code New:
3rd EPA Haz Wst Name New:
3rd EPA Haz Wst Char New:
3rd EPA Acute Hazard New:

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Label Data

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el Required: YES
echnical Review Date:
Label Date:
MFR Label Number:
Label Status: G
Common Name: CALCIUM CHLORIDE PELLETS 90 (BULK)
Chronic Hazard:
Signal Word:
Acute Health Hazard-None:
Acute Health Hazard-Slight:
Acute Health Hazard-Moderate:
Acute Health Hazard-Severe:
Contact Hazard-None:
Contact Hazard-Slight:
Contact Hazard-Moderate:
Contact Hazard-Severe:
Fire Hazard-None:
Fire Hazard-Slight:
Fire Hazard-Moderate:
Fire Hazard-Severe:
Reactivity Hazard-None:
Reactivity Hazard-Slight:
Reactivity Hazard-Moderate:
Reactivity Hazard-Severe:
cial Hazard Precautions: EYE: MODERATE-SEVERE IRRITATE/CORNEAL INJURY-
W TO HEAL. DISSOLVING; THERMAL BURNS. SKIN: PROLONG/REPEAT EXPOSE;
IRRITATE/BURN. DAMP/ABRADED/CONFINED TO SKIN; SEVERE RESPONSE. DISSOLVING:
MORE INTENSE EFFECTS/THERMAL BURNS. INGEST: GASTROINTESTINAL IRRITATE/
ULCERATION. INHALE DUST: UPPER RESPIRATORY TRACT IRRITATE. N/K
Protect Eye:
Protect Skin:
Protect Respiratory:
Label Name: DOW CHEMICAL USA
Label Street: SOUTH SAGINAW ROAD
Label P.O. Box:
Label City: MIDLAND
Label State: MI
Label Zip Code: 48674
Label Country: US
Label Emergency Number: 517-636-4400
Year Procured:

Addenda to Activity Hazard Analysis

Principal Steps	Potential Hazards	Recommended Controls
All Work General Site Work (demolition and soil removal)		
Roof truss removal	Falling trusses	Secure trusses from falling before the piece is cut from anchor points. Secure to lifting arm of equipment
Building and slab demolition	Dust generation	Employ wet methods, using water hose, to reduce dust
Fall arrest systems	Falling from roof	Use full body harness for personnel on the roof, attached to the installed roof securing system.

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ACTION	INFORMATION	FILE
TO: File	cc: Dr. Kangmin Zheng, R&R Peter Weilsbacher, R&R Stephen Lanham - SSHO	Ft. Drum Bldg. T4002 Interim Remedial Action Project 19577-041-027
FROM: Kenneth E. Fischer - WAS		DATE: August 8, 1996
SUBJECT: Addendum 1 to Site Safety and Health Plan, Interim Remedial Action, Ft. Drum, NY		

The following changes have been made to the referenced Plan of June, 1996.

Section 3.3 - Activity Hazards Analysis for Site Task, add: "The activity hazard analysis will be reviewed and updated, if necessary, prior to the preparatory QC inspection for that feature of work and reviewed during the inspection."

Section 5.2.4.2 - MSA Explosimeter Model 2A Calibration. Change to "ISC HMX271 Combustible Gas Indicator Calibration" and replace the section with the following:

- **Checking Alarm Settings**

  Before calibrating the instrument, check all of the alarm settings to verify that they are set correctly. The calibration cover must first be released and turned ninety degrees to expose the three calibration adjustments along the bottom end of the instrument. The function of the three control adjustments are: (1) LEL zero offset, marked "Z LEL", (2) LEL span sensitivity, marked "S LEL", (3) OX calibrations, marked "S OX".

- **To Check LEL**

  To check the LEL alarm setting, switch the display to the LEL mode. Slowly turn the Z LEL (LEL zero offset) adjustment in the clockwise direction until the alarm is activated. When the alarm point is reached, slowly turn the adjustment back and forth through the point at which the alarm is activated. Observe the display. The display will show the percent of LEL at which the alarm is set to activate. Turn the adjustment back to the zero display reading. The correct setting for the LEL alarm is 10%.

- **To Check OX**

  Unlike the LEL, the OX section does not require a Z adjustment. After switching to the OX mode, observe and note the display reading, which should be 20.9% in normal room air. Slowly turn the S OX (OX calibration) adjustment counterclockwise until the low oxygen alarm setting is reached. Slowly turn the adjustment back and forth through the alarm point to verify the setting. After the low alarm setting is located, slowly turn the adjustment in the clockwise

direction until the high oxygen alarm setting is found. Slowly turn the adjustment back and forth through the alarm point to verify the setting. Return the display to the original setting. The oxygen alarm are factory set at 19.5% for the low alarm and 23.5% for the high alarm.

- **Adjusting the Alarm Settings**

  In order to access the three alarm adjustments, the instrument must be opened by separating the two halves of the case. To open the case:

  - Use the 5/64" Allen wrench to remove the screws on either side of the monitor.
  - Back off the knurled nut of the strap assembly as far as possible. Use a 5/16" wrench to remove the center post of the strap assembly.
  - Lift the case top off the monitor. Set the case top (containing the electronics) aside, being careful not to damage the wires between the case top and bottom.

  The alarm adjustments are located along the top end of the main printed circuit board and are identified with a label.

- **Adjusting the LEL Alarm**

  Switch the display to the LEL mode and turn the Z LEL (LEL zero offset) adjustment, so that the display shows the desired level of LEL to which the alarm is to be adjusted. If the alarm is activated, the new LEL alarm is higher than the one currently set. Turn the LEL alarm adjustment, in the clockwise direction until the alarm is deactivated. Then, slowly turn the LEL alarm adjustment in the counterclockwise direction until the point is reached that again activated the alarm. The Z LEL adjustment should then be turned slowly back and forth through the alarm trip point to verify that it is correct. Return the display to zero.

- **Adjusting the OX Alarm**

  After the display has been set to the OX mode, use the S OX (OX calibration) control to set the desired level of the low oxygen alarm on the display. If the alarm is activated, the present setting is higher than the desired new setting. Turn the low alarm adjustment, in the counterclockwise direction until the alarm is deactivated. Now, turn the low alarm adjustment slowly clockwise until the alarm is once again activated. Slowly turn the S OX calibration control back and forth through the alarm point to verify the setting. Adjust the S OX calibration control so the display reads the desired level for the high oxygen alarm. If the alarm is activated, the current setting is lower than the desired new setting. Turn the high alarm adjustment, in the clockwise direction until the alarm is deactivated. Now, turn the high alarm adjustment slowly in the counterclockwise direction until the alarm is once again activated. Turn the S OX calibration control back and forth through the alarm point to verify the setting. Return the display to its original setting. [NOTE: It is possible to overlap the high and low oxygen alarm settings. If this happens, the alarm will be activated for all oxygen levels. To exit this condition, turn the high oxygen alarm to its highest clockwise position and the low oxygen alarm to its lowest counterclockwise position and repeat the procedure.] Reassemble the monitor and perform calibration using gas.

- **Zero Adjustment**

  In clean air, switch the display to the LEL mode and adjust the Z LEL (LEL zero offset) control by turning it counterclockwise until the minus sign (-) appears on the display. Very slowly turn the Z LEL control clockwise until the minus sign just goes off, leaving (000) in the display.

- **Span Adjustments**

  After the LEL zero has been properly set, the span sensitivity may be calibrated. Switch the display to the LEL mode, and apply the span gas of 25% LEL Pentane to the monitor using the calibration cup. Allow the gas to flow for two (2) minutes. With the gas still flowing, adjust the S LEL (LEL span sensitivity) control, on the bottom of the instrument, so that the display reads the percent of LEL, to the nearest percent, that is printed on the calibration gas cylinder. Remove the calibration gas.

  In clean air, known to have 20.9% oxygen, the S OX (OX calibration) control should be adjusted so that the display reads 20.9% oxygen. Final calibration of the oxygen readout should only be done in free air if the use is sure that the air contains the normal 20.9% oxygen. The readout should then be adjusted so the display reads 20.9%. If there is any doubt of the oxygen content of the air, calibration gas of a known percentage of oxygen in nitrogen should be used.

Section 5.2.4.3 - Industrial Scientific Oxygen Meter Calibration. Delete entire section.

Section 5.2.1 - Real-Time Air Monitoring. After "The locations of these [four real-time perimeter monitoring stations] shall be submitted to the Contracting Officer for daily approval", add "Since daily weather conditions dictate location of these stations and these conditions are not known until beginning work each day, when equipment must be quickly calibrated and set up prior to work activities, monitoring locations shall be chosen by the SSHO based upon best judgement and submitted to the Contracting Officer at the earliest practical opportunity. Information on only changed locations will be submitted."

Section 10.1.4 - Site Safety and Health Officer. Change entries for "Joe Reese" to "Stephen Lanham" and "Patrick Ledda" to "Rudy Scipio"

Table 5-1, Hazard Monitoring Methods, Action Levels, and Response Measures at Work Area. After "Also use chemical detector tubes", add "such as benzene (with prefilter), organic amines, ammonia, alcohol, and carbon dioxide."

Section 5.2.4.5 - Model 215 Sound Level Calibration Instructions. change to "Quest Model 2700 Sound Level Meter Calibration Instructions" and replace the section with the following:

To check the calibration of the Model 2700, perform the following procedure using a Quest Calibrator.

1. Perform a battery check by pressing the battery push button. The weaker of the two 9-volt batteries is shown in the bar indicator of the Model 2700's display. Good batteries will be

indicated with the bar extending well beyond the indicating arrow (5 on the 0-60 scale). If the bar falls below the indicating arrow, then **both alkaline** batteries must be replaced. The stored MAX value and the AC and DC outputs are not affected by performing a battery check.

2. Turn the Calibrator ON to produce the level specified on the calibration label at 1 kHz.

3. An adapter is needed to mate the microphone size to the calibrator coupler. Insert it fully into the calibrator.

4. Place the Calibrator with adapter fully onto the microphone.

5. Set the Model 2700 to LIN, SLOW or FAST, the SPL mode, and the 60-120 range.

6. Use a small screwdriver to adjust the calibration potentiometer, located through the small hole on the left side of the meter, until the display matches the calibration level.

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WASHINGTON OFFICE

ACTION	INFORMATION	FILE
TO: File	cc: Dr. Kangmin Zheng, R&R Peter Weilsbacher, R&R Stephen Lanham - SSHO	Ft. Drum Bldg. T4002 Interim Remedial Action Project 19577-041-027
FROM: Kenneth E. Fischer - WAS		DATE: Sept. 16, 1996
SUBJECT: Addendum 2 to Site Safety and Health Plan, Interim Remedial Action, Ft. Drum, NY		

The following changes have been made to the referenced plan of June, 1996, as amended:

Change Section 9.4, "Information Provided to the Occupational Physician" to "Information Provided to the Examining Physician" and change Section 9.5, "Physician's Written Opinion" to "Examining Physician's Written Opinion" to clarify that a fit-for-duty certificate from a qualified Physician is adequate and that the Occupational Physician designated in Section 10.1.3, Dr. Gary Krieger, does not have to conduct this physical examination or review the results. Dr. Krieger's role is to resolve medical issues that may occur, such as to provide consultation in case of accidental exposures.

Figure 3-2, Activity Hazard Analysis - Add the attached page, "Addenda to Activity Hazard Analysis", to Figure 3-2

Section 5.2, Monitoring Requirements - Use of the sound level meter will be discontinued because it has become a standard practice for all employees to use hearing protection when exposed to any level of noise above background. Noise level monitoring has not indicated personnel exposure approaching the PEL, even without the use of hearing protection.

Use of the Photoionization Detector (PID) to monitor for volatile organics is being discontinued until Phases III and IV (excavation) of the project. No VOCs have been detected during background sampling nor above ground demolition, nor is it likely to occur until soil intrusive activities. The meter will be kept available, however.

Appendix B

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7101 WISCONSIN AVENUE, SUITE 700, BETHESDA, MARYLAND 20814-4870
(301) 652-2215 FAX: (301) 656-8059

August 2, 1996

Dr. Kangmin Zheng
R&R International, Inc.
9881 Broken Land Parkway, Suite 102
Columbia, MD 21046

RE: Baseline Air Monitoring Data
Remedial Action, Building T4002
Fort Drum, New York
Contract No. DACW41-94-D-9009

Dear Dr. Zheng:

Dames & Moore is pleased to present the results of baseline air monitoring conducted by Dames & Moore at the Building T4002 site at Fort Drum, New York. The following report summarizes the sampling locations selected, sampling methodology, and results reported by real time air monitoring instruments and laboratory analyses.

1.0 BACKGROUND

Dames & Moore performed baseline air monitoring from July 17 - 19, 1996 to establish baseline levels for comparison to air monitoring results gathered during pending site activities. The monitoring was performed at four perimeter locations surrounding Building T4002 and one location inside the building. In accordance with Section 01110 - Safety, Health, and Emergency Response of the specifications provided for this project by the US Army Corp of Engineers (COE) and Section 5.2.5 of the Site Safety and Health Plan, the perimeter monitoring locations were selected depending on the prevailing wind direction each day. One perimeter monitoring location was positioned upwind from the building and the remaining three perimeter locations were distributed along the perimeter downwind of the building.

Monitoring was performed at the five locations using real time instruments for respirable particulate, hydrocarbon vapors, noise (dBA scale), explosive gases, and oxygen. Air samples were also collected on filters for laboratory analysis at each monitoring location for lead, 2,4-D, 2,4,5-T, DDD, DDE, and DDT.

2.0 SAMPLE LOCATION SELECTION

Throughout the three days of air monitoring, the wind consistently traveled from west to east across the length of the site. The upwind monitoring station (Station number 1) was placed adjacent to the south-west corner of the building. Station number 2 was placed along the north face of the building

near the north-east corner. Station number 3 was positioned slightly east of the north-east corner of the building. Station number 4 was positioned slightly east of the south-east corner of the building. Since the wind direction was consistent throughout all three days of monitoring, the same locations were maintained each day. Station number 5, the indoor sample location, was positioned inside of the interior door of the mixing room, an area that was deemed most likely to be contaminated. This location did not vary either. Attachment 1 presents a diagram of the site and the locations of the monitoring stations.

Due to vehicle traffic around the building and the absence of control fencing, sampling locations 1 through 4 were positioned no more than 10 feet from the building. This distance was chosen because it was inside of the apparent vehicle traffic lanes around the building. By positioning the locations inside the 10 foot perimeter, it was unlikely that sampling equipment or samples would interfere with vehicle traffic or be damaged by moving equipment.

3.0 SAMPLING METHODOLOGY

At each sampling location, the direct reading instruments were positioned at breathing zone height (BZH) approximately every 30 minutes and the readings recorded. A datalogger was specified in the Site Safety and Health Plan for use with the particulate monitor but it failed to work, so instrument readings were recorded manually. See Attachment 2, "Real Time Air Monitoring Data Sheets". Measurements were conducted over approximately eight hour periods.

The following real time monitoring instruments were used to conduct the periodic monitoring at each of the locations:

Instrument	Parameter
MIE Mini-RAM (PDM-3)	Respirable particulate
HNU Photoionization Detector	Hydrocarbon vapor
Quest Model 250 Sound Level Monitor	Ambient Noise (dBA scale)
Industrial Scientific Combustible Gas Indicator/Oxygen Meter	Flammable vapors and Oxygen

Each of the instruments was checked for calibration against known standards at the beginning and at the conclusion of each day. Additional calibrations were performed on particular instruments when results reported appeared inconsistent or questionable. Each of the calibration checks performed on the direct reading instruments was recorded. See Attachment 3, "Instrument Calibration Check Sheets".

Air sampling for the compounds listed above in Section 1.0 was performed using low volume sampling pumps to draw air through pre-labeled sampling cassettes, containing filter media to trap airborne particulate. The flow rate of the air sampling pumps was calibrated using a Gilian, Inc., Gilibrator, which was factory calibrated against a National Institute of Standards and Technology (NIST) traceable standard.

One sample cassette was used at each of the five sample locations for analysis of DDD, DDE, and DDT. Similarly, a single cassette was use at each location for 2,4-D, and 2,4,5-T, and a separate cassette was used for lead. Samples cassettes were labeled with a unique sample number to identify the site, date collected, project phase, analyte, and sequence number. For example sample number *FD-71796-BG-A-001* would be described as follows:

FD = Fort Drum
71796 = July 17, 1996
BG = Background phase
A = Analyte code (A = lead; B = 2,4-D and 2,4,5-T; and C = DDD, DDE, and DDT)
001 = Sample sequence number (new sequence begins each day)

Sample collection information including sample identification, locations, sample flow rates, start and stop times, and sample volumes is recorded on the attached "Industrial Hygiene Sampling Data Sheets" in Attachment 4.

On July 19, 1996, frequent, heavy rain showers occurred throughout most of the morning and were predicted into the afternoon. As a result of the heavy rain and its potentially damaging effect on the monitoring equipment, air monitoring and sampling activities were discontinued after approximately five hours of operation. The data collected was representative of field activities because work will likely continue during some periods of rain.

Each of the air samples were submitted under Chain-of-Custody to Wisconsin Occupational Health Laboratories (WOHL) for analysis. Samples for airborne lead were submitted for analysis via National Institutes for Occupational Safety and Health (NIOSH) analytical method number 7082 (NIOSH 7082) as specified in the Site Safety and Health Plan. However, laboratory analysts advised that NIOSH 7300 would provide more precise measurement of actual lead concentrations and would allow better differentiation of interfering compounds. As a result, the lead samples were analyzed via NIOSH 7300. Similarly, samples for DDD, DDE, and DDT were submitted to WOHL for analysis via NIOSH S274 and the laboratory advised that a more accurate analytical procedure would be to use a modified version of NIOSH S274. Dames & Moore again agreed and advised the laboratory to implement the changes recommended.

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One set of cassettes (three cassettes total) was designed as blanks for quality control purposes. These cassettes were never opened but kept with the other cassettes and retained by Dames & Moore for later analysis if necessary because of discrepancies in sampling or analytical data.

4.0 RESULTS OF AIR MONITORING AND SAMPLE ANALYSIS

The air monitoring results for the three days are as follows:

Baseline Results

Time Weighted Average	mg/m^3 (1)
2,4-D, and 2,4,5-T	BDL (2)
DDD, DDE, and DDT	BDL (3)
Lead	BDL (4)
Real Time Air Monitoring	
Respirable Particulate	0.15 - 0.23 mg/m^3 TWA (5)
Hydrocarbon Vapors	<1 ppm (5)
Oxygen	20.7 - 20.9% (5)
Flammable Vapors	0 - 1% LEL (8)
Ambient Noise	47 - 80 dBA (7)

(1) Averaged over three days.
(2) Below limit of detection; limit of detection range = 0.010 - 0.022 mg/m^3.
(3) Below limit of detection; limit of detection range = 0.002 - 0.004 mg/m^3.
(4) Below limit of detection; limit of detection range = 0.001 mg/m^3.
(5) Range of TWAs for all days at all locations.
(6) Range of values recorded.
(7) Range of values recorded; upper limit corresponds to periods of vehicle and other equipment passing during measurement.

NIOSH methods for the pesticides specify a much shorter sampling period than a workday for collecting a sample, but the methods are based on the assumption that the analytes are present at levels approaching the occupational health limit. Since the pesticides were expected to occur in very low concentrations, the sampling period was extended and the pump flowrate reduced to cover most of the workday. This provided a lower limit of detection for the laboratory analytical method. With lead, longer sampling periods were already specified by the NIOSH method.

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Following common industrial hygiene practice, full workday samples of approximately six to seven instead of eight hours were collected as representative of a full workday. This is based upon the assumption that air concentrations for the full workday are similar to those occurring during the measured period.

TWA values were calculated for real time respirable particulate results by adding the values recorded at each interval and dividing by the number of intervals. Any period less than eight hours was assumed to involve equivalent exposures to the value calculated. Attachment 5 presents TWAs for respirable particulate. Attachment 6 presents TWAs for pesticides and lead contaminants that were analyzed by WOHL. Laboratory analytical reports are in Attachment 7.

5.0 SUMMARY

As required in the Site Safety and Health Plan, the baseline air monitoring data will be available on-site and will be compared to data gathered during site activities.

It has been a pleasure, working with you thus far on this project and we look forward to a successful and safe conclusion to site activities. We will be pleased to quickly respond to requests for clarification or additional information.

Sincerely,

DAMES & MOORE

Stephen C. Lanham KF

Stephen C. Lanham
Site Safety & Health Officer

Kenneth E. Fischer

Kenneth E. Fischer, P.E., CIH
Site Safety & Health Manager

SCL/KEF/scl

Attachments

ATTACHMENT 1

SAMPLING LOCATIONS

7-17-96 BASELINE AIR MONITORING - PERIMETER STATION LOCATIONS

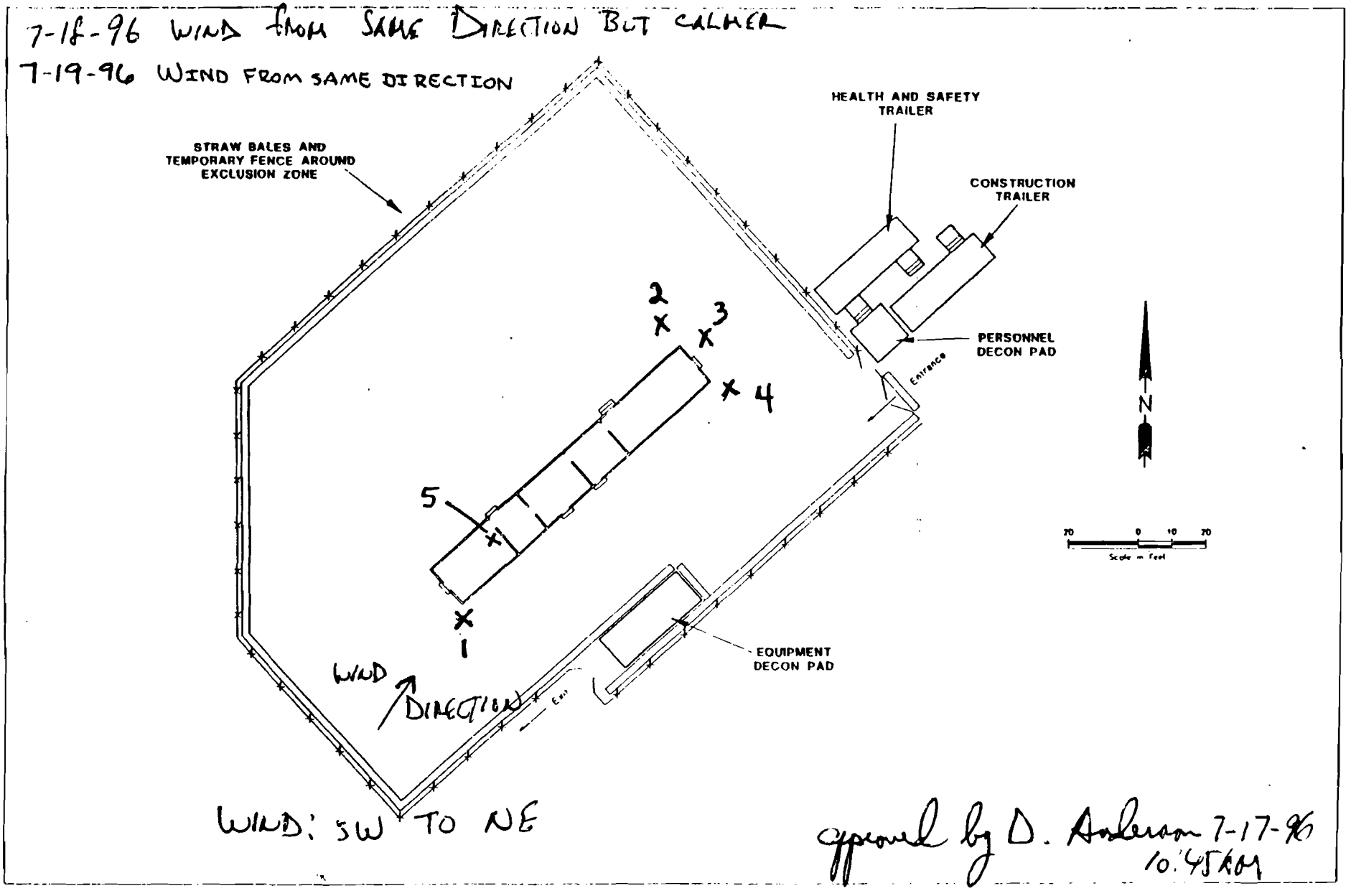

Figure
Build T4002 Remediation Site Plan
Ft. Drum, New York

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ATTACHMENT 2

REAL TIME AIR MONITORING DATA SHEETS

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities: BASELINE MONITORING - NO FIELD ACTIVITIES

Wind Direction: FROM SW

Instrument, Model & Serial No.: PID, CGI, NOISE, DUST

Estimated Wind Speed: < 5 KNOTS

Technician Signature: R. E. [illegible]

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
STATION 1	0930		STATION 1		
DUST				0.14	mg/m³
PID				0	ppm
NOISE				80 dBA	Pickup TRUCK DROVE PAST
O_2				20.9	%
LEL				0	%
	9:39		STATION 2		
DUST				0.14	mg/m³
PID				0	ppm
NOISE				51 dBA	
O_2				20.9	%
LEL				0	%
DUST	9:41		STATION 3	0.14	mg/m³
PID				0	ppm
NOISE				68	dBA
O_2				20.9	%
LEL				0	%

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: JULY 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
DUST	0943		STATION 4	0.12	mg/m³
PID				0	ppm
NOISE				58	dBA
O_2				20.9	%
LEL				0	%
DUST		0955	INSIDE T-4002 - CENTER	0.18	mg/m³
PID			of BUILDING	0	ppm
NOISE				58	dBA
O_2				20.9	%
LEL				0	%
DUST		0958	INSIDE T-4002 - ENTRANCE	0.14	mg/m³
PID			TO MIXING AREA	0	ppm
NOISE				49	dBA
O_2				20.9	%
LEL				0	%

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
DUST	1004		STATION 1	0	mg/m³
PID				0	ppm
NOISE				67	dBA
O_2				21.0	%
LEL				0	%
DUST	1005		STATION 2	0.24	mg/m³
PID				0	ppm
NOISE				—	
O_2				21	%
LEL				0	%
DUST	1006		STATION 3	0.14	mg/m³
PID				0	ppm
NOISE				65	dBA
O_2				20.9	%
LEL				0	%

* See Calibration Check Sheet for calibration data

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
DUST	1007		STATION 4	0.14	mg/m³
PID				0	ppm
NOISE				—	
O_2				20.9	%
LEL				0	ppm
DUST			INSIDE T004 - ENTRANCE		
PID			TO MIXING AREA		
NOISE					
O_2					
LEL					
DUST	1040		Station 1	0.2	
PID				0.0	
NOISE				60.7	
O_2				21.0	
LEL				0	
Dust	1040		Station 2	0.16	
PID				0	

* See Calibration Check Sheet for calibration

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
Noise	1040		Station 2	56	
O_2				21	
LEL	1045			0	
Dust			Station 3	0.14	
PID				0	
Noise				56	
O_2				20.9	
LEL				0	
Dust	1045		Station 4	0.18	
PID				0	
Noise				56	
O_2				20.7	
LEL				0	
Dust	1115		Station 1	0.22	
PID				0	
Noise				70	Truck passing
O_2				20.8	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
LEL			Station 1	0	
Dust			Station 2	0.16	
PID				0	
Noise				62.2	
O_2				20.9	
LEL				0	
Dust			Station 3	0.18	
PID				0	
Noise				68	
O_2				20.9	
LEL				0	
Dust				0.16	
PID			Station 4	0 → 0.12	
Noise				67	
O_2				20.9	
LEL				0	
Dust	1145		Station 1	0.18	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
PID	1145		Station 1	0	
N				58	
O_2				20.9	
LEL				0	
D			Station 2	0.18	
PID				0	
N				61	
O_2				20.8	
LEL				0	
D			Station 3	0.25	
PID				0	
N				77	truck passing
O_2				20.9	
LEL				0	
D			Station 4	0.20	
PID				0	
N				54.7	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
O_2	1145		Station 4	20.8	
LEL				0	
D	1240		Station 1	0.23	
PID	"			0	
N				59	
O_2				20.9	
LEL				0	
D			Station 2	0.23	
PID				0	
N				64.7	
O_2				20.8	
LEL			~~Station 3~~	0	
D			Station 3	0.27	
PID				0	
N				67	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1240		Station 4	0.27	
PID				0	
N				59	
O_2				20.8	
LEL				0	
D	1320 1220		INSIDE T4002 - ENTRANCE TO	0.27	mg/m³
PID			MIXING AREA	0	PID CALIBRATED: former 50ppm
N				64	dBA (PICKING up PUMPS) = 107ppm
O_2				20.9	%
LEL				0 %	CALIBRATED: former 0.06% = 21.0%
D	1323		STATION 1	25	
PID				0	
N				57	
O_2				21	
LEL				0	
D	1324		STATION 2	0.23	
PID				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
N				60	
O_2				21	
LEL				0	
D	1325		STATION 3	23	
PID				0	
N				57	
O_2				21	
LEL				0	
D	1326		STATION 4	0.25	
PID				0	
N				54	
O_2				21	
LEL				0	
D	1353 1353		STATION 1	0.18	
PID				0	
N				59	
O_2				21	

* See Calibration Check Sheet for calibration ...

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
LEL				0	
D	1357		STATION 2	0.20	
PID				0	
N				55	
O_2				21	
LEL				0	
D	1400		STATION 3	0.22	
PID				0	
N				54	
O_2				21	
LEL				0	
D	1404		STATION 4	0.20	
PID				0	
N				56	
O_2				21	
LEL				0	
D	1423		STATION 1	0.16	

* See Calibration Check Sheet for calibration [illegible]

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
PID				0	
N				55	Full size Pickup Truck passing
O_2				21	30' away raised level approx 10 kts
LEL				0	
D	1425		STATION 2	0	
PID				0	
N				55	
O_2				21	
LEL				0	
D	1427		STATION 3	0	
PID				0	
N				51	
O_2				21	
LEL				0	
D	1429		STATION 4	0.24	
PID				0	
N				55	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
O_2				21	
LEL				0	
D	1500		STATION 1	0.18	
PID				0	
N				57	
O_2				20.9	
LEL				0	
D	1500		STATION 2	0.22	
PID				0	
N				52	
O_2				20.9	
LEL				0	
D	1500		STATION 3	0.22	
PID				0	
N				52	
O_2				20.9	
LEL				0	

* See Calibration Check Sheet for calibration data.

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1500		STATION 4	0.20	
PID				0	
N				57	
O_2				20.9	
LEL				0	
D	1315		Station 5	0.20	mg/m³
PID				0	ppm
N				53	dBA
O_2				20.9	%
LEL				0	%
D	1335		Station 1	0.22	
PID				0 → ~~57~~	dBA
N				57	
O_2				20.8	
LEL				0	
D			Station 2	0.22	
PID				0	

* See Calibration Check Sheet for [illegible]

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
N			Station 2	55	
O_2				20.8	
LEL				0	
D	1538		Station 3	0.22	
PID				0	
N				53	
O_2				20.8	
LEL				0	
D	1540		Station 4	0.22	
PID				0	
N				57	
O_2				20.9	
LEL				0	
D	1556		INSIDE T4002 - ENTRANCE	0.29	
PID			TO MIXING AREA	0	
N				52	
O_2				20.8	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
LEC			~~Station 5~~	0	
D	1600		STATION 1	0.25	
PID				0	
N				52	
O_2				21.0	
LEL				0	
D	1602		STATION 2	0	
PID				0	
N				52	
O_2				20.9	
LEL				0	
D	1604		STATION 3	0.22	
PID				0	
N				50	
O_2				21.0	
LEL				0	
D	1606		STATION 4	0.18	

* See Calibration Check Sheet for calibration

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
PID				0	
N				—	
O_2				20.9	
LEL				0	
D	1630		STATION 1	0.29	
PID				0	
N				53	
O_2				21.0	
LEL				0	
D	1630		STATION 2	0	
PID				0	
N				53	
O_2				21.0	
LEL				0	
D	1630		STATION 3	0	
PID				0	
N				53	

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 17, 1996

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
O_2				21.0	
LEL				0	
D	1630		STATION 4	0.21	
PID				0	
N				53	
O_2				21.0	
LEL				0	

* See Calibration Check Sheet for calibration

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: July 18, 1996

Field Activities: BASELINE AIR MONITORING - NO FIELD ACTIVITIES

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature: R. E. Trieber

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
Dust (D)	0753		STATION 1	0.14	7:30 - 8:00 A lot of noise & dust
PID				0	clouds as result of heavy
Noise (N)				55	equipment leaving yard.
oxygen (O_2)				20.9	vehicle driving by can
LEL				0	increase noise level from
D	0755		STATION 2	0.20	55 to 65 or even 80 dBA
PID				0	for large flatbed truck
N				70	BACKHOE RUNNING IN IDLE
O_2				20.9	30' AWAY
LEL				0	
D	0756		STATION 3	0.12	
PID				0	
N				70	BACKHOE 30' AND LARGER VEHICLE USED
O_2				20.9	100' AWAY
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction: W → E ; nill → light

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0759		STATION 4	0.14	
PID				0	
N				65	
O_2				20.9	
LEL				0	
D			INSIDE T004 - ENTRANCE	0.16	
PID			TO MIXING AREA	0	
N				51	
O_2				20.9	
LEL				0	
D	0830		STATION 1	0.0	
PID				0	
N				57	
O_2				21	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7 18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0830		STATION 2	0.20	
PID				0	
N				55	
O_2				20.9	
LEL				0	
D	0830		STATION 3	0.28	
PID				0	
N				74	Truck passing (medium size)
O_2				20.9	
LEL				0	
D	0830		STATION 4	0.0	
PID				0	
N				65	
O_2				20.9	
LEL				0	

* See Calibration Check Sheet for calibration data.

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0830		Station 5	0.16	
PID				0	
N				55	
O_2				20.9	
LEL				0	
D	0900		Station 1	0.20	
PID				0	
N				51.4	
O_2					
LEL					
D	0900		Station 2	0.18	
PID				0	
N				54	
O_2				20.9	
LEL				0	
D	0900		Station 3	0.02	

* See Calibration Check Sheet for calibration data

REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
PID			Station 3 (Cont.)	0	
N				56.7	
O_2				20.8	
LEL				0	
D	0900		Station 4	0.18	
PID				0	
N				54.2	
O_2				20.8	
LEL				0	
D	0935		Station 1	0.10	
PID				0	
N				54	
O_2				20.8	
LEL				0	
D	0935		Station 2	0.18	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
PID	0935		Station 2 (cont-)	0	
N				51	
O_2				20.8	
LEL				0	
D	0935		Station 3	0.0	
PID				0	
N				53	
O_2				20.8	
LEL				0	
D	0935		Station 4	0	Heavy Front Loader
PID				0	
N				69	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0937		Station 5	0.26	
PID				0	
N				53	Air pumps
O_2				20.8	
LEL				0	
D	1005		Station 1	0.19	
PID				0	
N				55	
O_2				20.9	
LEL				0	
D			Station 2	0.33	
PID				0	
N				53	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-15-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D			Station 3	0.33	
PID				0	
N				54	
O_2				20.8	
LEL				0	
D			Station 4	0.31	
PID				0	
N				52	
O_2				20.9	
LEL				0	
D			Station 5	0.41	
PID				0	
N				55	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18 96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D			Station 1	0.27	
PID				0	
N				57	
O_2				20.8	
LEL				0	
D			Station 2	0.35	
PID				0	
N				57	
O_2				20.9	
LEL				0	
D			Station 3	0.25	
PID				0	
N				60	Train passing
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D			Station 4	0.27	
PID				0	
N				74	Train passing
O_2				20.9	
LEL				0	
D			Station 5	0.35	
PID				0	
N				53	
O_2				20.8	
LEL				0	
D					
PID					
N					
O_2					
LEL					

* See Calibration Check Sheet for calibration data.

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18 96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1110		STATION 1	0.04	
PID				0	
N				56	
O_2				20.9	
LEL				0	
D	1112		STATION 2	0.22	
PID				0	
N				58	
O_2				20.9	
LEL				0	
D			STATION 3	0.26	
PID				0	
N				56	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1114		STATION 4	0.22	
PID				0	
N				56	
O_2				20.9	
LEL				0	
D	1116		INSIDE T4002-ENTRANCE	0.28	
PID			TO MIXING AREA	0	
N				55	
O_2				20.9	
LEL				0	
D	1146		Station 1	0.22	
PID				0	
N				56	
O_2				20.9	
LEL				0	

* See Calibration Check Sheet for calibration data

479

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1148		Station 2	0.18	
PID				0	
N				53	
O_2				20.8	
LEL				0	
D	1149		Station 3	0.20	
PID				0	
N				54	
O_2				20.3	
LEL				0	
D	1150		Station 4	0.20	
PID				0	
N				52	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data.

481

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1220		Station 1	0.20	
PID				0	
N				55	
O_2				20.8	
LEL				0	
D	1222		Station 2	0.20	
PID				0	
N				52	
O_2				20.8	
LEL				0	
D	1223		Station 3	0.20	
PID				0	
N				56	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data.

483

REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1225		Station 4	0.20	
PID				0	
N				51	
O_2				20.9	
LEL				0	
D	1258		Station 1	0.24	
PID				0	
N				56	
O_2				20.8	
LEL				0	
D	1254		station 2	0.20	
PID				0	
N				58	
O_2				20.9	
LEL				0	

* See Calibration Check Sheet for calibration data

485

REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1256		Station 3	0.20	
PID				0	
N				69	Bobcat + Truck engines
O_2				20.8	
LEL				0	
D	1258		Station 4	0.22	
PID				0	
N				56	
O_2				20.8	
LEL				0	
D	1325		Station 1	0.22	
PID				0	
N				54	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1327		Station 2	0.22	
PID				0	
N				56	
O_2				20.9	
LEL				0	
D	1328		Station 3	0.28	
PID				0	
N				58.	
O_2				20.8	
LEL				0	
D	1328		Station 4	0.24	
PID				0	
N				56	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1412		Station 1	0.26	
PID				0	
N				53	
O_2				20.8	
LEL				0	
D	1415		Station 2	0.20	
PID	*			0	
N				61	
O_2				20.8	
LEL				0	
D	1416		Station 3	0.22	
PID				0	
N				56	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data.

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1417		Station 4	0.24	
PID				0	
N				66	VEHICLE PASSING
O_2				20.9	
LEL				0	
D	1419		Station: INSIDE T004 - ENTR-	0.24	
PID			ANCE TO MIXING AREA	0	
N				54	
O_2				20.8	
LEL				0	
D	1446		Station 1	0.24	
PID				0	
N				57	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

493

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7 18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1447		Station 2	0.31	
PID				0	
N				52	
O_2				20.8	
LEL				0	
D	1447		Station 3	0.27	
PID				0	
N				55	
O_2				20.8	
LEL				0	
D	1448		Station 4	0.22	
PID				0	
N				54	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data.

495

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1449		Station 5- Inside building	0.31	
PID				0	
N				54	
O_2				20.8	
LEL				0	
D	1517		Station 1	0.29	SPRAY TRUCK JUST BEGAN
PID				0	SPRAYING WATER ON LOT
N				58	
O_2				20.7	
LEL				0	
D	1521		Station 2	0.29	
PID				0	
N				59	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature: [illegible]

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1522		Station 3	0.27	
PID				0	
N				64	Heavy Equip
O_2				20.7	
LEL				0	
D			Station 4	0.35	
PID				0	
N				60	
O_2				20.7	
LEL				0	
D			Station 5	0.39	
PID				0	
N				50	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

499

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date:

Field Activities:

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1545		Station 1	0.24	
PID				0	
N				54	
O_2				20.8	
LEL				0	
D	1545		Station 2	0.51	
PID				0	
N				56	
O_2				20.8	
LEL				0	
D	1546		Station 3	0.29	
PID				0	
N				52	
O_2				20.7	
LEL				0	

* See Calibration Check Sheet for calibration data.

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-18-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1547		Station 4	0.27	
PID				0	
N				61	Truck passing
O_2				20.7	
LEL				0	
D			Station 5 - Inside T-4002	0.29	
PID				0	
N				49	
O_2				20.7	
LEL				0	
D					
PID					
N					
O_2					
LEL					

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction: W-E; Light → moderate

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature: [illegible]

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0652		Station 1	0.26	
PID				0	
N				53	
O_2				20.7	
LEL				0	
D	0653		Station 2	0	
PID				0.26	
N				51	
O_2				20.8	
LEL			~~Station 3~~	0	
D	0655		Station 3	0.28	
PID				0	
N				49	
O_2				20.9	
LEL				0	

* See Calibration Check Sheet for calibration data

505

REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0655		Station 4	0.24	
PID				0	
N				51	
O_2				20.9	
LE				0	
D	0656		Station 5 - INSIDE T-4002	0.26	
PID			ENTRANCE TO MIXING AREA	0	
N				47	
O_2				20.9	
LEL				0	
D	0810		STATION 1	0.24	HEAVY RAIN AFTER LAST ROUND
PID				0	
N				60	
O_2				20.8	
LEL				1	

Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0811		STATION 2	0.24	
PID				0	
N				63	
O_2				20.8	
LEL				0	
D	0812		STATION 3	0.26	
PID				0	
N				63	
O_2				20.8	
LEL				1	
D	0813		STATION 4	0.24	
PID				0	
N				63	
O_2				20.8	
LEL				1	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0814		STATION 5	0.22	
PID				0	
N				60	
O_2				20.8	
LEL				0	
D	0847		Station 1	0.24	
PID				0	
N				58	Truck passing
O_2				20.8	
LEL				0	
D	0848		Station 2	0.22	
PID				0	
N				53	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

511

REAL TIME AIR MONITORING DATA SHEET

Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0848		Station 3	0.24	
PID				0	
N				55	
O_2				20.8	
LEL				0	
D	0849		Station 4	0.24	
PID				0	
N				56	
O_2				20.8	
LEL				0	
D	0923		Station 1	0.28	
PID				0	
N				68	
O_2				20.9	
LEL				0	

* See Calibration Check Sheet for calibration data.

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0924		Station 2	0.24	
PID				0	
N				60	
O_2				20.8	
LEL				0	
D	0924		Station 3	0.22	
PID				0	
N				55	
O_2				20.8	
LEL				0	
D	0925		Station 4	0.24	
PID				0	
N				55	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	0930		Station 5	0.22	
PID				0	
N				63	
O_2				20.8	
LEL				0	
D	1000		Station 1	0.24	Rain Showers
PID				0	
N				56	
O_2				20.8	
LEL				0	
D	1001		Station 2	0.26	
PID				0	
N				55	
O_2				20.8	
LEL				0	

* See Calibration Check Sheet for calibration data

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REAL TIME AIR MONITORING DATA SHEET
Building T4002
Fort Drum, New York

Date: 7-19-96

Field Activities: Background

Wind Direction:

Instrument, Model & Serial No.:

Estimated Wind Speed:

Technician Signature:

Background Level:

Sample No.	Time	Duration (minutes)	Sample Location	Result/ Units	Comments/Recommendations
D	1003		Station 3	0.24	Rain Showers
PID				0	
N				54	
O_2				20.9	
LEL				0	
D	1004		Station 4	0.06	
PID				0	
N				56	
O_2				20.8	
LEL				0	
D			Station		NO MORE READINGS POSSIBLE
PID					BECAUSE of HEAVY RAINS
N					
O_2					
LEL					

* See Calibration Check Sheet for calibration data

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ATTACHMENT 3

INSTRUMENT CALIBRATION CHECK SHEETS

INSTRUMENT CALIBRATION CHECK SHEET

Building T4002
Fort Drum, New York

July 17, 1996
BACKGROUND

Instrument(s): PID, DUST MONITOR, LEL & O_2 METER, NOISE METER

Serial No.(s):

Technician's Signature: R. C. Trieb

Date	Pure Air (Y/N)	Calibration Gas (ppm)	Battery Check (Good/Bad)	Calibrated by	Remarks
9:00 AM PID		107	G	RT	S/N 11365
					HNU PI-101
Calibrated 1:20 PM when gas arrived, former 50 ppm = 107 ppm					
O_2	21.9%	X	G	RT	ISE HMX-271
					8903092-200
~~calibr~~					
LEL			G	RT	" "
calibrated 1:20 PM when gas arrived, former 0.06%					" "
= 21.0%					
DUST		factory	G	RT	MIE-PDM-3
					S/N 4134
NOISE		114dBA source	G	RT	QUEST 2700
					HU5020001
4:00 pid					
PID		107	G	RT	S/N 11365
no drift or change from earlier calibration					
LEL		21.4%	G		8903092-200
No change from earlier calibration					
NOISE		114dBA source	G	RT	HU5020001
No change from earlier calibration					

Proper calibration of instruments shall be conducted immediately prior to site activities.

INSTRUMENT CALIBRATION CHECK SHEET

Building T4002
Fort Drum, New York

July 18, 1996
BACKGROUND

Instrument(s): PID, DUST MONITOR, LEL O_2 METER, NOISE METER

Serial No.(s):

Technician's Signature:

Date	Pure Air (Y/N)	Calibration Gas (ppm)	Battery Check (Good/Bad)	Calibrated by	Remarks
8:35 AM					
PID		107	G	[illegible]	S/N 11365
					HNU PI-101
O_2	21.9 ~~21.9%~~	21.9 ~~21.9%~~	G	[illegible]	ISC HMX-271
					8903092-200
LEL	21.4%	21.4%	G	[illegible]	" "
					" "
DUST		FACTORY	G	[illegible]	MIE-PDM3
					S/N 4134
NOISE		114 dBA Source	G	[illegible]	QUEST 2700
					HU502000
3:50 PM					
PID		107	NEEDS RECHARGE	[illegible]	32 PPM = 107 PPM
NOISE		114 dBA SRCE		[illegible]	NO CHANGE FROM AM
		21.4			
LEL		~~21.9%~~		[illegible]	READ 16%

Proper calibration of instruments shall be conducted immediately prior to site activities.

INSTRUMENT CALIBRATION CHECK SHEET

Building T4002
Fort Drum, New York

July 19, 1994 BACKGROUND

Instrument(s): PID, Dust Monitor, LEL & O_2 METER, NOISE METER

Serial No.(s):

Technician's Signature:

Date	Pure Air (Y/N)	Calibration Gas (ppm)	Battery Check (Good/Bad)	Calibrated by	Remarks
0645					
PID		107	Poor	KT	S/N 11365 - HNU PI101
					INSTRUMENT CALIBRATED
					BUT CHARGE INDICATOR
					JUST BELOW GOOD RANGE
O_2	21.9%	21.9%	G	KT	ISE GMX-271
					890392-200
LEL	21.4%	21.4%	G	KT	" "
					" "
DUST		FACTORY	G	KT	MIE-PDM3
					S/N 4134
NOISE		114dBA SOURCE	G	KT	QUEST 2700
					H050200001
1150					(PLANT SHUT DOWN
					MONITORING OPERATIONS)
PID		107	Poor		35 ppm = 107 ppm on
					METER
NOISE		114dBA SOURCE	G	KT	
LEL		21.4%	G	KT	21.4 = 24% on METER

Proper calibration of instruments shall be conducted immediately prior to site activities.

ATTACHMENT 4

INDUSTRIAL HYGIENE SAMPLING DATA SHEETS

DAMES & MOORE

INDUSTRIAL HYGIENE SAMPLING DATA SHEET

Project: Ft. Drum - Bldg T4002 Demolition	Activity: Background
Address:	
	Sampling Media: Filter
Job Number:	Analytical Method: —
Date: 7/17/96	Industrial Hygienist: Stephen Lanham

Sample Number	Sample Location	Pump #	Test Period			Flow Rate			Total Volume	Results
			start	stop	total	start	stop	mean		
FD-71796-BG-A-001	Station No. 1	—	1023	1625	362	1.54 L/m	1.~~53~~ 45	1.~~53~~ 45	5249 L	
B-001	↓	↓	↓	↓	↓	0.48	0.46	0.46	166.52	
C-001	↓	↓	↓	↓	↓	0.48	0.46	0.46	166.52	
A-002	Station No. 2	↓	1021	1627	366	1.32	1.32	1.32	483.12	
B-002	↓	↓	↓	↓	↓	0.45	0.43	0.43	157.38	
C-002	↓	↓	↓	↓	↓	0.42	0.41	0.41	150.06	
A-003	Station No. 3	↓	1022	1630	368	1.48	1.47	1.47	540.96	
B-003	↓	↓	↓	↓	↓	0.48	0.47	0.47	172.96	
C-003	↓	↓	↓	↓	↓	0.47	0.47	0.47	172.96	

CHAIN OF CUSTODY RECORD

Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

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DAMES & MOORE

INDUSTRIAL HYGIENE SAMPLING DATA SHEET

Project: Ft. Drum – Bldg T4002 Demolition	Activity: Background
Address:	
	Sampling Media: Filter
Job Number:	Analytical Method: –
Date: 7/17/96	Industrial Hygienist: Stephen Lanham

Sample Number	Sample Location	Pump #	Test Period			Flow Rate			Total Volume	Results
			start	stop	total	start	stop	mean		
FD-71796-BG-A-004	Station No. 4	—	1020	1635	375	1.52	1.51	1.51	566.25	
B-004	↓	↓	↓	↓	↓	0.48	0.47	0.47	176.25	
C-004	↓	↓	↓	↓	↓	0.48	0.47	0.47	176.25	
A-005	Station No. 5	↓	1000	1600	360	1.53	1.53	1.53	550.8	
B-005	↓	↓	↓	1355	235	0.46	0.46	0.46	108.1	
C-005	↓	↓	↓	↓	↓	0.46	0.46	0.46	108.1	

CHAIN OF CUSTODY RECORD

Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

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DAMES & MOORE

INDUSTRIAL HYGIENE SAMPLING DATA SHEET

Project: Ft. Drum - Bldg T4002 Demolition	Activity: Background
Address:	
	Sampling Media: Filter
Job Number:	Analytical Method: —
Date: 7/18/96	Industrial Hygienist: Stephen Lanham

Sample Number	Sample Location	Pump #	Test Period			Flow Rate			Total Volume	Results
			start	stop	total	start	stop	mean		
D-71896-BG-A-001	Station No. 4	—	0801	1500	419	1.51	1.53	1.53	641.07	
B-001	↓	↓	↓	↓	↓	0.46	0.46	0.46	192.74	
C-001	↓	↓	↓	↓	↓	0.47	0.49	0.49	205.31	
A-002	Station No. 3	↓	0810	1515	425	1.52	1.42	1.42	603.5	
B-002	↓	↓	↓	↓	↓	0.48	0.45	0.45	191.25	
C-002	↓	↓	↓	↓	↓	0.48	0.45	0.45	191.25	
A-003	Station No. 2	↓	0811	1504	413	1.49	1.47	1.47	607.11	
B-003	↓	↓	↓	↓	↓	0.45	0.44	0.44	181.72	
C-003	↓	↓	↓	↓	↓	0.47	0.47	0.47	194.11	

CHAIN OF CUSTODY RECORD

Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

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DAMES & MOORE **INDUSTRIAL HYGIENE SAMPLING DATA SHEET** Page 2 of 2

Project: Ft. Drum - Bldg T4002 Demolition	Activity: Background
Address:	
	Sampling Media: Filter
Job Number:	Analytical Method: —
Date: 7/18/96	Industrial Hygienist: Stephen Lanham

Sample Number	Sample Location	Pump #	Test Period			Flow Rate			Total Volume	Results
			start	stop	total	start	stop	mean		
FD-71896 BG-A-004	Station No. 5	—	0803	1456	413	1.50	1.63	1.63	673.19	
B-004	↓	↓	↓	↓	↓	0.48	0.47	0.47	194.11	
C-004	↓	↓	↓	↓	↓	0.48	0.47	0.47	194.11	
A-005	Station No. 4	↓	0800	1510	430	1.52	1.63	1.63	700.9	
B-005	↓	↓	↓	↓	↓	0.47	0.47	0.47	202.1	
C-005	↓	↓	↓	↓	↓	0.46	0.47	0.47	202.1	

CHAIN OF CUSTODY RECORD

Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

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DAMES & MOORE

INDUSTRIAL HYGIENE SAMPLING DATA SHEET

Project: Ft. Drum - Bldg T4002 Demolition	Activity: Background
Address:	
	Sampling Media: Filter
Job Number:	Analytical Method: —
Date: 7/19/96	Industrial Hygienist: Stephen Lanham

Sample Number	Sample Location	Pump #	Test Period			Flow Rate			Total Volume	Results
			start	stop	total	start	stop	mean		
71996-BG-A-001	Station No. 1	—	0730	1050	200	1.52	1.58	1.58	316	
B-001	↓	↓	↓	↓	↓	0.48	0.46	0.46	92	
C-001	↓		↓	↓	↓	0.47	0.47	0.47	94	
A-002	Station No. 2		0723	1105	222	1.56	1.49	1.49	330.78	
B-002	↓		↓	↓	↓	0.46	0.46	0.46	102.12	
C-002	↓		↓	↓	↓	0.48	0.43	0.43	95.46	
A-003	Station No. 3		0735	1108	203	1.52	1.55	1.55	314.65	
B-003	↓		↓	↓	↓	0.46	0.46	0.46	93.38	
C-003	↓	↓	↓	↓	↓	0.46	0.46	0.46	93.38	

CHAIN OF CUSTODY RECORD

Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

DAMES & MOORE

INDUSTRIAL HYGIENE SAMPLING DATA SHEET

Project: Ft. Drum - Bldg T4002 Demolition	Activity: Background
Address:	
	Sampling Media: Filter
Job Number:	Analytical Method: —
Date: 7/19/96	Industrial Hygienist: Stephen Lanham

Sample Number	Sample Location	Pump #	Test Period			Flow Rate			Total Volume	Results
			start	stop	total	start	stop	mean		
71996-BG-A-004	Station No. 4	—	0725	1111	226	1.57	1.49	1.49	336.74	
B-004	↓	↓	↓	↓	↓	0.47	0.45	0.45	101.70	
C-004	↓	↓	↓	↓	↓	0.48	0.47	0.47	106.22	
A-005	Station No. 5	↓	0732	1130	238	1.55	1.46	1.46	374.48	
B-005	↓	↓	↓	↓	↓	0.48	0.46	0.46	109.48	
C-005	↓	↓	↓	↓	↓	0.48	0.46	0.46	109.48	

CHAIN OF CUSTODY RECORD

Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

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ATTACHMENT 5

TWA CALCULATIONS

REAL TIME MONITORING DATA - RESPIRABLE PARTICULATE

Time Weighted Average Calculations
Real Time Monitoring Data - Respirable Particulate

PARAMETER	INTERVALS																Number of Intervals	Time Weighted Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
7/17/96 - Station Number 1 (SW Corner outside of Building T4002)																		
Respirable Particulate (mg/m^3)	0.14	0	0.20	0.22	0.18	0.23	0.25	0.18	0.16	0.18	0.22	0.25	0.29				13	0.19
7/17/96 - Station Number 2 (North side outside of Building T4002)																		
Respirable Particulate	0.14	0.24	0.16	0.16	0.18	0.23	0.23	0.20	0	0.22	0.22	0	0				13	0.15
7/17/96 - Station Number 3 (NE Corner outside of Building T4002)																		
Respirable Particulate	0.14	0.14	0.14	0.18	0.25	0.27	0.23	0.22	0	0.22	0.22	0.22	0				13	0.17

PARAMETER	INTERVALS																Number of Intervals	Time Weighted Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
7/17/96 - Station Number 4 (SE Corner outside of Building T4002)																		
Respirable Particulate	0.12	0.14	0.18	0.16	0.20	0.27	0.25	0.20	0.24	0.20	0.22	0.18	0.27				13	0.20
7/17/96 - Station Number 5 (Inside of Building T4002 in mixing area)																		
Respirable Particulate	0.14	--	--	--	--	0.27	--	--	--	0.20	0.29	--	--				4	0.23
7/18/96 -Station Number 1 (SW Corner outside of Building T4002)																		
Respirable Particulate	0.14	0	0.20	0.10	0.19	0.27	0.04	0.22	0.20	0.24	0.22	0.26	0.24	0.29	0.24		15	0.15
7/18/96 -Station Number 2 (North side outside of Building T4002)																		
Respirable Particulate	0.20	0.2	0.18	0.18	0.33	0.35	0.22	0.18	0.20	0.20	0.22	0.20	0.31	0.29	0.51		15	0.20

PARAMETER	INTERVALS																Number of Intervals	Time Weighted Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
7/18/96 - Station Number 3 (NE Corner outside of Building T4002)																		
Respirable Particulate	0.12	0.28	0.02	0	0.33	0.25	0.26	0.20	0.20	0.20	0.28	0.22	0.27	0.27	0.29		15	0.18
7/18/96 - Station Number 4 (SE Corner outside of Building T4002)																		
Respirable Particulate	0.14	0	0.18	0	0.31	0.27	0.22	0.20	0.20	0.22	0.24	0.24	0.22	0.35	0.27		15	0.16
7/18/96 - Station Number 5 (Inside of Building T4002 in mixing area)																		
Respirable Particulate	0.16	0.16	--	0.26	0.41	0.35	0.28	--	--	--	--	0.24	0.31	0.39	0.29		10	0.22
7/19/96 -Station Number 1 (SW Corner outside of Building T4002)																		
Respirable Particulate	0.26	0.24	0.24	0.28	0.14	**Severe rain showers; Air monitoring discontinued**											5	0.23

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PARAMETER	INTERVALS																Number of Intervals	Time Weighted Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
7/19/96 -Station Number 2 (North side outside of Building T4002)																		
Respirable Particulate	0.26	0.24	0.22	0.24	0.16												5	0.22
7/19/96 - Station Number 3 (NE Corner outside of Building T4002)																		
Respirable Particulate	0.28	0.26	0.24	0.22	0.14												5	0.23
7/19/96 - Station Number 4 (SE Corner outside of Building T4002)																		
Respirable Particulate	0.24	0.24	0.24	0.24	0.06												5	0.20
7/19/96 - Station Number 5 (Inside of Building T4002 in mixing area)																		
Respirable Particulate	0.26	0.22	--	0.22	--												3	0.23

ATTACHMENT 6

TIME WEIGHTED AVERAGE CONCENTRATIONS PESTICIDES AND LEAD

Time Weighted Average Concentrations
Pesticides and Lead

Date	Location	Sample Number	Analyte	Laboratory Result (mg/m^3)	Time Weighted Average (mg/m^3)
7/17/96	Station No. 1	FD-71796-BG-A-001	Lead	<0.001	<0.001
		FD-71796-BG-B-001	2,4-D	<0.012	<0.012
		FD-71796-BG-B-001	2,4,5-T	<0.012	<0.012
		FD-71796-BG-C-001	DDD	<=0.002	<=0.002
		FD-71796-BG-C-001	DDE	<=0.002	<=0.002
		FD-71796-BG-C-001	DDT	<=0.002	<=0.002
7/17/96	Station No. 2	FD-71796-BG-A-002	Lead	<0.001	<0.001
		FD-71796-BG-B-002	2,4-D	<0.013	<0.013
		FD-71796-BG-B-002	2,4,5-T	<0.013	<0.013
		FD-71796-BG-C-002	DDD	<=0.003	<=0.003
		FD-71796-BG-C-002	DDE	<=0.003	<=0.003
		FD-71796-BG-C-002	DDT	<=0.003	<=0.003
7/17/96	Station No. 3	FD-71796-BG-A-003	Lead	<0.001	<0.001
		FD-71796-BG-B-003	2,4-D	<0.012	<0.012
		FD-71796-BG-B-003	2,4,5-T	<0.012	<0.012
		FD-71796-BG-C-003	DDD	<=0.002	<=0.002
		FD-71796-BG-C-003	DDE	<=0.002	<=0.002
		FD-71796-BG-C-003	DDT	<=0.002	<=0.002
7/17/96	Station No. 4	FD-71796-BG-A-004	Lead	<0.001	<0.001
		FD-71796-BG-B-004	2,4-D	<0.011	<0.011
		FD-71796-BG-B-004	2,4,5-T	<0.011	<0.011
		FD-71796-BG-C-004	DDD	<=0.002	<=0.002

Date	Location	Sample Number	Analyte	Laboratory Result (mg/m^3)	Time Weighted Average (mg/m^3)
		FD-71796-BG-C-004	DDE	<=0.002	<=0.002
		FD-71796-BG-C-004	DDT	<=0.002	<=0.002
7/17/96	Station No. 5	FD-71796-BG-A-005	Lead	<0.001	<0.001
		FD-71796-BG-B-005	2,4-D	<0.019	<0.019
		FD-71796-BG-B-005	2,4,5-T	<0.019	<0.019
		FD-71796-BG-C-005	DDD	<=0.004	<=0.004
		FD-71796-BG-C-005	DDE	<=0.004	<=0.004
		FD-71796-BG-C-005	DDT	<=0.004	<=0.004
7/18/96	Station No. 1	FD-71896-BG-A-005	Lead	<0.001	<0.001
		FD-71896-BG-B-005	2,4-D	Not analyzed; sample preparation error	
		FD-71896-BG-B-005	2,4,5-T	Not analyzed; sample preparation error	
		FD-71896-BG-C-005	DDD	<=0.002	<=0.002
		FD-71896-BG-C-005	DDE	<=0.002	<=0.002
		FD-71896-BG-C-005	DDT	<=0.002	<=0.002
7/18/96	Station No. 2	FD-71896-BG-A-003	Lead	<0.001	<0.001
		FD-71896-BG-B-003	2,4-D	<0.011	<0.011
		FD-71896-BG-B-003	2,4,5-T	<0.011	<0.011
		FD-71896-BG-C-003	DDD	<=0.002	<=0.002
		FD-71896-BG-C-003	DDE	<=0.002	<=0.002
		FD-71896-BG-C-003	DDT	<=0.002	<=0.002
7/18/96	Station No. 3	FD-71896-BG-A-002	Lead	<0.001	<0.001
		FD-71896-BG-B-002	2,4-D	<0.010	<0.010
		FD-71896-BG-B-002	2,4,5-T	<0.010	<0.010

Date	Location	Sample Number	Analyte	Laboratory Result (mg/m³)	Time Weighted Average (mg/m³)
		FD-71896-BG-C-002	DDD	<=0.002	<=0.002
		FD-71896-BG-C-002	DDE	<=0.002	<=0.002
		FD-71896-BG-C-002	DDT	<=0.002	<=0.002
7/18/96	Station No. 4	FD-71896-BG-A-001	Lead	<0.001	<0.001
		FD-71896-BG-B-001	2,4-D	<0.010	<0.010
		FD-71896-BG-B-001	2,4,5-T	<0.010	<0.010
		FD-71896-BG-C-001	DDD	<=0.002	<=0.002
		FD-71896-BG-C-001	DDE	<=0.002	<=0.002
		FD-71896-BG-C-001	DDT	<=0.002	<=0.002
7/18/96	Station No. 5	FD-71896-BG-A-004	Lead	<0.001	<0.001
		FD-71896-BG-B-004	2,4-D	Not analyzed; sample preparation error	
		FD-71896-BG-B-004	2,4,5-T	Not analyzed; sample preparation error	
		FD-71896-BG-C-004	DDD	<=0.002	<=0.002
		FD-71896-BG-C-004	DDE	<=0.002	<=0.002
		FD-71896-BG-C-004	DDT	<=0.002	<=0.002
7/19/96	Station No. 1	FD-71996-BG-A-001	Lead	<0.001	<0.001
		FD-71996-BG-B-001	2,4-D	<0.022	<0.022
		FD-71996-BG-B-001	2,4,5-T	<0.022	<0.022
		FD-71996-BG-C-001	DDD	<=0.004	<=0.004
		FD-71996-BG-C-001	DDE	<=0.004	<=0.004
		FD-71996-BG-C-001	DDT	<=0.004	<=0.004
7/19/96	Station No. 2	FD-71996-BG-A-002	Lead	<0.001	<0.001
		FD-71996-BG-B-002	2,4-D	<0.020	<0.020

Date	Location	Sample Number	Analyte	Laboratory Result (mg/m^3)	Time Weighted Average (mg/m^3)
		FD-71996-BG-B-002	2,4,5-T	<0.020	<0.020
		FD-71996-BG-C-002	DDD	<=0.004	<=0.004
		FD-71996-BG-C-002	DDE	<=0.004	<=0.004
		FD-71996-BG-C-002	DDT	<=0.004	<=0.004
7/19/96	Station No. 3	FD-71996-BG-A-003	Lead	<0.001	<0.001
		FD-71996-BG-B-003	2,4-D	<0.021	<0.021
		FD-71996-BG-B-003	2,4,5-T	<0.021	<0.021
		FD-71996-BG-C-003	DDD	<=0.004	<=0.004
		FD-71996-BG-C-003	DDE	<=0.004	<=0.004
		FD-71996-BG-C-003	DDT	<=0.004	<=0.004
7/19/96	Station No. 4	FD-71996-BG-A-004	Lead	<0.001	<0.001
		FD-71996-BG-B-004	2,4-D	<0.020	<0.020
		FD-71996-BG-B-004	2,4,5-T	<0.020	<0.020
		FD-71996-BG-C-004	DDD	<=0.004	<=0.004
		FD-71996-BG-C-004	DDE	<=0.004	<=0.004
		FD-71996-BG-C-004	DDT	<=0.004	<=0.004
7/19/96	Station No. 5	FD-71996-BG-A-005	Lead	<0.001	<0.001
		FD-71996-BG-B-005	2,4-D	<0.018	<0.018
		FD-71996-BG-B-005	2,4,5-T	<0.018	<0.018
		FD-71996-BG-C-005	DDD	<=0.004	<=0.004
		FD-71996-BG-C-005	DDE	<=0.004	<=0.004
		FD-71996-BG-C-005	DDT	<=0.004	<=0.004

ATTACHMENT 7

LABORATORY ANALYTICAL REPORTS

S. Lanham 565

WOHL Wisconsin Occupational Health Laboratory
979 Jonathon Drive
Madison, WI 53713-3226
Phone: (608) 263-6550
FAX: (608) 263-6551

Wisconsin State Laboratory of Hygiene
University of Wisconsin

July 29, 1996

STEVE LANHAM
DAMES & MOORE - PO WA8990
STE 700
7101 WISCONSIN AVE
BETHESDA, MD 20814-4870

Company #: 4897

PROJ FT DRUM

The results for the samples received by the lab on 07/23/96 are as follows:

Lab#	Field#	ug/sample	MG/M3	Analyte
589245	FD717BGB001	ND <2.0	ND <0.012	2,4-D
		ND <2.0	ND <0.012	2,4,5-T
589246	FD717BGB002	ND <2.0	ND <0.013	2,4-D
		ND <2.0	ND <0.013	2,4,5-T
589247	FD717BGB003	ND <2.0	ND <0.012	2,4-D
		ND <2.0	ND <0.012	2,4,5-T
589248	FD717BGB004	ND <2.0	ND <0.011	2,4-D
		ND <2.0	ND <0.011	2,4,5-T
589249	FD717BGB005	ND <2.0	ND <0.019	2,4-D
		ND <2.0	ND <0.019	2,4,5-T
589250	FD719BGB001	ND <2.0	ND <0.022	2,4-D
		ND <2.0	ND <0.022	2,4,5-T
589251	FD719BGB002	ND <2.0	ND <0.020	2,4-D
		ND <2.0	ND <0.020	2,4,5-T
589252	FD719BGB003	ND <2.0	ND <0.021	2,4-D
		ND <2.0	ND <0.021	2,4,5-T
589253	FD719BGB004	ND <2.0	ND <0.020	2,4-D
		ND <2.0	ND <0.020	2,4,5-T
589254	FD719BGB005	ND <2.0	ND <0.018	2,4-D
		ND <2.0	ND <0.018	2,4,5-T
589255	FD718BGB001	ND <2.0	ND <0.010	2,4-D
		ND <2.0	ND <0.010	2,4,5-T

WOHL Wisconsin Occupational Health Laboratory

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Madison, WI 53713-3226
Phone: (608) 263-6550
FAX: (608) 263-6551

Wisconsin State Laboratory of Hygiene

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PROJ FT DRUM

Lab#	Field#	ug/sample	MG/M3	Analyte
589256	FD718BGB002	ND <2.0	ND <0.010	2,4-D
		ND <2.0	ND <0.010	2,4,5-T
589257	FD718BGB003	ND <2.0	ND <0.011	2,4-D
		ND <2.0	ND <0.011	2,4,5-T
589258	FD718BGB004			No Analysis
589259	FD718BGB005			No Analysis

Comments: ACCIDENTLY COMBINED #589258 AND #589259 TOGETHER WHEN FILTERING THEM. NEITHER 2,4,5-T OR 2,4-D WERE DETECTED IN THE MIXTURE.

If you have any questions about these results, please call the lab at (800) 446-0403

Lyle Reichmann, CIH, Chemist Supervisor

LeRoy Dobson

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WOHL Wisconsin Occupational Health Laboratory

979 Jonathon Drive
Madison, WI 53713-3226
Phone: (608) 263-6550
FAX: (608) 263-6551

Wisconsin State Laboratory of Hygiene
University of Wisconsin

July 30, 1996

STEVE LANHAM
DAMES & MOORE - PO WA8990
STE 700
7101 WISCONSIN AVE
BETHESDA, MD 20814-4870

Company #: 4897

PROJ FT DRUM

The results for the samples received by the lab on 07/23/96 are as follows:

Lab#	Field#	ug/sample	MG/M3	Analyte
589260	FD718BGC001	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589261	FD718BGC002	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589262	FD718BGC003	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589263	FD718BGC004	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589264	FD718BGC005	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589265	FD719BGC001	<=.40	<=0.004	DDT
		<=.40	<=0.004	DDE
		<=.40	<=0.004	DDD
589266	FD719BGC002	<=.40	<=0.004	DDT
		<=.40	<=0.004	DDE
		<=.40	<=0.004	DDD
589267	FD719BGC003	<=.40	<=0.004	DDT
		<=.40	<=0.004	DDE
		<=.40	<=0.004	DDD

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WOHL Wisconsin Occupational Health Laboratory

979 Jonathon Drive
Madison, WI 53713-3226
Phone: (608) 263-6550
FAX: (608) 263-6551

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PROJ FT DRUM

Lab#	Field#	ug/sample	MG/M3	Analyte
589268	FD719BGC004	<=.40	<=0.004	DDT
		<=.40	<=0.004	DDE
		<=.40	<=0.004	DDD
589269	FD719BGC005	<=.40	<=0.004	DDT
		<=.40	<=0.004	DDE
		<=.40	<=0.004	DDD
589270	FD717BGC001	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589271	FD717BGC002	<=.40	<=0.003	DDT
		<=.40	<=0.003	DDE
		<=.40	<=0.003	DDD
589272	FD717BGC003	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589273	FD717BGC004	<=.40	<=0.002	DDT
		<=.40	<=0.002	DDE
		<=.40	<=0.002	DDD
589274	FD717BGC005	<=.40	<=0.004	DDT
		<=.40	<=0.004	DDE
		<=.40	<=0.004	DDD

If you have any questions about these results, please call the lab at (800) 445-0403

Steve Strebel, Organic Supervisor

Mark Hudzak

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WOHL Wisconsin Occupational Health Laboratory

979 Jonathon Drive
Madison, WI 53713-3226
Phone: (608) 263-6550
FAX: (608) 263-6551

Wisconsin State Laboratory of Hygiene

University of Wisconsin

Pesticide Analysis
Dames & Moore
July 29, 1996

Fifteen glass fiber filters were submitted to WOHL for DDT, DDE, and DDD analysis. The samples were desorbed in isooctane and analyzed by gas chromatography with electron capture detection (GC-ECD). This is an in-house developed method, a copy of which is included with the report.

Analysis results showed non detectable amounts of the above listed pesticides in all samples. All isomers of the compounds were analyzed, but none were found in detectable amounts.

Three spike samples (one each of 4,4-DDT, 4,4-DDE, and 4,4-DDD) were analyzed in the same manner as the samples to check recovery. Recoveries ranged from 95% to 133% indicating that desorption and analytical conditions were optimal for DDT, DDE, and DDD. The value to the right of the "<=" sign is the minimum quantitation limit for that pesticide based on the sample extraction and air volume for the sample. The "<=" sign stands for "less than or equal to".

If you have any questions about the results, please call the lab at (608) 263-6550.

Mark Hudziak _____
(analyst)

Steve Strebel _____
(analyst)

S. Lanham 579

WOHL Wisconsin Occupational Health Laboratory
979 Jonathon Drive
Madison, WI 53713-3226
Phone: (608) 263-6550
FAX: (608) 263-6551

Wisconsin State Laboratory of Hygiene
University of Wisconsin

July 26, 1996

STEVE LANHAM
DAMES & MOORE - PO WA8990
STE 700
7101 WISCONSIN AVE
BETHESDA, MD 20814-4870

Company #: 4897

PROJ FT DRUM

The results for the samples received by the lab on 07/23/96 are as follows:

Lab#	Field#	ug/sample	MG/M3	Analyte
589230	FD719BGA001	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589231	FD719BGA002	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589232	FD719BGA003	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589233	FD719BGA004	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589234	FD719BGA005	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589235	FD718BGA001	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589236	FD718BGA002	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589237	FD718BGA003	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589238	FD718BGA004	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589239	FD718BGA005	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589240	FD717BGA001	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589241	FD717BGA002	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589242	FD717BGA003	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589243	FD717BGA004	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists
589244	FD717BGA005	ND <0.38	ND <0.001	Lead, Inorganic Fume & Mists

581

WOHL Wisconsin Occupational Health Laboratory

979 Jonathon Drive
Madison, WI 53713-3226
Phone: (608) 263-6550
FAX: (608) 263-6551

Wisconsin State Laboratory of Hygiene University of Wisconsin

PROJ FT DRUM

If you have any questions about these results, please call the lab at (800) 446-0403

Lyle Reichmann, CIH, Chemist Supervisor

Susan Percy

583

Appendix C

Certificate of Completion

This Certifies That

Kenneth E. Fischer

Has Successfully Completed 8-Hour OSHA Refresher Training Per 29 CFR 1910.120, Including DOT HM-126F Training

SEAL

Presented by:
Dames & Moore

Training Director

Bethesda, MD
February 14, 1996

585

American Red Cross

This certifies that

Kenneth Fischer

has completed the requirements for

ADULT CPR

sponsored by

Dames & Moore

MCC/ARC

Date completed

03/21/96

American Red Cross

This certifies that

Kenneth Fischer

has completed the requirements for

STANDARD FIRST AID

sponsored by

Dames & Moore

MCC/ARC

Date completed

03/21/96

589

MEDICAL SURVEILLANCE NOTIFICATION
Dames & Moore Health Services Group
Denver, CO

Employee Name: Ken Fischer Exam Date: 10/18/94

Company: Dames & Moore Location: WAS

Job Title: Associate

Exam Type: Biennial, CXR, ECG

This individual's medical status was reviewed according to 29 CFR 1910.120, 1910.1001, 1910.134 and:

X Is qualified for full participation in hazardous waste or asbestos site work when conducted under the conditions of adequate training and a health and safety plan.

___ Is qualified at this time for participation in hazardous waste or asbestos site work when conducted under the conditions of adequate training and a health and safety plan. These work modifications are required.

___ Is NOT QUALIFIED at this time for full participation in hazardous waste or asbestos work. See below.

X Qualified to use a respirator.

___ NOT QUALIFIED to use a respirator.

___ Follow-up under Dames & Moore account.

___

Gary R. Krieger MD/M

11-1-94
Date

Gary R. Krieger, MD, MPH, DABT
Dames & Moore Medical Director

THE INFORMATION PROVIDED ON THIS FORM WILL BE CONSIDERED INVALID ON 10-18-96
For information needed after the expiration date, contact the Dames & Moore Medical Surveillance Group, Denver, Colorado (303) 299-7978

Supervisor: Josef Udwari
Manager:
Division Health & Safety Manager: Ken Fischer
Office Safety Coordinator: Rudy Scipio

MEDICAL SURVEILLANCE NOTIFICATION
Dames & Moore Health Services Group
Denver, CO

Employee Name: Kenneth Fischer Exam Date: 10/30/96

Company: Dames & Moore Location: Mayo Scottsdale, AZ

Job Title: Industrial hygienist

Exam Type: Executive + HazMat exam

This individual's medical status was reviewed according to 29 CFR 1910.120, 1910.1001, 1910.134 and:

✓ Is qualified for full participation in hazardous waste or asbestos site work when conducted under the conditions of adequate training and a health and safety plan.

___ Is qualified at this time for participation in hazardous waste or asbestos site work when conducted under the conditions of adequate training and a health and safety plan. These work modifications are required.

___ Is NOT QUALIFIED at this time for full participation in hazardous waste or asbestos work. See below.

✓ Qualified to use a respirator.

___ NOT QUALIFIED to use a respirator.

___ Follow-up under Dames & Moore account.

___ Follow-up with personal physician under personal health insurance.

✓ Qualified for non-hazardous work requiring hearing protection.

10/31/96 [signature]
Date Signature of Physician

THE INFORMATION PROVIDED ON THIS FORM WILL BE CONSIDERED INVALID ON 10/30/98 unless earlier re-examination is required by government regulation.

For information needed after the expiration date, please contact the Dames & Moore Medical Surveillance Group, Denver, Colorado (303) 299-7978.

593

DAMES & MOORE
RESPIRATOR FIT TEST RECORD

Printed Name Ken Fischer **Date** 2/21/96

Respirator: **Make** MSA

Model 480259

Size Medium

Half Face ? Yes ___ **No** ✓; **Full Face? Yes** ✓ **No** ___

```
Ready
PORTACOUNT PLUS FROM V1.4
ALL RIGHTS RESERVED

[illegible]
[illegible] = 4 sec.
[illegible]
[illegible]

[illegible] 2 = [illegible] sec.
[illegible] 3 = [illegible] sec.
[illegible]
[illegible] 5 = [illegible] sec.
[illegible]
[illegible] = [illegible]
Ready
NEW TEST  PASS =   100
Ambient        11100 #/cc
Mask            2.68 #/cc
Ambient        10900 #/cc
FF    1         4290 PASS
Mask            2.23 #/cc
Ambient        11100 #/cc
FF    2         4930 PASS
Mask            1.96 #/cc
Ambient        10500 #/cc
FF    3         5720 PASS
Mask            1.66 #/cc
Ambient        10600 #/cc
FF    4         6290 PASS
Mask            1.28 #/cc
Ambient        10400 #/cc
FF    5         8220 PASS
Mask            1.01 #/cc
Ambient        10200 #/cc
FF    6        10100 PASS
Overall FF      5950 PASS
NEW TEST  PASS =   100
```

Signature of Person Conducting Test Kyle Bosmans

HAZMAT
TRAINING ▲ INFORMATION ▲ SERVICES ▲ INC

CERTIFICATE OF COMPLETION

This is to certify that

STEPHEN LANHAM

has successfully completed

HAZARDOUS MATERIALS SITE WORKER COURSE (40-HOUR)

at

HAZMAT T.I.S.I.; COLUMBIA, MARYLAND

Leonard G Deanarino
President

Richard Ashfield
Chief Executive Officer

September 14 - 18, 1992
C92-1882

595

Certificate of Completion

This Certifies That

Stephen Lanham
216-78-9770

Has Successfully Completed An OSHA 8-Hour Hazardous Waste Refresher Course, Including Bloodborne Pathogens and DOT HM-126F Training

SEAL

Bethesda, Maryland
June 12, 1996

Presented by:
Dames & Moore

Kenneth E. Fison/SCL
Trainer

597

Certificate of Completion

This Certifies That

Stephen C. Lanham

has completed an 8–hour OSHA Supervisor's Training in accordance with 29 CFR 1910.120

SEAL

Bethesda, Maryland
December 11, 1992

Presented by:

Dames & Moore

Training Director

599

CERTIFICATE OF RECOGNITION

STEPHEN LANHAM

HAS ATTENDED
A
MEDIC FIRST AID® COURSE
(CPR INCLUSIVE)

☒ CARE INITIATOR COURSE™ (CIC) ☐ BASIC
☐ ESSENTIAL ☐ RETRAINING

DATE 9-20-95

Your contribution of time and effort to become trained
in basic emergency skills
increases the world of understanding and caring.

EMP INTERNATIONAL

MEDIC FIRST AID® FAMILY OF PROGRAMS

EMP America™

AMERICAN FIRST AID
ORGANIZATION

LUIS DIAZ
INSTRUCTOR

601

603

MEDICAL SURVEILLANCE NOTIFICATION
Dames & Moore Health Services Group
Denver, CO

Employee Name: Steve Lanham Exam Date: 05/31/96

Company: Dames & Moore Location: WAS

Job Title: Asst. Env. Scientist

Exam Type: Asbestos

This individual's medical status was reviewed according to 29 CFR 1910.120, 1910.1001, 1910.134 and:

___ Is qualified for full participation in hazardous waste or asbestos site work when conducted under the conditions of adequate training and a health and safety plan.

_X_ Is qualified at this time for participation in hazardous waste or asbestos site work when conducted under the conditions of adequate training and a health and safety plan. These work modifications are required.
Must wear hearing protection in high noise areas

___ Is NOT QUALIFIED at this time for full participation in hazardous waste or asbestos work. See below.

_X_ Qualified to use a respirator.

___ NOT QUALIFIED to use a respirator.

___ Follow-up under Dames & Moore account.

___ Follow-up with personal physician under personal health insurance.

___ Qualified for non-hazardous work requiring hearing protection.

7-8-96 Gary R. Krieger MD
Date Gary R. Krieger, MD, MPH, DABT
Dames & Moore Medical Director

THE INFORMATION PROVIDED ON THIS FORM WILL BE CONSIDERED INVALID ON 5-31-97
For information needed after the expiration date, contact the Dames & Moore Medical Surveillance Group, Denver, Colorado (303) 299-7978

Supervisor: Jeff Parks
Manager:
Division Health & Safety Manager: Ken Fischer
Office Safety Coordinator: Rudy Scipio

605

DAMES & MOORE
RESPIRATOR FIT TEST RECORD

Printed Name Steve Lanham **Date** 7/10/96

Respirator: Make MSA SILICON

Model 480259

Size MEDIUM

Half Face ? Yes ___ **No** ✓; **Full Face? Yes** ✓ **No** ___

```
DIP switch     =[0111111]
Ready
NEW TEST  PASS =   100
Ambient        18400 #/cc
Mask            0.76 #/cc
Ambient        18200 #/cc
FF    1        24000 PASS
Mask            0.44 #/cc
Ambient        16500 #/cc
FF    2        39400 PASS
Mask            0.34 #/cc
Ambient        16700 #/cc
FF    3        48500 PASS
Mask            0.45 #/cc
Ambient        17600 #/cc
FF    4        38100 PASS
Mask            0.22 #/cc
Ambient        16100 #/cc
FF    5        76400 PASS
Mask            0.69 #/cc
Ambient        15100 #/cc
FF    6        22500 PASS
Overall FF     35000 PASS
```

Signature of Person Conducting Test Kyle Bosmans

WORKER/VISITOR ACKNOWLEDGEMENT FORM

PROJECT NAME: Interim Remedial Action, Building T4002, Fort Drum, New York
CONTRACT NO.: DACW41-94-9009, D.O. 0002
CONTRACTOR'S NAME: R&R International, Inc.
[EMPLOYEE'S] [VISITOR'S] NAME: Peter Weilersbacher

The contract for the above project requires that you be provided with and complete formal and site-specific training; that you be supplied with proper personnel protective equipment including respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE

Name _____ Date 8-12-96

FORMAL TRAINING: I have completed the following formal training courses that meet OSHA's requirements:

	Date Completed
40 hour	1989 Dec 8
8 hour supervisory	1989 Dec 8
8 hour refresher	July 1995
First Aid	4-9-96
Cardiopulmonary Resuscitation	4-9-96

SITE-SPECIFIC TRAINING: I have been provided and have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training. _____

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in [the Contractor's] [my Employer's] Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy. _____

CERTIFICATE (cont'd)

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the R&R International's [my employer's] Respiratory Program and have received a satisfactory fit. [I have been assigned my individual respirator.] I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time. _____

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months which was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

✓ were no limitation to performing the required work tasks;

___ were identified physical limitations to performing the required work tasks.

Date medical exam completed: 12-19-96

[Employee's] [Visitor's] Signature: _____ Date: 8-12-96

Printed Name: Peter Wellersbacher Social Security Number: 172-40-4586

Contractor's Site Safety and health Officer Signature: Stephen C. Lanham

Date: 8-12-96 Printed Name: Stephen Lanham

Social Security Number: 216-78-9770

611

PROJECT HEALTH & SAFETY PLAN
PLAN ACCEPTANCE FORM

INSTRUCTIONS: This form is to be completed by each person to work on the subject project work site and returned to the Site Safety & Health Manager prior to site activities.

Project Name: Building T4002, Fort Drum, New York

Date: 8-12-96

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

Signed	Signed
Peter Welsbacher	
Print Name	Print Name
RIR International	
Company	Company
8-12-96	
Date	Date
Signed	Signed
Print Name	Print Name
Company	Company
Date	Date

HST

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Peter Weilersbacher

has successfully completed 40 hours of instruction in

WASTE SITE WORKER PROTECTION

Prepared and conducted by
Hygiene, Safety and Training Inc.
to comply with OSHA 1910.120(e)(2)

Jack M. Peterson
Jack M. Peterson
CSP, CIH

December 8, 1989
Date of Completion

613

HST

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

Peter G. Weilerspacher

has successfully completed 8 hours of instruction in

SUPERVISORY TRAINING

Prepared and conducted by
Hygiene, Safety and Training Inc.
to comply with OSHA 1910.120(e)(3)

Jack M. Peterson
CSP, CIH

December 8, 1989
Date of Completion

615

R & R International, Inc.

CERTIFICATE OF TRAINING

This certifies that

PETE WEILERSBACHER

has successfully completed an 8-hour annual refresher course of instruction in
HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE
(HAZWOPER) (29 CFR 1910.120(e)(8))
prepared and conducted by instructor:
P. David Gura
R&R International, Inc.
Akron, Ohio

P. David Gura
Director of Safety, Health, and
Environmental Compliance

G.M. Ruan, P.E.
President

June 19, 1995
Date Certificate Awarded

R & R International, Inc.

CERTIFICATE OF TRAINING

This certifies that

PETE WEILERSBACHER

has successfully completed an 8-hour annual refresher course of instruction in
HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE
(HAZWOPER) (29 CFR 1910.120(e)(8))

prepared and conducted by instructor:
P. David Gurn
R&R International, Inc.
Akron, Ohio

P. David Gurn
Director of Safety, Health, and Environmental Compliance

G.M. Reis, P.E.
President

July 19, 1995
Date Certificate Awarded

619

621

CERTIFICATE OF RECOGNITION

Peter Weilersbacher

HAS ATTENDED
A
MEDIC FIRST AID® COURSE
(CPR INCLUSIVE)

☐ CARE INITIATOR COURSE™ (CIC) ☒ BASIC
☐ ESSENTIAL ☐ RETRAINING

DATE April 9, 1996

Your contribution of time and effort to become trained
in basic emergency skills
increases the world of understanding and caring.

American First Aid
ORGANIZATION

Beth Yeiser
INSTRUCTOR

623

BUSINESS FIT

Post-it® Fax Note 7671	Date 1/23 ▸ 6
To muhamed	From Pete
Co./Dept.	Co.
Phone #	Phone #
Fax #	Fax #

January 11, 1996

Sharon Quinn
R & R International
300 Old Pond Road
Suite 206
Bridgeville, PA 15017

Dear Sharon:

Peter Wielersbacher was examined at Ohio Valley General Hospital on December 19, 1995 in conjunction with a physical examination for R & R International.

He was found fit for duty.

If we can be of any assistance to you, please do not hesitate to contact us at 412-777-6369.

Sincerely,

Teresa Silvaggio, M.D., M.P.H.
Medical Director
BusinessFit

/ksw

Pittsburgh's
Ohio Valley
General Hospital

Heckel Road
Kennedy Township
McKees Rocks,
Pennsylvania
15136

(412) 777-6369
FAX (412) 777-6363

Your Partner
In Keeping
America's
Workers
Healthy

RECEIVED
JAN 17 1996
R & R INTERNATIONAL
PITTSBURGH OFFICE

WORKER/VISITOR ACKNOWLEDGEMENT FORM

PROJECT NAME: Interim Remedial Action, Building T4002, Fort Drum, New York
CONTRACT NO.: DACW41-94-9009, D.O. 0002
CONTRACTOR'S NAME: R&R International, Inc.
[EMPLOYEE'S] [VISITOR'S] NAME: Mohammad Husain

The contract for the above project requires that you be provided with and complete formal and site-specific training; that you be supplied with proper personnel protective equipment including respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE

Name	Date
Mohammad Husain	11-21-96

FORMAL TRAINING: I have completed the following formal training courses that meet OSHA's requirements:

	Date Completed
40 hour	5/93
8 hour supervisory	—
8 hour refresher	9/95, 7/96
First Aid	10/95
Cardiopulmonary Resuscitation	10/95

SITE-SPECIFIC TRAINING: I have been provided and have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training. ✓

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in [the Contractor's] [my Employer's] Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy. ✓

CERTIFICATE (cont'd)

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the R&R International's [my employer's] Respiratory Program and have received a satisfactory fit. [I have been assigned my individual respirator.] I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time. ✓

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months which was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

✓ were no limitation to performing the required work tasks;

___ were identified physical limitations to performing the required work tasks.

Date medical exam completed: 10/95

[Employee's] [Visitor's] Signature: [signature] Date: 11/4/96

Printed Name: MOHAMMAD HUSAIN Social Security Number: 442-84-9843

Contractor's Site Safety and health Officer Signature: Stephen C. Lan

Date: 11-21-96 Printed Name: Stephen C. Lanham

Social Security Number: 216-78-9770

PROJECT HEALTH & SAFETY PLAN
PLAN ACCEPTANCE FORM

INSTRUCTIONS: This form is to be completed by each person to work on the subject project work site and returned to the Site Safety & Health Manager prior to site activities.

Project Name: Building T4002, Fort Drum, New York

Date: 8-14-96

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

Signed	Signed
Mohammad Husain	
Print Name	Print Name
R+R INT.	
Company	Company
8/14/96	
Date	Date
Signed	Signed
Print Name	Print Name
Company	Company
Date	Date

631

JOHNS HOPKINS
UNIVERSITY

Center for Occupational and Environmental Health
5501 Hopkins Bayview Circle
Baltimore, MD 21224
Phone (410) 550-2323
Fax (410) 550 3355

RECEIVED
10
COLUMBIA

MANAGEMENT MEDICAL SURVEILLANCE REPORT
OSHA HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE STANDARD

Patient: Husain, Mohammad Date of Visit: 10 / 13 / 95

Type of Evaluation: Pre-placement/Initial____ Periodic ✓
Separation___ Other___

✓ There were no occupationally related medical conditions which would place the employee at increased risk of material impairment of his/her health.

___ The following occupationally related medical conditions may place the employee at an increased risk of material impairment of his/her health:

_____

_____

✓ Non-occupational conditions were detected that do not ✓ / do ___ restrict normal work activities as follows:

_____

_____

The employee has been informed by separate letter of the results of this evaluation.
We recommend a re-evaluation in: one year / two years ___ five years ___

The medical evaluation indicates that this employee is: fit for duty without restriction ✓

fit for duty with restrictions: _____

not fit for duty because _____

If you have any questions or concerns, please call or write.

John Parkerson, M.D. Virginia Weaver, M.D. 10 / 26 / 95 Date

Clifford Mitchell, M.D. Brian Schwartz, M.D.

Certificate Of Training

awarded to

MOHAMMED HUSAIN

For successfully completing an 8 hour refresher course in
Hazardous Waste Operations and Emergency Response,
(HAZWOPER), as required by OSHA 29CFR 1910.120 (e).

prepared and conducted by instructor:
P.David Gura

R&R International Inc.

July 3, 1996

P. David Gura
Manager Health/Safety QA

Raymond Meyo
President, COO

633

Certificate Of Training

awarded to

Mohammad Husain

For successfully completing an 8-hour annual refresher course of instruction in
HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE
(HAZWOPER 29 CFR 1910.120(e)(8))

presented by

R&R International, Inc.

September 25, 1995

P. David Gura
SHE Director

G. M. Rana
President

635

R&R
INTERNATIONAL, INC.

CERTIFICATE OF TRAINING

THIS CERTIFIES THAT

MOHAMMED HUSAIN

has successfully completed a 40-Hour OSHA course in

HAZARDOUS WASTE MATERIALS OPERATIONS TRAINING

prepared and conducted by
R&R International, Inc.
Akron, Ohio
May 7-9, 1993

Instructor:
Kimberly McCutcheon

P. David Cura
Regulatory Compliance Officer

G. M. Rana, P.E.
President

637

WORKER/VISITOR ACKNOWLEDGEMENT FORM

PROJECT NAME: Interim Remedial Action, Building T4002, Fort Drum, New York
CONTRACT NO.: DACW41-94-9009, D.O. 0002
CONTRACTOR'S NAME: R&R International, Inc.
[EMPLOYEE'S] [VISITOR'S] NAME: Gary Ray

The contract for the above project requires that you be provided with and complete formal and site-specific training; that you be supplied with proper personnel protective equipment including respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE

Name: Gary Ray

Date: 8/11/96

FORMAL TRAINING: I have completed the following formal training courses that meet OSHA's requirements:

	Date Completed
40 hour	4/89
8 hour supervisory	7/89
8 hour refresher	7/96
First Aid	6/95
Cardiopulmonary Resuscitation	10/95

SITE-SPECIFIC TRAINING: I have been provided and have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training. GR

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in [the Contractor's] [my Employer's] Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy. _____
GR

CERTIFICATE (cont'd)

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the R&R International's [my employer's] Respiratory Program and have received a satisfactory fit. [I have been assigned my individual respirator.] I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time. SR

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months which was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

✓ were no limitation to performing the required work tasks;

___ were identified physical limitations to performing the required work tasks.

Date medical exam completed: 12/22/95

[Employee's] [Visitor's] Signature: [signature] Date: 8/11/96

Printed Name: GARY RAY Social Security Number: 214-28-8516

Contractor's Site Safety and health Officer Signature: Steph C. Lanham

Date: 8/11/96 Printed Name: Stephen C. Lanham

Social Security Number: 216-78-9770

PROJECT HEALTH & SAFETY PLAN
PLAN ACCEPTANCE FORM

INSTRUCTIONS: This form is to be completed by each person to work on the subject project work site and returned to the Site Safety & Health Manager prior to site activities.

Project Name: Building T4002, Fort Drum, New York

Date: _____

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

Signed	Signed
Gary Ray Print Name	Print Name
R&R International Inc Company	Company
8/11/96 Date	Date
Signed	Signed
Print Name	Print Name
Company	Company
Date	Date

O.H. MATERIALS CORP.

A Subsidiary of Environmental Treatment and Technologies Corp.

The Environmental Services Company

CERTIFICATE OF COMPLETION

This is to certify that

Gary E. Ray

Has successfully completed the following training:

OSHA 40-HR HAZARDOUS WASTE WORKER TRNG.
29 CFR 1910.120(e)

Date 4/7/89

President

Manager, Training & Development

645

R & R International, Inc.

CERTIFICATE OF TRAINING

This certifies that

GARY E. RAY

has successfully completed an 8-hour annual refresher course of instruction in
HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE
(HAZWOPER) (29 CFR 1910.120(e)(8))

prepared and conducted by instructor:

P. David Gura
R&R International, Inc.
Akron, Ohio

P. David Gura
Director of Safety, Health, and
Environmental Compliance

G.M. Rana, P.E.
President

June 23, 1995
Date Certificate Awarded

647

Certificate Of Training

awarded to

GARY RAY

For successfully completing an 8 hour refresher course in
Hazardous Waste Operations and Emergency Response,
(HAZWOPER), as required by OSHA 29CFR 1910.120 (e).

prepared and conducted by instructor:
P.David Gura

R&R International Inc.

July 3, 1996

P. David Gura
P. David Gura
Manager Health/Safety QA

Raymond D. Meyo
Raymond Meyo
President, COO

649

651

SPECTRACARE
OCCUPATIONAL HEALTH SERVICES

SUITE 202
324 E. MAIN STREET
NEWARK, DE 19711
TEL: (302) 738-0193
FAX: (302) 738-6613

January 14, 1996

Mr. Terrill Stammler, Jr.
R & R International, Inc.
37 N. Philadelphia Blvd.
Aberdeen, MD 21001

RE: RAY, GARY
Date of Exam: 12-22-95

Dear Mr. Stammler:

Gary Ray had his Annual Physical Examination at SpectraCare on 12-22-95. The results of this examination reveal him to be in good health. He is found to be medically qualified to perform the stated work assignment. He is also certified to wear respiratory protection. There is no evidence of any occupationally related disease.

If I can be of any further assistance, please do not hesitate to contact me.

Sincerely,

Jay S. Feldstein, D.O., FACPM
Medical Director

JSF/vrs

SAFETY AND HEALTH FORMS

SHF-5. QUALITATIVE FIT TEST RECORD

Project Location: Aberdeen Md. R&R International Inc.

Project Site: _____ Project No.: _____

This record represents a factual account of a qualitative Fit-Test conducted on the named individual, and specifies the type of test which was conducted.

Name: Gary Ray

Signature: [signature] **Date:** 7/3/96

Location: _____

Name of Fit Tester: P. DAVID GURA

Signature of Fit Tester: P. David Gura **Date:** 7/3/96

Qualifications of Fit Tester: Instructor

	Irritant Fume
Type of Mask: Full Face **Manufacturer:** North **Model:** _ **Size:** med.	Pass/Fail
Type of Mask: _____ **Manufacturer:** _____ **Model:** _____	Pass/Fail
Type of Mask: _____ **Manufacturer:** _____ **Model:** _____	Pass/Fail

Comments: _____

Note: This Fit-Test was conducted according to the standard prescribed in 29 CFR 1910.1025.

WORKER/VISITOR ACKNOWLEDGEMENT FORM

PROJECT NAME: Interim Remedial Action, Building T4002, Fort Drum, New York
CONTRACT NO.: DACW41-94-9009, D.O. 0002
CONTRACTOR'S NAME: R&R International, Inc.
[EMPLOYEE'S] [VISITOR'S] NAME: Rick Bailey

The contract for the above project requires that you be provided with and complete formal and site-specific training; that you be supplied with proper personnel protective equipment including respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE

Name _____ Date 8/14/96

FORMAL TRAINING: I have completed the following formal training courses that meet OSHA's requirements:

	Date Completed
40 hour	Feb 93
8 hour supervisory	
8 hour refresher	Feb 96
First Aid	Nov 96
Cardiopulmonary Resuscitation	Nov 96

SITE-SPECIFIC TRAINING: I have been provided and have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training. _____

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in [the Contractor's] [my Employer's] Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy. _____

CERTIFICATE (cont'd)

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the R&R International's [my employer's] Respiratory Program and have received a satisfactory fit. [I have been assigned my individual respirator.] I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time. _____

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months which was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

___ were no limitation to performing the required work tasks;

✓ were identified physical limitations to performing the required work tasks.

Date medical exam completed: Aug 96

[Employee's] [Visitor's] Signature: _____ Date: 8/14/96

Printed Name: Rick Bailey Social Security Number: 492-66-7534

Contractor's Site Safety and health Officer Signature: Stephen C. Lanham

Date: 8/14/96 Printed Name: Stephen C. Lanham

Social Security Number: 216-78-9770

PROJECT HEALTH & SAFETY PLAN
PLAN ACCEPTANCE FORM

INSTRUCTIONS: This form is to be completed by each person to work on the subject project work site and returned to the Site Safety & Health Manager prior to site activities.

Project Name: Building T4002, Fort Drum, New York

Date: _____

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

Signed	Signed
Rick Bailey	
Print Name	Print Name
R&R International	
Company	Company
Date	Date
Signed	Signed
Print Name	Print Name
Company	Company
Date	Date

Certificate Of Training

awarded to

RICK BAILEY

For successfully completing an 8 hour refresher course in Hazardous Waste Operations and Emergency Response, (HAZWOPER), as required by OSHA 29CFR 1910.120 (e).

prepared and conducted by instructor:
P.David Gura
R&R International Inc.

February 29, 1996

P. David Gura
Manager Health/Safety QA

Raymond Meyo
President, COO

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JOHNS HOPKINS
UNIVERSITY

Center for Occupational and Environmental Health

5501 Hopkins Bayview Circle
Baltimore, MD 21224
(410) 550-2322 / FAX (410) 550-3355

Management Report of Duty Status

Patient: Bailey, Neil Date of Exam 8/22/96

Type of Evaluation: Pre-placement/Initial ___ Periodic ✓
Separation ___ Other ___

Medically fit to perform job duties: Without Restriction ___
Not Medically Fit for Duty ___

Fit for duty with the following restrictions: Medical Conditions, see below

Fit for Respirator Use: Without Limitations ___ With Limitations ___

No: ✓ Not Applicable ___

Fit to Wear Insert Type Hearing Protection: Yes ___ No ___

Audiogram is : Normal ___ Abnormal ___ Not Applicable ___

Audiogram shows 10dB or greater shift from baseline: Yes ___ No ___ Not applicable ___

PPD - Test for Tuberculosis: Negative ___ Positive ___
Employee will not ___ / will ___ require further evaluation/treatment for tuberculosis.
Employee did not return for PPD reading or notify the COEH of test result ___

Comments/Recommendations: Medical Conditions, unrelated to work, that prevent present Respirator and Type A protective Equipment use

The employee has been informed by separate letter of the results of the examination.

Anita M Holloway MD
PHYSICIAN'S NAME (PRINT)

8/30/96
DATE

Anita M Holloway MD
PHYSICIAN'S SIGNATURE

391-5567

WORKER/VISITOR ACKNOWLEDGEMENT FORM

PROJECT NAME: Interim Remedial Action, Building T4002, Fort Drum, New York
CONTRACT NO.: DACW41-94-9009, D.O. 0002
CONTRACTOR'S NAME: R&R International, Inc.
[EMPLOYEE'S] [VISITOR'S] NAME: Donald Warren Troslow

The contract for the above project requires that you be provided with and complete formal and site-specific training; that you be supplied with proper personnel protective equipment including respirators; that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you.

I HAVE READ, UNDERSTAND AND AGREE TO FOLLOW THE SITE SAFETY AND HEALTH PLAN FOR THIS SITE

Name	Date
Donald Warren Troslow	Sept 11, 1996

FORMAL TRAINING: I have completed the following formal training courses that meet OSHA's requirements:

	Date Completed
o 40 hour	9-15-89
8 hour supervisory	—
o 8 hour refresher	9-5-96
o First Aid	— 11-15-96
o Cardiopulmonary Resuscitation	— 11-15-96

SITE-SPECIFIC TRAINING: I have been provided and have completed the site-specific training required by this Contract. The Site Safety and Health Officer conducted the training. DWT

RESPIRATORY PROTECTION: I have been trained in accordance with the criteria in [the Contractor's] [my Employer's] Respiratory Protection program. I have been trained in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair policy. DWT

CERTIFICATE (cont'd)

RESPIRATOR FIT-TEST TRAINING: I have been trained in the proper selection, fit, use, care, cleaning, and maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the R&R International's [my employer's] Respiratory Program and have received a satisfactory fit. [I have been assigned my individual respirator.] I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time. _____

MEDICAL EXAMINATION: I have had a medical examination within the last twelve months which was paid for by my employer. The examination included health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made determination regarding my physical capacity to perform work tasks on the project while wearing protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's industrial hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

✓ were no limitation to performing the required work tasks;

___ were identified physical limitations to performing the required work tasks.

Date medical exam completed: 9-5-96 Sept 5, 1995

[Employee's] [Visitor's] Signature: _____ Date: Sept 9, 1996

Printed Name: Donald Warren Troslow Jr Social Security Number: 218-72-1689

Contractor's Site Safety and health Officer Signature: _____

Date: 9-11-96 Printed Name: Stephen Lanham

Social Security Number: 216-78-9770

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PROJECT HEALTH & SAFETY PLAN
PLAN ACCEPTANCE FORM

INSTRUCTIONS: This form is to be completed by each person to work on the subject project work site and returned to the Site Safety & Health Manager prior to site activities.

Project Name: Building T4002, Fort Drum, New York

Date: SEPT 11, 1996

I represent that I have read and understand the contents of the above Plan and agree to perform my work in accordance with it.

[signature]	
Signed	Signed
Donald Warren Truslow	
Print Name	Print Name
R&R International	
Company	Company
SEPT 11, 1996	
Date	Date
Signed	Signed
Print Name	Print Name
Company	Company
Date	Date

Certificate Of Training

awarded to

Donald Truslow

For successfully completing an 8 hour refresher course in
Hazardous Waste Operations and Emergency Response.
(HAZWOPER), as required by OSHA 29CFR 1910.120 (e).

prepared and conducted by instructor:
P. David Gura

R&R International Inc.

September 5, 1996

P. David Gura
Manager Health/Safety QA

Raymond Mayo
President, COO

Concentra Medical Centers

324 E. Main St.Suite 202 Newark, DE 19711
Phone: (302) 738-0103 Fax: (302) 738-6612

Service Date: 09/04/96

Non-Injury Status Report

Patient: Truslow, Donald W.
SSN: 218-72-1684
Address: 12 Meadowood dr
Conowingo, MD 21918
Home: (410) 378-4264
Work: **Ext.:**

Employer: R&R
Address: 9123 Old Annapolis
Columbia, MD 21045
Auth. by:

Contact: Anita Richey
Role: Primary contact
Phone: (410) 992-5200 **Ext.:**
Fax:

This Visit:

Time In: 02:20 pm **Time Out:** 04:49 pm

Custom Protocol

Mercury (Blood)
Non Regulated UDS
PCB, (Serum)
Pulmonary Function Test
Vision Titmus
Blood Lead ZPP
Chem 20, CHD,CBC,UA
Cholinesterase RBC, (Serum)
Hazardous Material Physical (HazMat)
Arsenic (Blood)
Lymes Screen

Result Status:

No Status Required

Remarks:

675

CERTIFICATION FORM OHM-OSHA-01-TCF

O.H. MATERIALS CORP.
OSHA 40-HOUR SAFETY TRAINING COURSE
29 CFR 1910.120

NAME: Donald W Troslow Jr EMPLOYEE NO.: 7911

DIVISION ASSIGNED TO: Maryland Division JOB TITLE: RT

CLASS NO.: 89-74 DATES: 9/11/89 - 9/15/89

AGE: 21 EDUCATION LEVEL: 12 - College

TRAINING SUBJECTS	DATE	INSTRUCTOR
INTRODUCTION & REGULATIONS	9/11-15/89	TB+GB
TOXICOLOGY - HAZARDOUS MATERIALS (PART I)		
RESPIRATORY PROTECTION		
FIT TEST A.O. 7 Step		
RESPIRATOR TYPE A.O. Commander		
PROTECTIVE CLOTHING		
TOXICOLOGY - (PART II)		
DECONTAMINATION & WORK ZONES		
PROTECTIVE EQUIPMENT FAMILIARIZATION		
LEVEL "C"		
LEVEL "B" SCBA		
EGRESS & AIR LINE		
LEVEL "A" DEMONSTRATION		
RESPIRATOR CLEANING		
SITE SAFETY		
CHEMICAL SAFETY		
LEAK SEALING		
CONFINED SPACE ENTRY		
MONITORING INSTRUMENTS		
FIRST AID & HEALTH FACTORS		
MSDS & LABELING		
ELECTRICAL SAFETY		
EYE SAFETY		
FIRE PROTECTION		
BASIC RESPONSE PROCEDURES		
PROPER LIFTING TECHNIQUES		
SLIPS, TRIPS & FALLS		
HEARING SAFETY		
GENERAL SAFETY		
TEST SCORE 93	9/11-15/89	TB+GB

I HAVE RECEIVED THE ABOVE TRAINING ON THE DATES SHOWN.

D W Troslow
STUDENT SIGNATURE

SPECIAL SKILLS: First Aid, Health Factors, Fire Company Exp Fire Rescue ~~[illegible]~~ School. General Safety. Fire Protection given by Fire School.

Concentra Medical Centers

Respiratory Questionnaire And Examination Record

Service Date: 09/04/96 677

Patient: Truslow, Donald W. Address: 12 Meadowood dr
218-72-1684
L 07/24/68 Conowingo, MD 21918
Gender: M Phone: (410) 378-4264

Race: ASIAN (Asiatico) BLACK (negro) HISPANIC (Hispano) INDIAN (Indio) WHITE (blanco) OTHER (otro)

OCCUPATIONAL HISTORY (ANTECEDENTES LABORALES)

Have you worked in:
(Ha trabajado anteriomente en:)

- A foundry (Una fundidora) — Yes ~~No~~
- Stone or mineral mining, quarry, or processing (Minas o excavaciones procesamiento de) — Yes ~~No~~
- Asbestoes milling or processing (Molinos de minerales) — Yes ~~No~~
- Gas or chemical (Vapores o gases químicos) — ~~Yes~~ No
- Length of exposure (years) of each "Yes" 1 yrs (Periodo de tiempo por el cual estuvo usted expuesto)

MEDICAL HISTORY:
(HISTORIA MEDICA)

Do You Wear:
- Glasses — Yes ~~No~~
- Contacts — Yes ~~No~~

Have you ever had: (Ha tenido o padecido de:)
- Epilepsy (Epilepsia) — Yes ~~No~~
- Diabetes (Diabetes) — Yes ~~No~~
- Cancer (Cancer) — Yes ~~No~~
- Heat Exhaustion (Exhausto debido a altas temperaturas) — Yes ~~No~~
- art Disease (Enfermedades del corazon) — Yes ~~No~~

CHEST COLD/CHEST ILLNESS
(ESFRIADOS/ENFERMEDADES DEL PECHO)

Have you ever had:
(Ha tenido o padecido de:)
- Asthma (Asma) — Yes ~~No~~
- Allergies (Alergias) — Yes ~~No~~
- Chest Surgery (Cirugia en el pecho) — Yes ~~No~~
- Tuberculosis (Tuberculosis) — Yes ~~No~~
- Lung Problems (Problemas en los pulmones) — Yes ~~No~~
- If yes, name _____ (Si contestó afirmativamente, explique)

Do you:
- Cough first thing in the morning (Tos durante las primeras horas del día) — Yes ~~No~~
- Cough during the day or night (Tos durante el día o durante la noche) — Yes ~~No~~
- Cough up phlegm (mucus) first thing in the morning (Tos con flemas durante las primeras horas del día) — Yes ~~No~~
- Cough up phlegm (mucus) during the day or night (Tos con flemas durante el día o durante la noche) — Yes ~~No~~
- Cough up phelgm (mucus) like this on most days, 3+ months a year (Tos con flemas la mayor parte del tiempo o más de) (3 meses en el año) — Yes ~~No~~

SMOKING (FUMAR CIGARRILLOS)

Have you ever smoked (Ha fumado alguna vez) — ~~Yes~~ No
Years (Años) NO Packs/day (Cajetillas por día) NO

I hereby certify and have answered the above questions to the best or my knowledge and the the answers are complete and true.
(Por medio de la presente certifico que he contestado a estas preguntas en pleno uso de mis facultades y la información dada veraz.)

Employee signature (Firma del empleado)

RESPIRATOR:

Type _____ Disposable _____
_____ Full Face / Half Mask with cartridge or canister
_____ Other

Reason for wearing a respirator:

Activity level Light % of use _____
Moderate
Heavy

EXAMINATION

Height 68" Weight 227 Pulse 80
Blood Pressure 120 / 82 / _____ Respirations _____

Heart	NL	AB
Lungs	NL	AB
	NL	AB
Drums	NL	AB
Nose	NL	AB

Comments: _____

Pulmonary Function Tests:

FVC 4.06 FEV1 3.15 FEV1/FVC% 93%
Predicted _____ Predicted _____
Comments: _____

Chest X-Ray:# of views: _____ X-Ray #: _____
Comments: _____

Respirator Fit Test: Pass Fail

RESULTS: (see attached documentation)
- ✓ Worker is medically qualified for respirator use
- ____ Worker is not medically qualified for respirator use
- ____ Worker should stop smoking
- ____ Worker must shave beard
- ____ Worker cannot wear contact lens with respirator, must use glass conversion kit

Physician's signature — Date 9/4/96