



May 18, 2009

SHAW-MC-CK10-1159
Project No. 796887

Mr. Lee Coker
U.S. Army Corps of Engineers, Mobile District
Attn: EN-GE/Lee Coker
109 St. Joseph Street
Mobile, Alabama 36602

**Contract: DACA21-96-D-0018, Task Order CK10
Fort McClellan, Alabama**

Subject: Letter Work Plan for Drum Sampling at Range T-24A

Dear Mr. Coker:

Shaw will collect a liquid sample from an unknown drum recently discovered during unexploded ordnance (UXO) clearance activities at Range T-24A. The objective of the sampling is to characterize the drum's contents for waste disposal purposes. The drum will be sampled in accordance with the Standard Operating Procedure (SOP) included as Attachment 2 of the site-specific safety and health plan (SSHP) provided in Appendix A. Sample documentation and chain of custody will follow the procedures specified in the Fort McClellan Installation-Wide Sampling and Analysis Plan (SAP). The sample will be sent to EMAX Laboratories, Inc. and analyzed for the following parameters using the U.S. Environmental Protection Agency's (EPA) *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846):

- Target analyte list (TAL) metals – EPA SW-846 Method 6010B/7470A
- Volatile organic compounds (VOC) – EPA SW-846 Method 8260B
- Semivolatile organic compounds (SVOC) – EPA SW-846 Method 8270D
- Organochlorine pesticides/PCBs – EPA SW-846 Method 8081B/8082A
- Organophosphorus pesticides – EPA SW-846 Method 8141B
- Chlorinated herbicides – EPA SW-846 Method 8151A
- Explosives – EPA SW-846 Method 8330A.

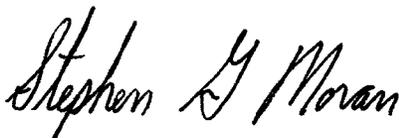
If the waste characterization results indicate that the liquid is hazardous waste, Shaw will arrange for transportation of the drum to an appropriate offsite disposal facility. If the waste characterization results indicate that the liquid is non-hazardous and the material otherwise meets the discharge criteria, Shaw will transport the drum to our field office location and discharge the

liquid to the sanitary sewer system.

All fieldwork will be performed in accordance with the SSHP (Appendix A). If TetraTech has not previously done so, Shaw will perform a UXO surface sweep over the work area prior to sampling the drum. We are prepared to mobilize for this effort on May 26, 2009.

At your request, I have distributed copies of this work plan according to the distribution list below. If you have questions, or need further information, please contact me at (865) 694-7361.

Sincerely,

A handwritten signature in black ink that reads "Stephen G. Moran". The signature is written in a cursive style with a large, stylized 'S' and 'M'.

Stephen G. Moran, P.G.
Project Manager

cc: Lisa Holstein, Army TF (4 hardcopies; 2 CDs)

APPENDIX A

**SITE-SPECIFIC SAFETY AND HEALTH PLAN
(including drum sampling SOP)**

Site-Specific Safety and Health Plan Range T-24A Unknown Drum Sampling

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602**

Prepared by:

**Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923**

**Task Order CK10
Contract No. DACA21-96-D-0018
Project No. 796887**

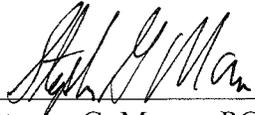
May 2009

Revision 0

The following Safety and Health Plan (SHP) has been designed for the methods presently contemplated by the company for execution of the proposed work. Therefore, the SHP may not be appropriate if the work is not performed by or using the methods presently contemplated by the company. In addition, as the work is performed, conditions different from those anticipated may be encountered and the SHP may have to be modified. Therefore, the company only makes representations or warranties as to the adequacy of the SSHP for currently anticipated activities and conditions. This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Revision 1 and the Installation-Wide Ordnance and Explosives Management Plan, Fort McClellan, Alabama.

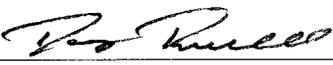
**Site-Specific Safety and Health Plan Attachment Approval
Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan for the Range T-24A drum sampling activity at Fort McClellan, Calhoun County, Alabama, with respect to project hazards, regulatory requirements, and Shaw procedures.



Steven G. Moran, PG
Project Manager

5/14/09
Date



Doug Russell
Health & Safety Manager

5-14-09
Date

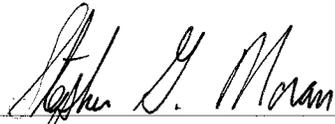


Jeff Tarr, PG
Site Manager

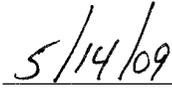
5/14/09
Date

Acknowledgements

The approved version of this site-specific safety and health plan (SSHP) for the Range T-24A drum sampling at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.



Project Manager

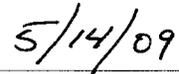


Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.



Site Manager



Date

Fort McClellan Project Emergency Contacts

Range Control Office (Main Post).....	(256) 848-6772
Fire Department (off post)	911
Ambulance (off post)	911
Northeast Regional Medical Center	(256) 235-5121
Southern Family Practice Occupational Medicine.....	(256) 236-9400
DOD Guard Force.....	(256) 848-5680, 848-4732
Anniston Police Department	(256) 238-1800
Chemical Agent Emergencies	(256) 895-1598
(Mike Smith, CEHNC)	cell phone (256) 759-3931
UXO Emergencies	(256) 895-1598
(Mike Smith, CEHNC)	cell phone (256) 759-3931
UXO Nonemergencies/Reporting Only (Lisa Holstein)	(256) 848-7455
National Response Center & Terrorist Hotline.....	(800) 424-8802
Poison Control Center.....	(800) 222-1222
EPA Region IV	(404) 562-8725
Lisa Holstein, Army Transition Force	(256) 848-7455
Lee Coker, U.S. Army Corps of Engineers, Mobile District	(251) 690-3099
Brandi Little, Alabama Department of Environmental Management	(334) 274-4226
Doyle Brittain, EPA Region IV	(404) 562-8259
Steve Moran, Shaw Project Manager.....	(865) 690-3211 (office) (865) 607-9148 (cell)
Jeff Tarr, Shaw Site Manager	Site (256) 848-3482, Cell (256) 310-4376
Doug Russell, Shaw H&S Manager.....	Direct dial (865) 692-3584, Cell (865) 414-9545
Melissa Smith, Shaw CIH.....	(865) 694-7407
Shaw EH&S Hot Line.....	(866) 299-3445
Dr. Jerry H. Berke, Health Resources Occupational Physician	(800) 350-4511

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1.0 Site Work Plan Summary

Project Objective. Shaw Environmental, Inc. (Shaw) has been contracted by the USACE to perform environmental assessments, investigation and remediation at Fort McClellan (FTMC), Alabama. The current scope work involves collection of a liquid sample from an unknown drum found by Tetra Tech under a separate contract during munitions of explosive concern (MEC) clearance operations near Training Area T-24A. The work will be performed by Shaw in accordance with the provisions of Prime Contract DACA21-96-D-0018 with the U.S. Army Corps of Engineers (USACE), Mobile District.

The objective of the sampling is to characterize the drum's contents for waste disposal purposes. The sample will be analyzed for metals, VOCs, SVOCs, pesticides, herbicides, explosives, and PCBs. Upon receipt of the analytical results, Shaw will arrange for the transportation of the drum to an appropriate offsite disposal facility (if needed) based on the waste characterization results.

Project Tasks

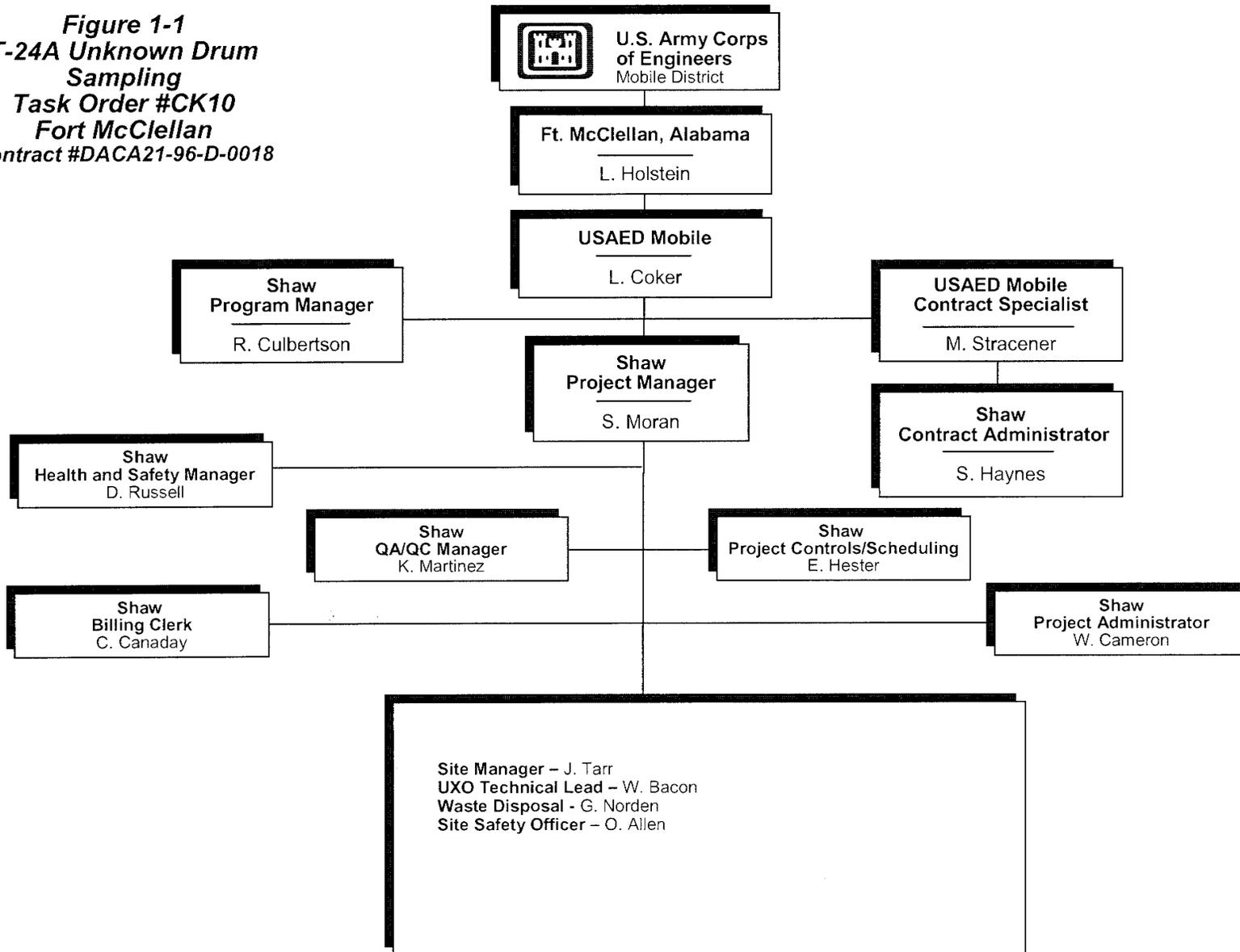
- Mobilization
- Site setup
- UXO avoidance
- Drum sampling and waste characterization
- Transportation and disposal (if required)
- Equipment decontamination
- Site restoration.

Personnel Requirements. Up to 4 employees are anticipated to complete this scope of field work. See Figure 1-1 for an organization chart.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, understand the requirements of this site-specific SHP (SSHP).

This SSHP must be used in conjunction with the FTMC installation-wide SHP and the FTMC Installation-Wide OE Management Plan.

Figure 1-1
T-24A Unknown Drum
Sampling
Task Order #CK10
Fort McClellan
Contract #DACA21-96-D-0018



2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis (AHA) indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE). The potential to encounter UXO has been determined to be low based on UXO clearance activities by others. However, *Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities* confirms that the historical records for Range T-24A have been reviewed and UXO support is required for site activities. This evaluation is presented in Attachment 1. In the event suspect items are encountered during site activities, do not disturb the item and immediately suspend work and contact the Shaw project manager and health and safety manager. Investigation of the suspect item is not authorized under this scope of work.

T-24A is currently undergoing a MEC clearance operation. Shaw will have to coordinate field activities with the MEC clearance contractor, Tetra Tech, in order to maintain MEC exclusion zone requirements during intrusive or demolition operations.

The toxicological and physical properties of chemicals formerly identified at T-24 and information on exposure effects and first-aid are included in Table 2-1.

2.2 General Site Information

Training Area 24A (T-24A) is located within Range 24A and has been the focus of MEC and CWM concerns. Range 24A is located southeast of the cantonment area and 1.7 miles east of Ford Hill in a valley. Range 24A occupies about 60 acres, with about 1.5 acres comprising T-24A. This training area include two square burning pits, each 16 feet on a side, enclosed within a fenced area.

T-24A was used from some unknown date (before 1949) until 1973. The range and associated training area fall within historic artillery training areas. The types of items used in this area include:

Table 2-1

Toxicological and Physical Properties of Chemicals
 T-24A Unknown Drum Sampling
 Fort McClellan
 Calhoun County, Alabama

(Page 1 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Arsenic and soluble inorganic compounds (as As) [7740-38-2]	NA	NA	Inh Abs Ing Con	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances; hyperpigmentation of the skin (carcinogenic); peripheral neuropathy, respiratory irritation.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediately medical attention	0.01 mg/m ³ 0.2 mg/m ³ (Ca-29 CFR 1910.1018 Inorganic compounds)	C0.002 mg/m ³	PEL TLV REL	Ca [100 mg/m ³]
DS2	None	?	Inh Ing Con	Direct contact will corrode skin, cause corneal opacification, severe burns, and esophageal stricture; inhalation may cause CNS depression, liver damage, nausea, vomiting, and respiratory irritation. Repeated skin and respiratory exposure can cause skin sensitization and asthma.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention. Give milk/water if conscious.	1 ppm 1 ppm 5.2 mg/m ³	- - Ceiling	TLV TLV TLV TLV	
Fuel oil (diesel oil, medium)	None	None	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention			PEL TLV REL	

Table 2-1

**Toxicological and Physical Properties of Chemicals
T-24A Unknown Drum Sampling
Fort McClellan
Calhoun County, Alabama**

(Page 2 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Gasoline [8006-61-9]	None	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	500 ppm	PEL TLV REL	1400 ppm 10% LEL
GB	None	None	Abs	Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.0001 mg/m ³	AEL	0.2 mg/m ³
Hydrogen chloride (hydrochloric acid) [74-90-8]	12.74	0.255–10.6	Inh Ing Con	Inflamed nose, throat, larynx; cough, burns throat, choking; burns eyes, skin; dermatitis; in animals; laryngeal spasm; pulmonary edema.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C5 ppm C5 ppm C5 ppm	PEL TLV REL	100 ppm
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43–200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm	PEL TLV REL	2,000 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
T-24A Unknown Drum Sampling
Fort McClellan
Calhoun County, Alabama**

(Page 3 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Lewisite (Arsenic trichloride)	None	None	Inh Con	Blister agent. Geranium-like odor. Systemic poison causing pulmonary edema, diarrhea, restlessness, subnormal temperature, and low blood pressure.	<p>Eye: Irrigate immediately. Transfer to medical facility</p> <p>Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility.</p> <p>Breath: Remove from area immediately. Transfer to medical facility.</p>		C0.003 mg/m ³	AEL	
Methanol	10.85	4.2-5960	Inh Abs Ing Con	Irritated eyes, headache, drowsiness, lightheadedness, nausea, vomiting, disturbance in vision, blindness.	<p>Eye: Irrigate immediately</p> <p>Skin: Water flush promptly</p> <p>Breath: Fresh air</p> <p>Swallow: Immediate medical attention</p>		200 ppm (skin) 200 ppm (skin) 200 ppm	PEL TLV REL	6000 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
T-24A Unknown Drum Sampling
Fort McClellan
Calhoun County, Alabama**

(Page 4 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Mustard gas	None	0.0006 mg/m ³	Abs Inh	Garlic-like odor. Eye and respiratory tract irritation; redness of skin and blisters develop 4 to 24 hours after exposure; hoarseness, sore throat, coughing, pulmonary edema	Treat like a thermal burn. Do not break blisters. Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.	Q	C0.003 mg/m ³	AEL	0.5 mg/m ³
Nitric acid [7697-37-2]	11.95	0.3-1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	100 ppm
Phosgene (CG)	11.55	?	Inh Con	Irritated eyes, nose and upper respiratory tract; wheezing and difficulty in breathing; eye and skin burns; pulmonary edema.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support	0.1 ppm 0.1 ppm 0.1 ppm	15-minute ceiling 0.1 ppm	PEL TLV REL	2 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
T-24A Unknown Drum Sampling
Fort McClellan
Calhoun County, Alabama**

(Page 5 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
2,4,6-Trinitrotoluene (TNT) [118-96-7]	10.59	?	Inh Abs Ing Con	Liver damage, jaundice; cyanosis; sneezing coughing, sore throat; peripheral neuropathy, muscular pain; kidney damage; cataract; sensitive dermatitis; leukocytosis; anemia; cardiac irregularities.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m ³ (skin) 0.5 mg/m ³ (skin) 0.5 mg/m ³ (skin)		PEL TLV REL	NE
VX	None	?	Abs	Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.00001 mg/m ³	AEL	0.4 mg/m ³

^aIP = Ionization potential (electron volts).

^bRoute = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.

^cTWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.

^dSTEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.

^ePEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

AEL = Airborne Exposure Limit.

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.

Table 2-1

Toxicological and Physical Properties of Chemicals T-24A Unknown Drum Sampling Fort McClellan Calhoun County, Alabama

(Page 6 of 6)

REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.

IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. No. 90-117, 2005).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC₅₀ = Lethal concentration for 50 percent of population tested.

LD₅₀ = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 2007, compiled by the American Conference of Governmental Industrial Hygienists.

Amoore, J. E. Hautala, "Odor as an Aid to Chemical Safety," Journal of Applied Toxicology, 1983.

Clayton, George D., Clayton, F. E., Patty's Industrial Hygiene and Toxicology, 3rd ed., John Wiley & Sons, New York.

Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 2007.

Fazzuluri, F. A., Compilation of Odor and Taste Threshold Values Data, American Society for Testing and Materials, 1978.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, CIVO, Netherlands, 1977.

Gemet, L. J. Van, Compilation of Odor Threshold Values in Air and Water, Supplement IV, CIVO, Netherlands, 1977.

Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1990, No. 90-117, National Institute for Occupational Safety and Health.

Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.

Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 2004.

- 37mm, 75mm, and 155mm projectiles
- 3-inch Stokes, 81mm, and 6-inch Newton Stokes mortars
- Machine guns and other small arms
- 4.2-inch mortars.

Two 81mm mortar rounds were discovered on the site in 1991. Two fused 105mm rounds, one 155mm round, four 4.2-inch mortar rounds, a burster tube, and smoke rounds were discovered during trenching in the RI conducted in 1994.

T-24A was used for chemical munitions disposal training. Agents used included phosgene (CG), BZ, sarin (GB), and distilled mustard (HD). The quantities of agent used in this area greatly exceeded the amounts used for the training exercises at other ranges. Some records reported the quantity of HD to be 4.46 kilograms, about 1,000 times the amount used in other exercises. For CG, incapacitating agent (BZ), and GB, the quantities used were 40 mL, one M-6 canister, and 740 grams, respectively.

Two burn pits were used for decontamination. The pits were about 25 square meters in area and unknown depth (possibly 6 feet based on Standard Operating Procedures [SOP]). Following each exercise, the area was checked for contamination and sprayed with STB.

Upon closure in 1973, the fenced area and training aids were decontaminated with DS-2. Training aids which were decontaminated included 105mm and 155mm projectiles. The pits were covered with soil and no surface contamination was found to remain.

The drum to be sampled is located approximately 500-feet west \ southwest of Training Area T-24A, located within Range 24A, an approximately 1.8-acre fenced parcel. This former chemical munitions disposal area was used from an unknown date in the 1960's until 1973. In November, 2003 through 2004; Shaw completed the removal of all buried 3X material (including various munitions, scrap metal, and glassware) from the designated anomalies identified at Training Area T-24A. A total of 1,312 cubic yards of soil, 3X material, and MEC scrap were excavated and screened at T-24A. All 3X scrap, OE, and non-OE scarp metal identified in six anomalies at T-24A (as reported by Parsons Environmental [2002]) were removed from Fort McClellan.

The drum is presumed to contain water based on a partially legible stencil on the drum head. The drum is a 17-E type, steel 55-gallon capacity with two threaded bung openings currently sealed. The drum was horizontal in orientation when initially discovered by Tetra Tech during MEC clearance operations. Subsequently Tetra Tech moved the drum into an upright position.

Duration of Planned Employee Activity. Employee activity duration is anticipated to be less than two days.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances dispersion from drum contents during the sampling effort is primarily from spills. Primary routes of exposure are inhalation and ingestion and contact.

2.3 Personnel Decontamination

Personnel decontamination shall be performed in compliance with Section 7.0 Decontamination, in the Installation-Wide SHP. Shaw anticipates using disposable PPE with the exception of SCBA and respirator face piece.

3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided. Any change in PPE that may be required will require approval by the Shaw H&S manager and project manager.

Task	Initial Level of PPE
Initial UXO avoidance sweep and equipment staging	Level D Modified Level D may be used if the site contains dense poisonous plants
Radiological survey and drum exterior PID/LEL measurements	Level D Modified Level D may be used if the site contains dense poisonous plants
Opening of drum bungs for additional survey measurements and sampling	Level B
Over pack of drum (if required before analytical results)	Level B
Disposal of drum and contents	Pending analytical results
Equipment decontamination	Modified Level D
Site restoration	Level D

Level D. The minimal level of protection that will be required of Shaw personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).
- Latex or Nitrile gloves during sampling activities.

Modified Level D. The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent (Saran-coated tyvek for heavy equipment decontamination)
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots

- Safety glasses
- Hard hat.

Level C. Level C protection is not anticipated but shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, Survivair air-purifying respirators equipped with multi-contaminant P-100 high-efficiency particulate filter.
- Hooded, impermeable Tyvek (Saranex), taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat.

Level B. The following equipment will be used for Level B protection:

- NIOSH-approved positive pressure SCBA or airline respirator with compatible component(s) 5-minute emergency escape air supply pack
- Saran coated Tyvek taped over gloves, over chemical resistant boots or PVC boot covers, and taped hood around respirator
- Outer Nitrile gloves
- Lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or PVC overbooties/steel-toed safety boots
- Hard hat secured to Saran coated Tyvek with duct tape or strap
- Hearing protection (when working near/adjacent to operating equipment).
- Ice or cooling vest as applicable to combat onset of heat related illness.

4.0 Site Monitoring

Site monitoring will consist of real time instrumentation in order to survey the drum exterior and locations that would present an opportunity to identify potentially hazardous contents i.e., threaded bungs, rusty locations, deteriorated seams, etc. Prior to opening the drum for sample collection a Geiger counter (Ludlum Model 5, P/N 48-1607) or equivalent will be used to perform a radiological survey of the drum and adjacent soil. Concurrent to the radiological survey a photo ionization detector and lower explosive limit/oxygen monitor (MSA-Sirius or equivalent) will be used to test for volatile organics and possible flammable vapor. Site monitoring shall be initiated in accordance with the Drum Sampling Standard Operating Procedure in Attachment 2.

The action levels for air monitoring are provided in Table 4-1. Table 4-2 provides the minimum air monitoring frequency and locations.

Unexploded Ordnance. If UXO, or any suspect CWM, is encountered, personnel will contact the site manager and project manager immediately. All personnel will immediately evacuate the site and contact the Shaw health and safety manager.

Table 4-1

**Action Levels and Equipment Calibration
T-24A Unknown Drum Sampling
Ft. McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level B PPE

Analyte	Action Level ^a	Required Action
VOCs	≥ 1000 ppm above background in BZ	Stop work, evacuate work area; contact HSM.
Oxygen	≥ 20%, <23%	Normal operations
	< 20%, >23%	Stop work, evacuate work area; Contact HSM
Flammable vapors	≥ 10% LEL in BZ	Stop work, evacuate work area/ Contact HSM
	< 10% LEL in BZ	Continue operations, monitor for VOCs
Gamma Radiation	> Background	Stop work, evacuate work area/ Contact HSM

When in Level D Modified/D PPE

Analyte	Action Level ^a	Required Action ^b
VOCs	≥ 5 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then contact HSM
Oxygen	≥ 20%, <23%	Normal operations
	< 20%, >23%	Stop work, evacuate work area; Contact HSM
Flammable vapors	≥ 10% LEL in BZ	Stop work, evacuate work area Contact HSM
	< 10% LEL in BZ	Continue operations, monitor for VOCs
Gamma Radiation	> Background	Stop work, evacuate work area/ Contact HSM

When in Support Zone

Analyte	Action Level ^a	Required Action
VOCs	≥ 1 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

Table 4-1

**Action Levels and Equipment Calibration
T-24A Unknown Drum Sampling
Ft. McClellan, Calhoun County, Alabama**

(Page 2 of 2)

Monitor Type	Calibration Method	Calibration Frequency	Maintenance Schedule
Combustible gas indicator (CGI)/oxygen meter	CGI sensor calibrated against known concentration of pentane or hexane (demonstration bottle). Zero setting checked in non contaminated air. Oxygen sensor calibrated daily to 20.8 percent in fresh non contaminated air.	CGI span calibrated once per day. CGI zero checked daily. Oxygen sensor calibrated daily. Note: If confined space entry monitoring is required the Oxygen shall be calibrated daily with a known oxygen deficient concentration.	Instrument cleaned as needed and no less than annually. Oxygen sensor changed annually. CGI sensor checked annually and changed if necessary.
Photoionization detector (PID)	PID zeroed in clean air. Span calibrated using known concentration of isobutylene (calibration bottle).	PID zeroed and span checked daily at start of work day.	Annual cleaning by qualified technician. Annual calibration of electronics by qualified technician. Clean lamp if sensitivity drops or if used in very dusty environment.
Geiger counter	Annual manufacturer calibration and pre shipping calibration at Shaw laboratory	Pre shipping calibration at Shaw laboratory	Annual cleaning by qualified technician. Annual calibration of electronics by qualified technician.

^a Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

^b Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

VOC - Volatile organic compound.

ppm - Parts per million.

LEL - Lower explosive limit.

BZ - Breathing zone.

≥ - Greater than or equal to.

< - Less than.

> - Greater than.

HSM - Health and safety manager.

No one is permitted to downgrade levels of PPE without authorization from the H&S manager.

Table 4-2

**Air Monitoring Frequency and Location
T-24A Unknown Drum Sampling
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
UXO avoidance sweeps and equipment staging	OV Monitor LEL/O ₂ Monitor Geiger Counter	Initially for area to establish background data	BZ of employees
Drum survey prior to opening for sampling	OV Monitor LEL/O ₂ Monitor Geiger Counter	Continuous	Headspace exterior of drum, threaded bung areas or any potentially compromised drum location
Drum survey during opening and sampling	OV Monitor LEL/O ₂ Monitor Geiger Counter	Continuously	Headspace of bungs while removing threaded caps and BZ
Post sampling	OV Monitor LEL/O ₂ Monitor	As needed	Headspace of bungs after sealed

BZ = Breathing zone.

OV = Organic vapor.

LEL/O₂ = Lower explosive level/oxygen.

Geiger Counter = Gamma radiation detector

5.0 Activity Hazard Analysis

The attached activity hazard analysis (Tables 5-1) is provided for the following activities:

- Mobilization and site preparation
- Drum sampling
- Over packing (if required)
- Equipment decontamination.

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer, who will then notify off-site personnel and organizations as necessary in accordance with Shaw procedure *HS020, Accident Prevention Program: Reporting, Investigation and Review*.

All injuries and illnesses must be immediately reported to the site manager or the SSHO, who will then notify off-site personnel and organizations as necessary in accordance with Shaw health and safety policy *HS020, Accident Prevention Program: Reporting, Investigation and Review*, and the Incident Reporting Management Procedure-Federal. A copy of the Incident Reporting Management Procedure-Federal has been provided in Attachment 3.

If emergency hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. For non life threatening injuries which may require medical treatment beyond onsite first aid the injured shall be transported by the site manager or site safety and health officer to the nearest Health resources occupational health facility. The nearest occupational clinic is Southern Family Practice and Occupational Medicine.

Directions to the hospital are provided in Figure 5-1 and directions to the occupational clinic are provided in Figure 5-2.

Table 5-1

**Activity Hazard Analysis
T-24A Unknown Drum Sampling
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 4)

Activity	Potential Hazards	Recommended Controls
Mobilization and site preparation	Contact with moving equipment/vehicles	Area around drum will be barricaded/demarcated.
		Equipment will be laid out in an area free of traffic flow.
	Cut hazards	Use care when handling any glassware.
		Wear adequate hand protection
	Operation of motor vehicles and trucks - general.	<p>All company owned, leased, or rented vehicle operations shall comply with the requirements of Shaw Environmental, Inc. (Shaw) Procedure HS800, "Motor Vehicle Operation: General Requirements."</p> <p>All company owned, leased, or rented commercial vehicle operations shall comply with the requirements of Shaw Procedure HS810, "Commercial Motor Vehicle Operation And Maintenance."</p> <p>Subcontractors operating motor vehicles shall comply with all federal, state, and local traffic regulations.</p> <p>Subcontractors shall only use vehicles, which are in good condition and safe to operate.</p> <p>Subcontractors shall inspect vehicles routinely used on a weekly basis and submit the inspection documentation to the Site Safety and Health Officer.</p> <p>All personnel shall drive defensively, take adequate rest breaks, and wear seat belts while vehicles are in motion.</p> <p>Use a spotter to help guide vehicles through tight areas.</p>
	Operation of motor vehicles and trucks – backing.	<p>Back into parking spaces upon arrival, whenever possible.</p> <p>Walk around the vehicle before backing to identify any new conditions or obstructions.</p> <p>Set out orange cone system to require truck operator to walk around truck and collect cone(s) prompting area inspection prior to moving truck.</p> <p>Use a spotter when backing whenever possible.</p> <p>Understand hand signals.</p> <p>Sound horn prior to backing.</p> <p>Check the rear-view and side mirrors prior to backing.</p> <p>(Note: All vehicles, other than automobiles, should have small convex mirrors attached to the side mirrors.)</p> <p>Back slowly in areas of obstructed vision.</p> <p>Anticipate others who may be backing out into your pathway and adjust accordingly.</p>
	Operation of motor vehicles and trucks – blind spots.	<p>Become familiar with any blind spots associated with your vehicle.</p> <p>Adjust mirrors properly.</p> <p>Make sure you use your directional signals.</p> <p>Always look over your shoulder to ensure that the lane is clear when changing lanes.</p> <p>Become extra cautious when approaching other drivers' blind spots.</p>
Unexploded ordnance	<p>UXO avoidance support shall be provided.</p> <p>Shaw will coordinate sampling activities with MEC clearance contractor in order to comply with applicable clearance exclusion zones.</p> <p>Any suspect items identified by Shaw shall be flagged and avoided.</p>	
Collect samples	Chemical contamination	Drum opening and sampling will be performed in Level B personal protection equipment.
	Hazard communication	Label all containers as to contents.
	Cut hazards	<p>Use care when handling glassware.</p> <p>Wear adequate hand protection.</p>

Table 5-1

**Activity Hazard Analysis
T-24A Unknown Drum Sampling
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 4)

Activity	Potential Hazards	Recommended Controls
Drum opening	Fire/Explosion	All equipment and tools will be of the type to prevent sources of ignition.
		Only essential personnel will be in drum opening area.
		Suspect drums will be opened using a beryllium or bronze spike.
		Bungs will be opened slowly without excessive pressure.
		Fire extinguishers will be available to control small fires. Only intrinsically safe equipment will be used to transfer contents of suspect drums.
Drum handling	Fire/Explosion	Real-time monitoring will take place before and during drum opening/handling.
	Spills	Absorbent and over pack drums will be kept available where leaks, spills, or ruptures may occur.
	Contact with potentially contaminated materials	Drum handling will be performed in Level B PPE. Air monitoring will be performed. Pending analytical results a PPE downgrade may be authorized by the HSM.
	Sprain/strains	Use caution when removing drum lids or bungs.
		Use the proper tool for the task being performed.
		Get assistance if required.
	Heavy lifting	Avoid twisting/turning while pulling on tools or drums.
		Lift with your legs, not your back. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
Pinch points	Keep feet and hands clear of moving materials and equipment.	
	Beware of contact points.	
	Stay alert at all times.	
Cut hazards	Wear adequate hand protection	
Drum transfer or over pack (if required)	Noise	Noise levels above 85 decibels mandates hearing protection.
	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting on or off any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
Machinery or equipment will not be operated in a manner that will endanger persons or property, nor will the safe operating speeds or loads be exceeded.		

Table 5-1

**Activity Hazard Analysis
T-24A Unknown Drum Sampling
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 4)

Activity	Potential Hazards	Recommended Controls
Drum transfer or over pack (if required) (continued)	Heavy equipment operations (continued)	All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location that provides protection from traffic for repair persons.
		All self-propelled construction equipment shall be equipped with a backup alarm.
	Fire	Equipment will be equipped with at least one dry chemical fire extinguisher having a minimum Underwriters Laboratories, Inc. rating of 1A5BC.
	Truck and equipment traffic	Site personnel will wear orange safety vests to identify themselves to traffic.
		Load out area will be properly demarcated.
	Slip, trip, and fall hazards	Good housekeeping; keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look where you step, ensure safe footing when climbing on/off equipment, etc.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
	Ropes, slings, chains, and hooks	The use of ropes, slings, and chains shall be in accordance with the safe recommendations of their manufacturer.
		Rigging equipment shall not be loaded in excess of its recommended safe working load.
		The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling.
		Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.
		Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be removed from service.
		Rigging equipment, when not in use, shall be removed from the immediate work area and properly stored so as not to present a hazard.
		Taglines shall be used to control the loads being handled by hoisting equipment.
	Hoisting equipment	All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service.
At no time shall the hoisting equipment be loaded in excess of the manufacturer's rating, except during performance tests.		
While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground.		
A standard signal system shall be used on all hoisting equipment.		

Table 5-1

**Activity Hazard Analysis
T-24A Unknown Drum Sampling
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 4)

Activity	Potential Hazards	Recommended Controls
Drum transfer or over pack (if required) (continued)	Insects, spiders, and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Cut hazards	Wear adequate hand protection.
	Falling objects	Hard hat; stay alert and clear of materials suspended overhead; steel-toed boots
Drum storage	Incompatible drums	Segregate drums so that no incompatibles are stored next to each other. Beware of contact points. Stay alert at all times!
	Sprain/strains	Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment. Size-up the lift. Recommend wearing a back support if possible. When pulling on materials, pull in a straight line. Do not twist and pull simultaneously.
Decontamination of equipment	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Slip, trip, and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Cut hazards	Wear adequate hand protection.
	Contact with potentially contaminated materials	Appropriate PPE protection will be required.
	Faulty or damaged equipment	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition. Equipment shall be inspected before being placed into service and at the beginning of each shift.
Equipment to be Used	Inspection Requirements	Training Requirements
Drum dolly/Grappler PPE Hoisting Equipment	Pre-post maintenance Visual prior to use	Tailgate safety meeting Site specific orientation Hazardous waste operations Hazard communication Drum handling

Figure 5-1 Hospital Route Map

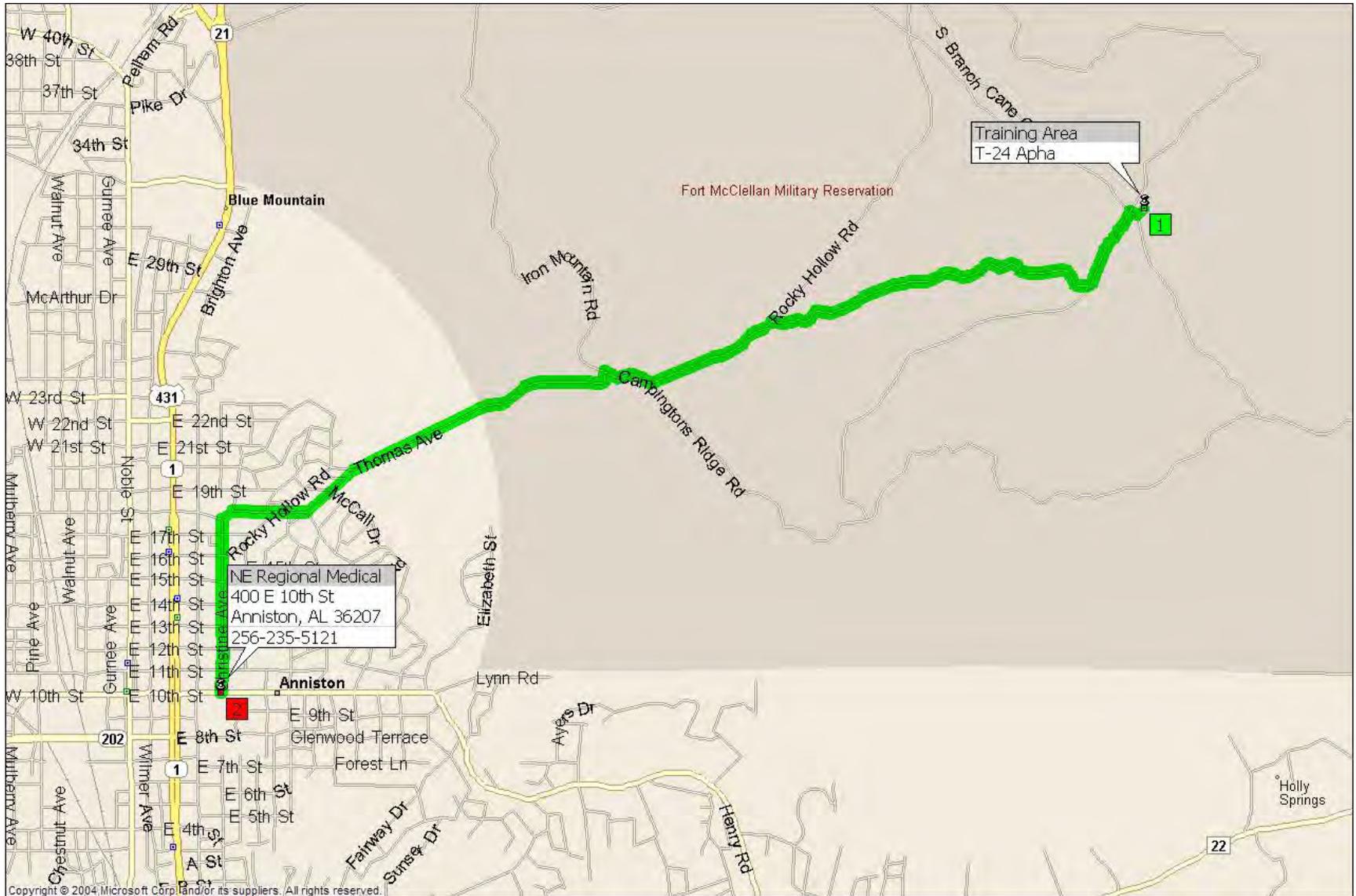
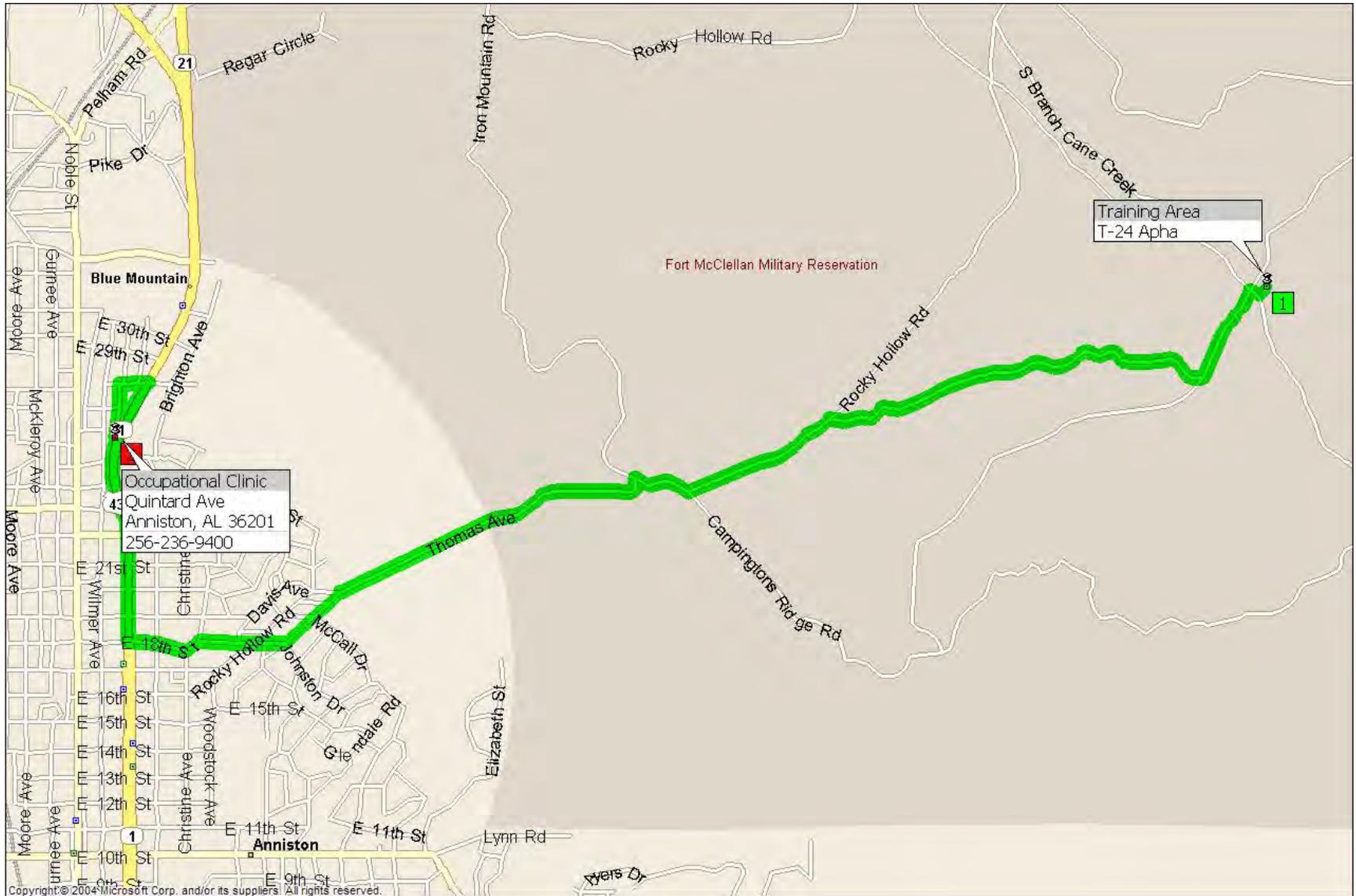


Figure 5-2 Occupational Clinic Route Map



ATTACHMENT 1
OE EVALUATION FORM

Site Name: *Range T-24A Drum Sampling*

Date: 5-12-09

Name of person completing form: Jeffrey Tarr

Title: Scientist IV

Job Number: 796887

Signature: *Jeffrey J. Tarr*

1a. Have the historical records available for this HTRW site been reviewed? Yes No

If the answer to 1a. is yes, proceed to 1b.
If the answer to 1a. is no, review site information prior to completing this form.

1b. Is there recent information (site walk, worker interviews, etc.) that indicates a potential OE/CWM hazard at this site? Yes No

Proceed to 2.

2. According to the records review, is this site known or suspected to have been used for:

	Yes	No
2a. Manufacturing, production, or shipping of conventional or chemical warfare materiel (CWM) OE:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Live fire testing of any ordnance:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conventional or CWM OE training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of conventional or CWM OE:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disposal or demilitarization of conventional or CWM OE:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify):		

	Yes	No
2b. Manufacturing, production, or shipping of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Research or testing of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chemical agent related training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disposal or demilitarization of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify):		

Any 2a question answered "YES" indicates MEC support is required for all site activities. If all 2a questions are answered "NO", MEC support may not be required. Refer to Installation-Wide Safety and Health Plan (SHP) for additional information concerning UXO support. Proceed to question 2b.

Any 2b question answered "YES" requires the remainder of this form to be completed. If all 2b questions are answered "NO", real-time monitoring for chemical agent will not be required and completing the remainder of this form is not required. Refer to SHP for additional information concerning agent monitoring.

Site Name: Range T-24A Drum Sampling

Job Number: 796887

Date: 5-12-09

3. For sites where the manufacturing, testing, storage, or disposal of CWM is suspected:	Yes	No
Is there evidence that the CWM is/was containerized in potentially unexploded ordnance:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM is/was containerized in nonexplosive containers:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM is open to the environment (i.e., in an open container or free liquid/solid in the soil/water):	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Has the site been previously monitored or sampled for chemical agent or agent breakdown products:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
For any "YES" above, was the agent or breakdown product identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

For any "Yes", list types of agent (mustard, lewisite, etc.) and the form (in ordnance, in drum, etc.) the CWM is expected to be found (or state "unknown"):

Field activities for this work plan involve sampling of an unknown drum outside the 1.8-acre fenced area previously identified as a demilitarized disposal area (see page 4).

List agent breakdown products identified: Thiodiglycol

41 groundwater samples were analyzed for CWM breakdown products. Only one compound (thiodiglycol) was detected in one of the samples. The thiodiglycol concentration (0.014 mg/L) was below its SSSL (0.063 mg/L) in monitoring well R24A-187-MW14.

4. Defining the Potential for the Presence of CWM:	Agent Monitoring Requirements for Site Activities:
<p>4a. High Presence Potential – Definition: CWM is known or highly suspected to be present at the site in a condition (within ordnance and/or nonexplosive container, or in an uncontainerized form in sufficient volume that weathering of the product has not rendered it harmless) that will cause potential harm to personnel if it is encountered.</p>	<p>Mandatory personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).</p>
<p>4b. Moderate Presence Potential - Definition: CWM is suspected to have been present at the site, but has been previously removed and/or decontaminated, or has been open to the environment such that it is expected to have degraded and been rendered harmless.</p>	<p>The need for personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples will be reviewed on a site-by-site basis. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).</p>
<p>4c. Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).</p>	<p>No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.</p>

Site Name: Range T-24A Drum Sampling

Job Number: 796887

Date: 5-12-09

Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be: Low

Exceptions/Explanations: Drum Sampling, work is outside the 1.8-acres fenced area. (additional space for notes and explanations on page 4)

5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:

<p>5a. High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw health and safety manager, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site.</p>
<p>5b. Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw health and safety manager, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site.</p>
<p>5c. Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw health and safety manager, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site.</p>

Based on all available information, the exposure potential at this site is considered to be:

Exceptions/Explanations: LOW

Review Signatures:

Shaw MEC Technical Manager



Date: 13may09 Shaw H&S Specialist



Date: 5-13-09

Site Name: Range T-24A Drum Sampling

Job Number: 796887

Date: 5-12-09

Additional Notes and Explanations:

The work involves collection of a liquid sample from an unknown drum found by Tetra Tech during MEC removal operations near Training Area T-24A. The drum is located approximately 500-feet west \ southwest of Training Area T-24A, located within Range 24A, an approximately 1.8-acre fenced parcel. This former chemical munitions disposal area was used from an unknown date in the 1960's until 1973. In November, 2003 through 2004; Shaw completed the removal of all buried 3X material (including various munitions, scrap metal, and glassware) from the designated anomalies identified at Training Area T-24A. A total of 1,312 cubic yards of soil, 3X material, and MEC scrap were excavated and screened at T-24A. All 3X scrap, OE, and non-OE scarp metal identified in six anomalies at T-24A (as reported by Parsons Environmental [2002]) were removed from Fort McClellan.

The objective of the sampling is to characterize the drum's contents for waste disposal purposes. The sample will be analyzed for metals, VOCs, SVOCs, pesticides, herbicides, explosives, and PCBs. Upon receipt of the analytical results, Shaw will arrange for the transportation of the drum to an appropriate offsite disposal facility (if needed) based on the waste characterization results. Shaw will conduct the drum sampling as outlined in the site-specific health and safety plan and standard operations for drum sampling.

The potential for MEC\UXO is possible within this area. Therefore, Shaw will conduct anomaly avoidance procedures as outlined in Appendix E of the Installation-Wide Sampling & Analysis Plan, Revision 3 (IT, 2002) prior to and during all field activities to ensure the safe sampling of the drum.

ATTACHMENT 2

DRUM SAMPLING STANDARD OPERATING PROCEDURE

STANDARD OPERATING PROJECT PROCEDURE

Subject: DRUM SAMPLING

1.0 PURPOSE

- 1.1 To provide general reference information for use in planning and implementing sampling programs that involve the moving, opening and sampling of closed containers (drums) at Shaw project sites.
- 1.2 To provide guidelines for primary and secondary staging of drums.
- 1.3 To provide Shaw standard procedures for opening containers.
- 1.4 To provide guidelines for the sampling of containerized materials.
- 1.5 To discuss site organization and assigned responsibilities.
- 1.6 To provide information on protective clothing, worker protection and other safety related issues.

2.0 SCOPE

- 2.1 This guideline is applicable to opening and sampling of closed containers (120 gallon or less) on Shaw project sites. Bulk tanks such as railroad tank cars, large above- and below-ground tanks (with a capacity of more than 120 gallons), and tank trailers are not considered in this procedure.

3.0 RELATED DOCUMENTS

- 3.1 Cassis, Jo, et al., 1985. Guidance Document for Cleanup of Surface Tank and Drum Sites. Prepared for Office of Emergency and Remedial Response, USEPA, Washington, D.C. under Contract No. 68-01-6930.
- 3.2 IT Corporation (IT), 1988. Hazardous Waste Operations and Emergency Response, December.

- 3.3 Martin, F.M., Lippitt, J.M., Prothero, T.G., 1987. Hazardous Waste Handbook for Health and Safety, Butterworth Publishers, p. 167-177.
- 3.4 NIOSH, OSHA, USCG, & USEPA, October 1985. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.
- 3.5 NUS Corporation, 1983. Operating Guidelines Manual.
- 3.6 IT Compatibility Testing Manual, 1993.
- 3.7 USEPA, 1986. Drum Handling Practices at Hazardous Waste Sites, EPA/600/2-86/013.
- 3.8 US Code of Federal Regulations 29 CFR 1910 and 1926 (OSHA).
- 3.9 US Code of Federal Regulations 49 CFR 265 (EPA).

4.0 GENERAL INFORMATION

- 4.1 Location of containers on a hazardous waste site.
 - 4.1.1 Typically, waste is shipped to sites in 55-gallon drums on trucks. About 60 to 80 drums are delivered from a given load, depending on the weight of the load. Usually there is some type of pattern to the method that the drums were staged on site. Markings on the drums may assist in determination of these patterns. Frequently, the only indication that a group of drums is related will be the color, size, or type of drum. During the initial site inspection, one should look for distinguishing features in an attempt to define the different lots or patterns of drums on the site. Often the trade name, chemical name, or empirical formula will be written on the drum. Another distinguishing feature would be drums of exotic metal such as aluminum, nickel, Monel, stainless steel, etc. A manufacturing facility will use a specified DOT coded drum, a strange drum size, or a drum with an unusual configuration or adaptation for a particular process line (center of drum head fill bung, double-sided fill/vent bungs, etc.).
 - 4.1.2 At almost every site that has been receiving waste, there is an isolated group of containers. These containers were most likely segregated because of their reactive nature or containing highly hazardous materials. Approach these with care and try to determine why they were segregated.

4.1.3 In any lot of drums there is sometimes encountered an unusual or out-of-place container. This oddball container will not fit the pattern, color, size, etc., of those around it (e.g., it may be the only distended drum among undistended drums or a lined drum among unlined drums).

4.2 Strict adherence to safety precautions will occur during drum handling, opening and sampling. Site Health and Safety Plan and Site Unexploded Ordnance work plan procedures and requirements will supersede this document and will be adhered to during field activities on-site.

4.3 Risks

4.3.1 Four basic risks are involved in moving and opening closed containers:

4.3.1.1 Exposure of personnel to toxic materials

4.3.1.2 Fire

4.3.1.3 Explosion

4.3.1.4 Hazardous reactions (i.e. rapid polymerization reactions)

4.3.2 Exposure of personnel to toxic materials.

4.3.2.1 The first risk can be reasonably eliminated through the use of proper skin and respiratory protection equipment. The use of level B protection with splash guard (i.e. Tyvek and Saran suits with face shield) acceptably reduces the risk of a worker being injured by toxic vapors, mists, or splashes.

4.3.3 Fire

4.3.3.1 In the same way, standard fire prevention procedures can be used to reduce the fire hazard through the use of detector instruments and proper equipment. These include the use of non-sparking tools and intrinsically safe radios, pumps, and other equipment as well as the staging of fire fighting equipment and the elimination of any other possible ignition sources. Piles of sand and lime (for neutralization and suffocation) will be on hand at the site in case of a fire.

4.3.4 Explosion

4.3.4.1 The explosive risk however, is not as easily handled, and thus is the primary consideration in any container-opening operation. Even if no solid evidence of the presence of explosives is found during the preliminary data collection, one can never be certain that explosives have not been disposed of at the site. In order to provide the same reasonable level of protection against this risk as against toxic exposure and fire, a very cautious approach, such as the one recommended in this guideline, should be used (see section 7.6.2, Drums Containing Explosive or Shock Sensitive Waste).

4.3.5 Hazardous Reactions

4.3.5.1 The risk of a hazardous reaction is another primary consideration in any container opening operation. Since a reaction can be triggered by a wide range of possibilities, it is not something that is always preventable. In order to provide the same reasonable level of protection against this risk as against toxic exposure and hazardous reactions, a very cautious approach should be used. An example of a hazardous reaction would be the self-polymerization of nylon or styrene precursors. Both can generate heat, fumes and can explosively pressurize a drum.

4.4 Scenarios involving drums encountered in the field may include drums that are:

- Unmarked
- Mislabeled
- Bulging (pressurized)
- Buried
- Deteriorated (physically unsound)
- Leaking

4.4.1 Drum condition and contents will be the factors which will determine the general drum handling and sampling procedures.

4.5 Consult OSHA regulations (29 CFR Sections 1910 and 1926) for established general requirements and standards for storing, containing, and handling chemicals and containers, and for maintaining equipment used for handling materials.

- 4.6 Consult EPA regulations (49 CFR 265) for requirements pertaining to the types of containers, maintenance of containers and containment structures, and design and maintenance of storage areas.

5.0 DEFINITIONS

- 5.1 Air Reactive Wastes - Some chemicals, such as white phosphorus and some of the metallic hydrides, react with the oxygen in the air and can start burning or at least producing considerable amounts of heat and may possibly release toxic or flammable vapors.
- 5.2 Compatibility Testing - A series of tests performed on individual drum samples where the object of the testing is to find those drums which have similar and potentially compatible contents. After further testing the contents of these drums would be mixed together to form a larger single waste stream for disposal purposes.
- 5.3 Container - Defined as any drum, bottle, can, bag, etc., with a capacity of 120 gallons (450 liters) or less.
- 5.3 Dosimeter - A portable, transistorized survey meter that can be used for radiation monitoring purposes and/or contamination measurements.
- 5.4 Exotic Metal Drums - (i.e. aluminum, nickel, stainless steel, or other unusual metals). Very expensive drums that usually contain an extremely dangerous material.
- 5.5 Glass Thief - A glass tube 4 feet long and 3/4 inches in diameter, used for taking samples from drums. The tube is usually broken up and disposed of in the drum following sampling.
- 5.6 LEL - (Lower explosive limit.) An air monitoring device can test the surrounding air for sufficient oxygen content for life support and/or the presence of combustible gases or vapors which may pose a potential flammability hazard. The lower explosive limit is defined as the minimum concentration of a particular combustible gas in the air that can be ignited. The upper explosive limit is defined as the maximum concentration that can be ignited.
- 5.7 Laboratory Packs - Such drums are commonly used for disposal of expired chemicals and process samples from laboratories, hospitals and similar institutions. Bottles in the laboratory pack may contain incompatible materials and may

not be packed in absorbent material. They may contain radioisotopes, shock sensitive, highly volatile, highly corrosive, or very toxic exotic chemicals. Laboratory packs have been the primary ignition sources for fires at some hazardous waste sites.

- 5.8 Monitox - A portable warning device used for detecting specific toxic gases found in the surrounding air (i.e. H₂S, HCl, Cl, HCN and COCl₂).
- 5.9 PID - (photoionization detector) A portable air-monitoring instrument used to detect organic vapors. The PID does not distinguish between different types of vapors or tell if more than one vapor is present.
- 5.10 Polyethylene or PVC-lined Drums - Often contains strong acids or bases. If the lining is punctured, the substance usually corrodes the steel, resulting in a significant leak or spill.
- 5.11 Shock Sensitives - A chemical which may undergo a very rapid chemical transformation, with the simultaneous production of large quantities of heat and gases, if introduced to shock (i.e. friction).
- 5.12 Single-Walled Drums Used as a Pressure Vessel - These drums have fittings for both product filling and placement of an inert gas, such as nitrogen. Such drums may contain reactive, flammable, or explosive substances.
- 5.13 Vapor Control - The use of an LEL, PID, Monitox, or any other air monitoring device to assure the quality of air meets all safety requirements.
- 5.14 Waste Blending Test - A waste blending test is done on sample materials from drums that were found to be similar and potentially compatible with each other. The sample materials are proportionally and sequentially blended with each other and observations and measurements are made during and after the blending process to determine if any potentially hazardous reactions are occurring (i.e., temperature rise, outgassing occurring or other reaction).
- 5.14 Water Reactive Wastes - Some chemicals will react violently with water on contact or through contact with moisture in the air while others may give off toxic or flammable gasses. Sodium or potassium metal reacts violently with water while calcium carbide reacts to produce a flammable gas (acetylene).

6.0 RESPONSIBILITIES

6.1 Site Manager

6.1.1 The Site manager will:

6.1.1.1 Act as site coordinator for field technical personnel

6.1.1.2 Review and update site sampling and analytical plans as required.

6.1.1.3 Determine which procedures and methods will be utilized on- site.

6.2 Project Chemist

6.2.1 The project Chemist will:

6.2.1.1 Manage the mobile laboratory (if applicable) or the shift so that the data generated meets the required levels of certification

6.2.1.2 Implement sample acquisition numbering system.

6.3 Chemists

6.3.1 The chemists will:

6.3.1.1 Carry out compatibility tests (if applicable)

6.3.1.2 Carry out approved analytical procedures and maintain sample analysis tracking forms.

6.4 Sample Technicians

6.4.1 The sampling technicians will be responsible for:

6.4.1.1 Carrying out all drum sampling as per the Installation-Wide Sampling and Analysis Plan and SOP

6.4.1.2 Generate trip blanks, equipment blanks, and acquire replicate samples as per the Installation-Wide Sampling and Analysis Plan

6.4.1.3 Record all field data in Log Books or on drum logs forms

6.4.1.4 Fill out COC forms.

6.5 Procedure Modifications

6.5.1 The responsibility and authority for modifying this SOP (Langley AFB Drum Sampling) lies with the Langley AFB Project Manager, Health and Safety Manager, and Technical Leads.

7.0 PROCEDURE

7.1 Introduction

7.1.1 The guidance presented is based on field experience in working with containers on uncontrolled hazardous substance sites and on information contained in USEPA and other government agency publications. It will be evident that in many cases hard and fast rules cannot be given, and professional judgement is required because uncontrolled variables are involved. For example, no one can be absolutely certain of any assessment of the potential contents of a container. Labels cannot be absolutely trusted; only educated guesses can be made by a thorough review of all available background data, such as potential sources of the wastes. The following topics will be covered in the paragraphs to follow:

7.1.1.1 Initial inspection of drums.

7.1.1.2 Handling.

7.1.1.3 Staging.

7.1.1.4 Remote opening of drums.

7.1.1.5 Second inspection of drums.

7.1.1.6 Numbering and mapping of drums.

7.1.1.7 Sampling of drums.

7.1.1.8 Characterization and test blending.

7.1.2 During many drum projects, several phases will be in progress simultaneously. Air monitoring, dust control, and organic vapor control operations should be in progress throughout the course of the project.

7.2 Initial Inspection

7.2.1 Prior to physically handling a drum or other container, the following preliminary classification checklist must be reviewed by a chemist and each response noted in a field notebook:

7.2.1.1 Are the drums radioactive?

7.2.1.2 Do the drums exhibit leakage or deterioration, i.e., is it unsound?

7.2.1.3 Do the drums exhibit apparent internal pressure?

7.2.1.4 Do the drums contain markings which would indicate that the contents are potentially explosive?

7.2.1.5 Are the drums of special construction (i.e., Nickel, Stainless Steel, or Corrugated drums)?

7.2.2 Drums which are determined to be possibly radioactive, shock sensitive, or reactive will be segregated to a special handling area. The results of the preliminary classification checklist will dictate what procedures are followed in the handling, opening, and sampling of a drum.

7.2.2.1 Overpacking Leakers

7.2.2.1.1 During the initial inspection, and beyond, personnel should watch for leaking drums. These must be overpacked promptly, and the spill should be cleaned up immediately.

7.2.3 Gas Cylinders

7.2.3.1 Gas cylinders, when encountered, should be stored and disposed of on a special case by case basis depending on the integrity of the cylinders and the type of substance they may contain.

7.2.4 Air Monitoring

7.2.4.1 Preliminary surveys at project sites for organic vapors, explosivity, and radiation should be completed for all drum projects. This survey will aid in identifying site-specific hazards and development of work zones. In addition, this is how many of the drums that require special handling are identified.

7.2.4.2 Radiological Survey

7.2.4.2.1 The personnel conducting radiological surveys will have a basic knowledge of the radiological survey meter used and of radiation types.

7.2.4.2.2 There are three types of radiation which might be encountered in the field:

Alpha (α), which is stopped by clothing or a sheet of paper. While alpha radiation is the least penetrating type, it can be very dangerous if alpha-emitting radionuclides are ingested, inhaled, or enter the body through a puncture wound.

Beta (β), which is stopped by the steel wall of a drum.

Gamma (γ) or X-ray, which is only stopped by lead shielding, thick concrete, or steel.

7.2.4.2.3 Ionizing Radiation Survey Meters

The survey meters measure radiation in units of millirems per hour (mr/hr). The dose that one is exposed to is calculated by multiplying the hours of exposure by the average measured level of exposure as determined by a calibrated radiation meter. The specified survey meter as found in the equipment list in Section 8.0 has internally mounted twin detectors. The survey meter shall be checked for proper function by use of a low-level non-regulated source before each day's usage of the meter. Record the results of the meter check in the sampler's daily notes.

7.2.4.2.4 Background Level for Gamma Radiation

The background level for gamma radiation is between 0.008 and 0.02 mr/hr. Occasionally, the needle will briefly jump above this level, but it should not stay there.

7.2.4.2.5 Radiation Areas Defined

The Nuclear Regulatory Commission defines a radiation area to be one in which the radiation levels are at 5 mr/hr or greater or an area where one can accumulate 100 milli-

rems of exposure in 5 days of normal work in the area. A high-radiation area has radiation at levels greater than 100 mr/hr.

When abnormally high readings are obtained, ranging from 0.2 to 2.0 mr/hr, one must first ascertain that this is not caused by a malfunction in the unit. If the readings are not caused by a malfunction one should follow the guidelines in Table 7.2-1 below.

**Table 7.2-1
Dosimeter Readings**

Reading	Action
< or = 2 mrem/hr	Radiation above background levels (0.01-0.02 mrem/hr) signifies the possible presence of radiation sources. Continue investigation with caution.
> 2 mrem/hr	Potential radiation hazard. Contact Site Health and Safety Officer and Site Supervisor immediately.

7.2.4.3 Other air monitoring includes scans with a Photoionization Detector (PID), Lower Explosion Limit (LEL) meter, and cyanide and sulfide monitoxes. Since the majority (if not all) of the drums should be unopened at the time of the initial survey, this scan is typically performed over the tops of the sealed drums. Special Handling drums are sometimes identified during this scan when P-

ID or LEL readings are abnormally high or when cyanide and/or sulfide monitox alarms sound. Such drums will need to be segregated to a special handling area.

7.3 The handling, movements and transport of drums and other containers should be by use of mechanical equipment only; no drums should be handled manually. Remote drum handling equipment may consist of a grappler-equipped backhoe or front-end loader. Drum transportation should be with front-end loaders or forklifts with modified carrying platforms. Portions of equipment that contact drums or canisters should be constructed of non-ferrous metals or contact portions should be coated or lined to preclude spark generation. Handling and transport equipment must be equipped with full frontal and side splash and explosion shields. Class ABC fire extinguishers will be fitted to the body of each piece of equipment.

7.3.1 Personnel involved in handling and transporting containerized waste will work in teams containing no fewer than two people. Visual contact will be maintained between members of the working team at all times. All team members will be able to communicate between themselves and with the Site Health and Safety Officer by intrinsically safe two-way radios at all times on the work site.

7.3.2 Whenever possible, drums or other containers to be sampled should be opened and sampled in place to minimize handling. However, when drums are stacked or are close together, they may have to be moved to prevent sympathetic detonation of or chemical reaction with, other drums around the one being opened. The main criterion is distance to other drums - a reasonable distance should be maintained to keep the drum to be opened segregated from the others.

7.3.3 Leaking or Deteriorated Drums

7.3.3.1 The contents of drums that exhibit leakage or apparent deterioration such that movement will cause rupture (determined by the Health and Safety Officer) must immediately be transferred to a repack drum. Equipment, including transfer pumps used in the repack operation must be of explosion-proof construction.

7.3.3.2 Leaking drums containing sludges or semi-solids, drums that are structurally sound but which are open and contain liquid or solid waste, and drums that are deteriorated but can be moved without rupture must be

placed in overpack containers. Make certain that representative samples are obtained from overpacked drums. Sample the actual drum, not material that has leaked from the drum into the overpack.

7.3.4 Bulging Drums

7.3.4.1 Drums, which potentially may be under internal pressure, as evidenced by bulging, must be sampled in place. Extreme care shall be exercised when working with and adjacent to potentially pressurized drums.

7.3.4.2 Should movement of a pressurized drum be unavoidable, handle only by a grappler unit constructed for explosive containment. The bulging drum should be moved only as far as necessary to allow seating on firm ground or it should be carefully overpacked.

7.4 Primary Staging of Drums

7.4.1 A staging configuration must allow the samplers reasonable access to each drum for inspection, sampling, and overpacking, if necessary, while economizing on space. Drums are staged in rows, two wide, with aisle space between rows. According to the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, "In all staging areas, stage the drums two wide in two rows, per area, and space these rows 7 to 8 feet apart to enable movement of the drum handling equipment."

7.5 Drum Opening

7.5.1 Drum opening operations are completed by remote means prior to the collection of samples. This provides the sampler a means for collecting a sample in an otherwise sealed container.

7.5.2 Opening Area

7.5.2.1 The drum opening area should be physically separated from the drum removal and drum staging operations. However, when drums must be opened after they are already in a staging area, personnel should be a minimum of 50 feet from the drum opening area. When drum opening can be performed at an area other than the staging area, there should be adequate distance between the drum opening and the removal and staging

operations to prevent a chain reaction or fire, should it occur, during the drum opening procedure.

7.5.3 Caterpillar 215 Grapppler

7.5.3.1 Drum opening is normally accomplished with a Caterpillar 215 grapppler using a brass-tipped punch. A remote drum-punching unit may also be used on smaller drum projects. At all times the staging area should be clear of personnel on the ground during punching operations. Extreme caution should always be taken when drum punching/opening is being performed. **AT NO TIME SHOULD DRUMS BE PUNCHED MANUALLY BY HAND USING HAND HELD TOOLS!** Drums that have been placed inside overpack drums upside down will need to be punched to obtain sample(s) of both liquids in them and any settled solids.

7.5.4 Shaw procedures prohibit the opening of drums containing unknown materials by hand. Employees found to be opening drums by hand will face disciplinary action. The drums will be opened by using a remote air operated or hydraulic punch, or by the method described above.

7.5.5 Small containers, like drums, are not to be opened by hand at any time. Shaw has remote opening devices specifically designed for the opening of small containers.

7.5.6 Containers that are inside warehouses, basements, or other buildings should be moved outside before they are opened. Opening and sampling of containers inside a building should only be done when there are no areas outside of the building that could be safely or physically used for these purposes.

7.5.6.1 If it is determined that opening and sampling of containers must be done inside of a building, then the following minimum requirements must be met:

7.5.6.1.1 Adequate ventilation must be provided.

7.5.6.1.2 Containment must be in place around drum opening and sampling area.

7.5.6.1.3 A,B,C type fire extinguishers must be in place.

7.5.6.1.4 Sand and mechanized equipment for spreading the sand in case of a fire or reaction must be present when drum opening operations take place.

7.5.6.2 Consult the site-specific safety and health plan for this investigation. Additional information may be found in the Sampling and Analysis Plan or Construction Quality Control Plan.

7.6 Second Inspection

7.6.1 After the drums have been staged and opened, a second inspection of the drums is required. During the initial inspection, the drums would have been sealed and only inspection of the outside of the drums was possible. Since the drums are now open, visual observations of the drum contents will aid in locating drums that will require special handling.

7.6.2 Special handling techniques are required for containers that may expose personnel to particularly hazardous conditions. These techniques and techniques for recognition of special handling drums are described in general below, although site-specific conditions may require the development of specialized methods for handling of special handling drums. The following are considered to be problem containers:

7.6.2.1 Drums Containing Biohazards.

7.6.2.2 Drums Containing Explosive or Shock Sensitive Waste.

7.6.2.3 Drums Containing Radioactive Waste.

7.6.2.4 Packaged Laboratory Wastes (Laboratory Packs).

7.6.2.5 Air Reactive Wastes (in drums).

7.6.3 Drums Containing Biohazards.

7.6.3.1 A biohazard is defined by the Biohazards Committee of the American Industrial Hygiene Association (AIHA), as "an agent that is biological in nature, capable of self-reproduction, and has the capacity to produce deleterious effects upon other biological organisms, particularly humans." Biological agents or substances which could be biohazardous substances are but not limited to the following:

7.6.3.1.1 Infectious or parasitic agents.

7.6.3.1.2 Non-infectious microorganisms (such as some fungi, yeasts and algae).

7.6.3.1.3 Plants and plant products.

7.6.3.1.4 Animals and animal products which can cause occupational disease.

7.6.3.2 Recognition is the key to avoiding disease contaminated biological waste. Be aware that this may take the form of cultured animal cells, infected clinical specimens (tissues, fluids, etc.) or tissues from experimental animals (including animal dander). Open drums should be examined for evidence of biological material such as:

7.6.3.2.1 Gauze.

7.6.3.2.2 Hypodermic syringes.

7.6.3.2.3 Petri dishes.

7.6.3.2.4 Cultures.

7.6.3.2.5 Blood.

7.6.3.2.6 Animal tissues.

7.6.3.2.7 Waste from orthopedic casts (may be gray, crumbly solids resembling a type of insulation).

7.6.3.3 Biological waste that has been prepared for incineration or for autoclaving may be packaged in **red plastic bags** or may be contained in plastic bags that are marked with the universal biohazard symbol (one ring with three interlocking "C"-shaped rings on top). Biohazards such as research bacterial cultures may be sent through the mail if they are packaged in a mailing tube. It is conceivable that either type of packaging could be found on a hazardous waste project.

7.6.3.4 If a biohazard or possible biohazard is identified, seal the drum and immediately notify the Site Health and Safety Officer and the Site Manager.

7.6.4 Drums Containing Explosive or Shock Sensitive Waste

7.6.4.1 If drums containing wastes that have been identified by sampling, or are suspected by visual examination to be explosive in nature are found, the Site Manager and the Health and Safety Officer must be notified immediately, before the drums are handled in any way.

7.6.4.2 If the Site Manager and the Health and Safety Officer approve handling of these drums, they shall be handled with extreme caution. Initial handling shall be by a grappler unit constructed for explosive containment. Drums shall be palletized prior to transport to a high hazard interim storage and disposal area.

7.6.4.3 If at any time during remedial activities, an explosive, pursuant to provisions of Title 18, U.S. Code, Chapter 40 (Importation, Manufacturer, Distribution, and Storage of Explosive Materials, 1975 Explosives List) is identified, it should be secured and the appropriate state and federal agencies notified.

7.6.4.4 Identification of an explosive substance during the course of a remedial action is usually based on the experience of the on-site personnel. Potentially explosive material usually may be identified by their physical characteristics such as texture, color density, etc. as well as the way they are packaged. Most explosives are solids. In some cases they are packaged in watertight containers to exclude water while in other cases they are packaged wet to preclude explosion.

7.6.4.5 Prior to handling or transporting drums containing explosive wastes, personnel working in the area shall be removed to a safe distance (as determined by the HSO). Continuous contact with the communication base shall be maintained until handling or transporting operations are complete. An audible siren signal system shall be used to signify the commencement and completion of explosive waste handling or transporting activities.

7.6.5 Drums Containing Radioactive Waste

7.6.5.1 After the containers are opened, another radiological survey will be conducted.

7.6.5.2 Handling and Transporting Radioactive Waste Drums

7.6.5.2.1 Drums containing radioactive wastes shall not be handled until radiation levels have been determined by a field survey which is recorded in a field notebook. The survey shall include background levels, direct gamma readings and laboratory analysis of drum surface wipe samples.

7.6.5.2.2 Depending on the level of radiation encountered, handling and transport may require special shielding devices to protect personnel. Following handling and transport, equipment used shall be surveyed by the HSO and decontaminated to background levels prior to recommencing work. Surveys shall also be made of the ground surface in the vicinity of original drum storage to identify potential soil contamination by spilled or leaked radioactive waste. Prior to recommencing work in the area, radioactive soil areas shall be isolated to prevent tracking of radioactive contaminants about the site, and workers who entered the area should have their gloves and boots surveyed for radiation.

7.6.6 Packaged Laboratory Wastes (Laboratory Packs)

7.6.6.1 If drums known or suspected of containing discarded laboratory chemicals, reagents or other potentially dangerous materials in small volume, or individual containers are found, the Site Manager is to be notified immediately, before the drums or containers are moved or opened.

7.6.6.2 Lab pack drums are easily identified by the presence of vermiculite or other absorbent type packaging material. If a drum contains such material, there is a good possibility that the drum is a lab pack drum. Further investigation may reveal that the drum also contains smaller containers inside such as:

7.6.6.2.1 Sample jars.

7.6.6.2.2 Metal shipping containers.

7.6.6.2.3 Specially sealed packages.

7.6.6.2.4 Sealed 5 gallon buckets.

7.6.6.3 If the Site Manager and the Health and Safety Officer approve the handling of these containers, they shall be handled with extreme caution. Until otherwise categorized, they shall be considered to be explosive or shock-sensitive wastes. Initial handling shall be by a grappler unit constructed for explosive containment. Drums shall be palletized and overpacked, if required, prior to transport to a staging area where sorting, identification, repacking and/or stabilization can be done.

7.6.6.4 Prior to handling or transporting Laboratory Packs from the existing drum area, personnel working in the immediate area shall be removed to a safe distance. Continuous contact with the communication base shall be maintained until handling or transporting operations are complete. An audible siren signal system, similar to that employed in conventional blasting operations will be used to signify the commencement and cessation of Laboratory Pack handling or transporting activities.

7.6.7 Air Reactive Wastes

7.6.7.1 If the presence of air reactive substance is verified or even suspected, the material should be immediately segregated and transported to a separate high hazard interim storage and disposal area.

7.6.7.2 Air reactive wastes may be discovered during opening or sampling operations. Air reactive substances are routinely packaged in special containers or packages that keep the material from making contact with the air. They may be stored under kerosene or some other liquid to minimize air contact. They may also be found in sealed ampoules, corrugated drums, stainless steel canisters, sealed aluminum containers or specially lined drums.

7.7 Numbering and Mapping

7.7.1 Accurate numbering is critical. Mistakes in numbering, such as missing numbers or double numbering, are minimized by numbering after primary staging. (It is highly recommended that drums are not numbered prior to staging.) To avoid problems, empty containers (not removed from the

staging area prior to sampling) should be numbered and recorded on drum inventory logs as empty. **DRUM NUMBERING SHOULD BE STRICTLY NUMERICAL.**

7.7.2 Mistakes in numbering occur in most drum sampling projects. In large part mistakes made in numbering have very little consequence until samples have been submitted to the laboratory. It is for this reason that drum numbering and drum mapping must occur before samples are collected.

7.7.3 After the drums in the staging area have been numbered, a drum map is made. The drum map is reviewed for double numbers and missing numbers. Any double numbered drums or missing numbers are corrected in the staging area and on the drum map before any sampling is to be performed in the staging area.

7.8 Sampling

7.8.1 Collection of samples should occur only after the procedures of the previous subsections have been followed. Any container not meeting these requirements will not be sampled until these procedures have been followed.

For example: If a drum is discovered to not have access into it (not remotely opened), the drum will not be sampled and the senior sampling technologist and the site supervisor will be notified. In this example, the procedures of the previous subsections were not met. Had those procedures been met, there would be access into the drum because the drum would have been remotely opened on a previous occasion. Until access can be made into the drum by remote means, the drum will not be sampled.

7.8.2 The following subsections describe collection of samples from drums that have been inspected, handled, staged, remotely opened, and inspected a second time prior to sampling.

7.8.3 Required Equipment (See also Section 8.0 for more detailed and specific data on the equipment and supplies required).

7.8.3.1 1 12-column book.

- 7.8.3.2 2 Shaw record books.
- 7.8.3.3 1 knife, beryllium copper.
- 7.8.3.4 1 bung wrench, Ampco metal.
- 7.8.3.5 1 screwdriver, beryllium copper.
- 7.8.3.6 1 scraper, beryllium copper.
- 7.8.3.7 2 pair Wizard cut-resistant glove liners.
- 7.8.3.8 2 1/2 inch drive ratchets, BeCu alloy.
- 7.8.3.9 2 15/16 sockets, BeCu alloy.
- 7.8.3.10 2 polyethylene squirt bottles.
- 7.8.3.11 U.S. EPA Level B personal protective equipment.
- 7.8.3.12 1 radiation survey meter.
- 7.8.3.13 1 H₂S monitox with gas generator.
- 7.8.3.14 1 HCN monitox with gas generator.
- 7.8.4 Expendables per Hundred Drums.
 - 7.8.4.1 120 drum log sheets.
 - 7.8.4.2 120^{*} 8 oz. jars with Teflon liners.
 - 7.8.4.3 200 tongue depressors.
 - 7.8.4.4 120 11-mm dip tubes.
 - 7.8.4.5 400 pair sample gloves.
 - 7.8.4.6 5 mean streaks.
 - 7.8.4.7 4 rolls paper towels

7.8.4.8 2 trash bags.

7.8.4.9 12 chain-of-custody forms.

7.8.4.10 1 Liter of Isopropanol (Pesticide Grade).

7.8.4.11 1 Liter of Hexane (Pesticide Grade).

* Varies according to sample volume requirements.

7.8.5 Sampling Procedures

(See sections 7.8.5.3 - 7.8.5.7 for additional information on sampling solids, semisolids and liquids).

7.8.5.1 All drums not in direct contact with ground surface and mechanical equipment should be grounded prior to the commencement of sampling. The reason for grounding of drums, which are not in direct contact with ground surface, is that a simple static electricity charge transferred to a drum that is not grounded, can cause an explosion or start a fire. A grounding rod driven into the ground surface, which is attached to copper wire, which is attached to a metal or copper clip, which is clipped to the drum being sampled, is an acceptable method of grounding a drum.

7.8.5.2 Once the drum has been grounded, sampling of the drum can begin. The steps to be followed in sampling are as follows:

7.8.5.2.1 Remove the lid of the overpack container or remove the polyethylene sheeting from the top of the drum.

7.8.5.2.2 Record any markings, special drum conditions, and type of opening on the Drum Inventory Log.

7.8.5.2.3 Record the identifying number from the drum onto the Drum Inventory Log. Have a copy (reduced size if necessary) of the drum staging area map and double-check the drum number and location.

7.8.5.2.4 Use a PID (if weather permits) and an LEL meter to collect air monitoring readings from the drum. Record the results on the Drum Inventory Log.

7.8.5.2.5 Insert glass tubing almost to the bottom of the drum or until a solid layer is encountered. About one foot of tubing should extend above the drum.

7.8.5.2.6 Allow the waste in the drum to reach its natural level in the tube. Cap the top of the sampling tube using a thumb or forefinger.

7.8.5.2.7 Carefully remove the capped tube from the drum and insert the uncapped end in the sample container. Release thumb or forefinger from tube and allow the glass thief to drain completely into the sample container.

7.8.5.2.8 Repeat steps 6 & 7 until the required sample volume has been collected.

7.8.5.2.9 Place the used sampling tube, along with paper towels or waste rags (used to wipe up any spills), into an empty metal barrel marked "sampling waste" for subsequent disposal.

7.8.5.2.10 Close the sample container cover tightly, wipe off with a paper towel and place a label on the sample container.

7.8.5.2.11 Replace the overpack lid or place a plastic cover over the drum/container.

7.8.5.2.12 Measure the sample for radioactivity and record results on the Drum Inventory Log.

7.8.5.2.13 Fill out Chain-of-Custody Record and carefully package samples (if applicable). The finished package will be padlocked or custody-sealed for shipment to the laboratory. The preferred procedure includes the use of a custody seal across filament tape that is wrapped around the package at least twice. The custody seal (paper, plastic, or metal) is folded over and stuck to itself so that the only access to the samples is by cutting the filament tape or breaking the

seal to unwrap the tape. The seal is signed before the package is shipped.

7.8.5.2.14 Complete the appropriate shipping forms. Drum samples are always considered to be high-hazard samples.

7.8.5.3 Sampling Solids and Semisolids

7.8.5.3.1 Solids in drums are sampled by scooping the material up with the use of drum thief, stainless steel spoon, scoop, or tongue depressors. Sampling device must be compatible with drum contents. All reasonable efforts shall be made to obtain sample to a depth of 12 inches or refusal. It is sometimes necessary to sample the material with the use of a trier. This sampling device is often not used however, due to the substantial increase in time necessary to obtain the samples and because of the time required to decontaminate the trier. Tongue depressors will be disposed after each use. Nonexpendable sampling tools must be decontaminated between drums. Sometimes, the material must first be broken up with a non-sparking hammer or hammer and chisel (NOTE: This is the **ONLY** time in which a sampler is allowed to have a hammer and chisel in their hands), or, for rubber-like solids, a piece may need to be cut off with a knife.

7.8.5.4 Sampling Solids Underneath Liquids

7.8.5.4.1 Sludges or solids underneath a liquid may be sampled by forcing the rigid tubing into it. If the sludge does not run out into the jar, shaking the tubing or tapping it against the side of the bottle may loosen the sample. If this fails, one may break the tubing and put the pieces that have the solid in them in the bottle.

7.8.5.4.2 When glass tubing is used for sampling, samplers should wear Whizard glove liners (stainless steel mesh glove liners designed to prevent cuts which could be caused by sharp objects such as broken glass tubing).

7.8.5.5 Materials between drum and overpack

7.8.5.5.1 In many drum sampling projects where drums have been overpacked, it is typical to find liquids or solids between the drum and the overpack it is contained in. Sometimes these materials have the same appearance and matrix as the material inside of the drum itself. Sometimes this material can be quite different than the material inside the drum itself.

7.8.5.5.2 Solids

Solids may appear in an overpack, between the drum and the overpack that is different than the solids or liquids in the drum itself. If these solids appear to be soil, then a notation must be made on the Drum Inventory Log that the material exists between the drum and the overpack. This material does not need to be sampled. If these solids appear to be something other than soil, then this material must be sampled in accordance with Sampling Solids and Semisolids in section 7.8.3.1. In addition, a notation that the material exists between the drum and the overpack must be made on the Drum Inventory Log.

7.8.5.5.3 Liquids

Liquids may appear in an overpack, between the drum and the overpack, which is different than the solids or liquids in the drum itself. This material must be sampled in accordance with Sampling Procedures in section 7.8.3. In addition, a notation that the material exists between the drum and the overpack must be made on the Drum Inventory Log.

7.8.5.6 Sampling Frozen Drums

7.8.5.6.1 Shaw is often faced with the need to collect samples in conditions where the temperature is below 32°F (0°C) and the material inside the drum is partially or completely frozen. In situations where the material in the drum is frozen, a Milwaukee wood bit with an air driven drill or hand drill can be used. An air driven drill or hand drill is used (with the Milwaukee wood bit) to drill, or auger through the frozen material. Every few inches of augering, the bit is removed and the shavings are placed into the appropriate sample container(s). This procedure is repeated until a sufficient volume of the material has been obtained. Care must be taken to ensure that a hole is not drilled through the bottom of the drum.

7.8.6 Post Sampling Procedures

7.8.6.1 After the sample has been taken, the outside of the bottle will be wiped off and labeled with the drum number. The drum number will also be written on the lid of the bottle. All sampling data and observations will be recorded on the drum inventory log and appropriate sample collection log.

7.8.6.2 After a group of drums have been sampled, the samples will be collected. The sampling trash, sample gloves, paper towels, etc., will be collected and placed into a drum marked "sampling waste" for disposal. The sampling pipettes will also be collected and packaged in the sampling waste drum for disposal.

7.8.6.3 All openings shall be plugged except during sampling operation. The reason for this is to prevent rainwater from entering the drum before or after sampling has been performed. For drums which are in overpack containers, this is simply having the lid on the overpack container. For drums which are not in overpack containers, this can be accomplished by placing polyethylene sheeting over the top of the drum in a manner that will keep rainwater from entering the drum.

7.8.7 Drum Inventory Log

7.8.7.1 The field data gathered during the drum sampling activities will be recorded on a Drum Inventory Log sheet (See Figure 7.8-1). The following is a list of the information needed for the form.

7.8.7.1 Drum Number--Numbers only; at least 3 digits in length

(001).

7.8.7.2 Project Number--Assigned by Shaw to each project.

7.8.7.3 Page of --If the drum log is accompanied by Material Safety Data Sheets (MSDS) or other information, then the total number of pages is required. Mostly, will be page 1 of 1.

7.8.7.4 Project Location--Name assigned by Shaw.

7.8.7.5 Project Contact--The Shaw employee responsible for overseeing the sampling operation. This person should be the individual to whom questions are to be directed or verbal results given for review (i.e., project chemist, or site supervisor).

7.8.7.6 Phone--Site phone or number of the supporting Shaw office.

7.8.7.7 Logger--Name of individual responsible for filling in the sampling portion of the Drum Inventory Log.

7.8.7.8 Sampler--Name of individual(s) responsible for obtaining the sample.

7.8.7.9 Weather--Weather conditions during sampling (e.g., temperature and/or precipitation).

7.8.7.10 Date--Date when sample is collected.

7.8.7.11 Time--Time when sample is collected.

7.8.7.12 Drum Type--Place an "x" in the box or boxes which best describe the drum type and materials of construction.

7.8.7.13 Lid Type--An "x" should appear in the box that describes the type of closure on the container.

7.8.7.14 Drum Condition--Place an "x" in the box indicating the integrity of the drum. "Meets DOT specifications" means the drum can be shipped according to Department of Transportation (DOT) regulations.

7.8.7.15 Drum Size--Place an "x" in the box indicating the volume of drum when full. If the drum is overpacked, the inner drum volume should be indicated, not the size of the overpack.

7.8.7.16 Drum Contents--Place an "x" in the box indicating the volume of waste contained in the drum.

7.8.7.17 Overpacked--An "x" should appear in the "yes" box if the container was overpacked, along with an "x" in the box which states the type of overpack utilized.

7.8.7.18 Layers--This designates the layer as top, middle, or bottom for a multi-layered sample. If only one layer exists, complete only the line associated with the top layer, "T."

7.8.7.19 Physical State--Place an "x" in the box indicating the actual physical state of each layer.

7.8.7.20 Color--The standard color description for each layer of the sample should be written in. **The only acceptable color descriptions are as follows.**

blue (blu)	white (wht)	black (blk)
red (red)	cream (crm)	orange (org)
pink (pnk)	yellow (yel)	gray (gry)
colorless (cls)	purple (pup)	tan (tan)
green (grn)	brown (brn)	green-blue (gbl)

7.8.7.21 Clarity--An "x" should appear in the box indicating the clarity of each layer of the sample.

7.8.7.22 Layer Thickness--Record the thickness of each layer in inches, an estimate of how deep the layer is.

7.8.7.23 pH--Record pH measurement in standard units (SU); 0 to 14 or the designation "NA" if there was no measurement obtained.

7.8.7.24 PID--Record the results for vapor analysis by photoionization detector (PID) or the designation "NA" if there was no measurement obtained. The PID scale reads in ppm (0 to

2,000).

7.8.7.25 Dosimeter--The results of the field radiation survey is recorded in this space or the designation "NA" if there was no measurement obtained. The dosimeter's scale units are in millirems per hour (mr/hr or mrem/hr).

7.8.7.26 Other--This space is for additional analysis which may take place or the designation "NA" if there were no other measurements. The information should include the equipment used, the parameter being measured, and its concentration. Example: Drager tube - HCN - 5 ppm

7.8.7.27 DOT Haz--Hazard category from placards or stencils on drum. Example: Corrosive Liquid

7.8.7.28 UN/NA--Space for any UN or NA numbers which are stenciled or written on the drum. These numbers are always prefixed by either UN or NA.

7.8.7.29 MFG Name--Name, address, and telephone number of the company producing or distributing the chemical/product. If the space provided is inadequate, indicate that the information continues on the back of the log, and do so.

7.8.7.30 Chemical Name--Any chemical compound, key ingredient, trade name, and/or chemical name of the contents on the label or stenciled on the drum. Indicate whether the information was printed on a label or stenciled or handwritten on the drum. If the space provided is inadequate, indicate that the information continues on the back of the log, and do so.

7.8.7.31 Additional Information--This space is for additional information or comments for which no specific space is designated. It can include unusual comments or problems such as the contents are too hard to sample, drum color, or that colored crystals have formed on the drum. If the space provided is inadequate, indicate that the information continues on the back of the log.

7.8.8 Sample Preservation and Packing Procedures for Drummed Waste Samples

7.8.8.1 No preservatives shall be used.

7.8.8.2 Place sample in a zip lock plastic bag.

7.8.8.3 Sample may require special shipping requirements per DOT.

7.8.8.4 Samples that are required to be shipped in ice should be double-bagged to prevent water contamination from melting ice. Ice should be double-bagged to prevent leakage from shipping container.

7.8.8.5 Arrange for the appropriate transportation mode consistent with the type of hazardous waste involved. Depending on mode of transportation and type of material being transported, additional packaging requirements may apply (IATA, DOT, etc.).

7.8.8.6 In general, follow the procedures given in the site-specific health and safety plan and in the Installation-Wide Safety and Health Plan and Installation-Wide Ordnance and Explosives Management Plan.

7.8.9 Decontamination Procedures

7.8.9.1 All sampling equipment used in obtaining samples from containers will be either dedicated (disposable) or pre-cleaned and decontaminated by the following procedures:

7.8.9.1.1 Thoroughly scrub with a brush using a detergent (Alconox) and hot water solution to remove large particles.

7.8.9.1.2 Thoroughly rinse the detergent solution off the equipment with tap water.

7.8.9.1.3 Rinse the equipment with deionized water.

7.8.9.1.4 Solvent rinse the stainless steel equipment only with pesticide grade isopropanol.

7.8.9.1.5 Solvent rinse the glass equipment only with pesticide grade Hexane.

7.8.9.1.6 Air dry the equipment before use.

7.8.10 Resealing and Secondary Staging

7.8.10.1 All containers opened for sampling need to be resealed to prevent the escape of vapors and possible reactions from rainwater, air and so on. The resealing methods will depend on the opening methods used and include the following:

7.8.10.1.1 Replacing the lid and retaining ring.

7.8.10.1.2 Placing the drum in an overpack (larger drum) when it cannot be resealed by any other method.

7.8.10.1.3 Placing polyethylene sheeting over the drum in a manner that prevents rainwater from entering the drum.

7.8.10.2 It is important to note that these resealing methods are for the purpose of preventing leakage from the container while it is in storage on the site. If the container is to be moved off the site, DOT regulations regarding transportation and sealing of drums will apply.

7.8.10.3 Once the drum is sampled and resealed, it should be left where it cannot react with other containers on the site. For a small number of drums, the storage areas may be the staging and opening area. In any event, the sampled drums should be placed in an area away from other groups of containers on the site. The reason is that slowly progressing chemical reactions can start when a container is opened and the contents exposed to air or the disturbance caused by handling the drum. Such a reaction could take hours or even days to occur. Another reason for the segregation and identification of drums for recovery is for use as evidence.

7.8.11 Sample Control

7.8.11.1 The Project Chemist or his/her representative on-site is responsible for the identification, preservation, packaging, handling, shipping, and storage of samples obtained from the site. All samples must be readily identifiable and retain the in-situ characteristics to be determined through testing. All samples collected from containers to be analyzed for compatibilities will be validated through the preparation of a drum log. At the conclusion of the daily sampling operations for containerized waste, it is the responsibility of the Technical Services

Representative to review each sample with its respective drum log to assure the documentation is complete and accurate. His signature verifying the sample has been checked must appear in the "Field Reviewer" space prior to sending samples to the laboratory. In addition, these samples will be validated through the following steps:

7.8.11.1.1 Sample Containers--Samples taken from containers to be analyzed for compatibilities will be placed into a clean 8-ounce glass bottle and secured with a Teflon-lined lid.

7.8.11.1.2 Sample Number--Each sample will be labeled and uniquely identified in accordance with the numbering system used for this job.

7.8.11.1.3 Sample Label--Each sample label will be legibly completed and affixed to the sample container. The label will include the name of the sampler, date and time of collection, place of collection, unique sample ID number, analysis required, preservatives added, and type of sample (grab or composite).

7.8.11.1.4 Field Log--All sample collection data and field observations for each sample will be recorded on a drum inventory log (see section 7.9.4.1).

7.8.11.1.5 Chain-of-Custody Procedures--All samples taken on the site will be verified through chain-of-custody procedures. The procedures followed will be in accordance with USACE Sampling Handling Protocols and USEPA procedures.

7.8.11.1.6 Sample Preservation--Samples taken from containers to be analyzed for compatibility will not be preserved.

7.8.11.1.7 Sample Shipment--Samples taken from containers to be analyzed for compatibilities will be packaged in their original shipping container or the sample bottles and transported to the laboratory.

7.9 Characterization and Test Blending

7.9.1 A waste blending test is used to determine if the drums included in a wastestream are truly compatible. Whether the wastes are to be blended on site or to be sent in drums to a disposal facility, a waste blending test must be performed by the Chemist for waste profile purposes. However, situations arise when the Sample Technologist is asked to determine which compatibility groups can be blended. Refer to Section 8.0, Waste Blending, in the Compatibility Manual prior to test blending any materials. A waste Blending Test chart is found in the Compatibility Manual.

7.9.2 When using the Waste Blending Test Chart, the first step is to locate the compatibility groups (which are to be test blended) on the chart. The next step is to move to the group that appears first on the chart and follow the row number down until the other compatibility group is reached. For example the supervisor of project (x) is planning to mix acid liquids with the water reactives on site. The supervisor wants to know if this will be a safe combination. The first step is to locate acids and water reactives on the chart. Once the two groups have been located, the next step is to determine which group is listed first on the chart. The acids group is listed first. The next step is to follow column one down to the water reactive group. The chart lists the combination to be (I,V,E). The final step is to determine what the letter combination means (this can be found on the upper right portion of the chart). The I is for Incompatible, the V is for Violent Reaction, and the E is for Explosive Mixture. Therefore, it would **not** be a good idea to blend these compatibility categories.

7.9.3 Shipment of Blended Waste

7.9.3.1 Samples of the blended waste to be sent off-site for laboratory analysis for disposal parameters will be shipped by the following procedures and by the procedures listed in the Installation-Wide Work Plan and Installation-Wide Sampling and Analysis Plan.

7.9.3.1.1 The lids of the sample jars will be sealed with tape.

7.9.3.1.2 The sample container will be placed inside two 4-mil plastic, protective bags.

7.9.3.1.3 The sealed sample will be place in a metal paint can.

7.9.3.1.4 The samples will be placed into a cooler and packed with blue ice to maintain their temperature at 4 degrees Centigrade.

7.9.3.1.5 Bubble pack or other insulating packing material will be placed into empty spaces in the cooler.

7.9.3.1.6 The cooler will be sealed, addressed, identified, and placarded according to the nature of the hazards associated with the materials being shipped.

8.0 EQUIPMENT

8.1 The equipment listed below will normally be required to accomplish drum sampling on a project site. Additional equipment or more specific equipment requirements may be found in the Installation-Wide Sampling and Analysis Plan.

- * Spill control kit.
- * Remote controlled drum opening equipment - pneumatic, hydraulic or other.
- * LEL/O₂ meter (MSA Model 260/360).
- * HNU portable organic vapor analyzer (Model HW-101).
- * Fire extinguisher, Class A, B and C size as per H&S Plan requirements.
- * Radiation survey meter, internal GM detectors (Ludlum Model 5, P/N 48-1607).
- * Personal protective equipment. This may include: Robar or Tingley boots, Tyvek and/or Saran protective suit with hood, acid jacket and pants, vinyl booties, vinyl sample gloves, nitrile outer gloves, hard hat with splash shield and SCBA or airline units.
- * Rolls of plastic sheeting (Visqueen).
- * Sampling equipment.

* Equipment and supplies needed for drum sampling (per 100 drums).

- 120 drum log sheets (Shaw Supplied)
- 120 8oz jars with Teflon lined lids (Qoorpak Brand)
- 200 tongue depressors (VWR P/N 62505-006)
- 120 11mm dip tubs
- 400 pair sample gloves
- 5 mean streaks
- 4 rolls of paper towels (Local Purchase)
- 2 30 gal. polyethylene trash bags (Local Purchase)
- 12 chain-of-custody forms (Shaw Supplied)
- 1 Liter of isopropanol (Pesticide Grade)(VWR P/N JT9334-3)
- 1 Liter of hexane (Pesticide Grade)(VWR P/N JT9126-3)

* Equipment and supplies generally needed per drum job

- 1 12-column book (Local Purchase or Shaw Supplied)
- 2 Shaw record books (Shaw Supplied)
- 1 knife, beryllium copper (McMaster-Carr P/N 3925A1)
- 1 bung wrench, Ampco metal (McMaster-Carr P/N 6496A1)
- 1 screwdriver, beryllium copper (McMaster-Carr P/N 6525A3)
- 1 scraper, beryllium copper (McMaster-Carr P/N 6473A1)
- 1 hammer, claw, BeCu alloy (McMaster-Carr P/N 6484A2)
- 1 chisel, Ampco metal, 1" wide (McMaster-Carr P/N 6458A94)
- 2 pairs cut-proof glove liners (Lab Safety P/N WA-15128)
- 2 15/16" sockets, BeCu alloy (McMaster-Carr P/N 6503A33)
- 2 1/2" drive ratchets, BeCu alloy (McMaster-Carr P/N 6503A3)
- 1 1 1/4" X 18"L wood boring bit (McMaster-Carr P/N 2878A25)
- 1 1/2" air powered drill, low RPM (Grainger P/N 4Z542)
- 1 tool box, polyethylene with lock for above (Local Purchase)
- 2 wash bottles, isopropanol (Lab Safety P/N WA-13831)
- 2 wash bottles, hexane (Lab Safety P/N WA-23158)
- 2 wash bottles, acetone (Lab Safety P/N WA-13828)
- 1 H₂S monitox with gas generator (Shaw Supplied)
- 1 HCN monitox with gas generator (Shaw Supplied)

* Source of pressurized air (100 psi and 8 CFM) and air hoses for air drill and remote pneumatic drum punch.

- 8.2 Deviations from the above list and substitutions for equipment listed above need to be approved by the Project Chemist or the Manager, Field Sampling Services.



Shaw E & I, Inc.

DRUM INVENTORY LOG

DRUM PROJECT NO. PAGE OF

PROJECT LOCATION LOGGER DATE PROJECT CONTACT SAMPLER TIME PHONE WEATHER

DRUM TYPE: FIBER POLY-LINED STEEL POLY STAINLESS STEEL OTHER LID TYPE: RINGTOP CLOSED TOP DRUM CONDITION: MEET DOT SPEC. GOOD FAIR POOR DRUM SIZE: 110 85 2 6 10 OTHER DRUM CONTENTS: VOLUME: FULL 3/4 2 4 1/4 M OVERPACKED: NO ES Pack Type: FIBER STEEL POLY OTHER

Table with columns: LAYERS, PHYS. STATE, COLOR, CLARITY, LAYER THICKNESS, FIELD ANALYSIS (pH, SU, PID, DOSIMETER, OTHER), DRUM LABELS/MARKINGS, DOT HAZ, UN/NA

MFG NAME CHEMICAL NAME ADDITIONAL INFORMATION

LABORATORY COMPATIBILITY DATA: MARK PHYSICAL STATE AND COLOR MATCHES THE ABOVE INFORMATION. IF NOT, ANALYSIS AND NOTIFY PROJECT CONTACT. FURTHER WORK WILL NOT BE PERFORMED. COMPATIBILITY CAT: ANALYSTS: DATE PERFORMED: RADIATION: POS N MREM/HR

Table with columns: PHYS. STATE, COLOR, CLARITY, WATER SOL, REACT, pH, HEX SOL, PE R, OXID, CN, SL, BIEL-STEIN, FLASH POINT, PCBs (25 PPM), PCB TEST COMP. Includes rows for Layers (Liquid, Solid, Gel, Sludge) and T, M, B.

COMMENTS: PCB CONC. PPM FLASH POINT °C COMPATABILITY COMP. BULK # DATA REVIEWER: DATA REVIEW DATE: FIELD REVIEWER: FIELD REVIEW DATE:

Table with columns: TRANSFER NUMBER, TRANSFERS RELINQUISHED BY, TRANSFERS ACCEPTED BY, DATE, TIME

Figure 7.8-1

ATTACHMENT 3

INCIDENT REPORTING MANAGEMENT PROCEDURES - FEDERAL

Incident Reporting and Management Procedure - Federal

Action	Who? When?	Under what circumstances?	How?	Notes:
1. Notify Supervisor for all incidents (no matter how minor)	Injured person, first person recognizing incident, driver/passenger, or employee causing damage <i>Immediately</i>	All incidents no matter how minor	In person or by telephone	
2. For life-threatening injuries/illnesses - contact local emergency personnel	Site Supervisor <i>Immediately (concurrently with next step if injury or illness)</i>	In case of serious injury or illness requiring off-site medical care	Via ambulance	Site Supervisor or Site Safety Officer must immediately go to emergency care facility.
For non life-threatening injuries/illnesses - transport injured person to doctor at an occupational medical facility	Site Supervisor <i>Immediately (concurrently with next step if injury or illness)</i>		Via vehicle	Site Supervisor or Site Safety Officer must transport and stay with injured person until released from care
For vehicle accidents – make scene safe, notify police, aid injured parties	Driver/passenger <i>Immediately</i>			
For equipment/property damage - make scene safe, prevent further damage or injuries	Employee causing damage <i>Immediately</i>			
3. Notify Health Resources (for injuries/illnesses to Shaw employees only)	Site Supervisor <i>Immediately, prior to transporting the injured employee, unless injuries are life threatening</i>	<ul style="list-style-type: none"> ◆ Serious injury requiring off-site medical care ◆ If employee states that he/she has been exposed to any chemical or biological substance 	800-350-4511 Note: Outside Continental US call 781-935-8581	<ul style="list-style-type: none"> ◆ Not required for temporary agency and contract labor ◆ Provide name of injured employee, name and phone # of treating medical facility, description of the incident ◆ Health Resources will help with medical facility coordination and follow-up care
4. Notify Regional/Program H&S Manager	Site Supervisor <i>Immediately (concurrently with providing transportation to occupational medical facility or EMS transport to hospital)</i>	All incidents	See Federal Incident Notification and Communication Contact List (attached)	<ul style="list-style-type: none"> ◆ Contact should be made prior to sending the individual for medical care ◆ Regional/Program H&S Manager will notify Mike Zustra as appropriate

Incident Reporting and Management Procedure – Federal (continued)

Action	Who? When?	Under what circumstances?	How?	Notes:
5. Notify Shaw Notification Hotline/Help Desk	Site Supervisor <i>As soon as possible. Prior to sending an individual for medical treatment</i>	<ul style="list-style-type: none"> ◆ Illness and/or injury (doctors cases and above) ◆ Property damage (damage > \$2,500.00) ◆ Vehicle accidents (All) ◆ Criminal activity (i.e. bomb threat, theft) ◆ Natural disaster (all) ◆ Explosion and/or fires (damage > \$2,500.00 or result in injury) ◆ Environmental spills/releases (incidents that requires regulatory notification or have an offsite impact) ◆ Regulatory agency visit ◆ Fatalities 	Shaw Notification Hotline/Help Desk Phone Number 866-299-3445 Note: Outside the Continental US call 225-215-5056	
6. Complete forms: <i>Injuries and illnesses</i> ◆ Authorization for Release of Protected Medical Information ◆ Authorization for Treatment of Occupational Injury/Illness ◆ Return-To-Work Examination Form <i>and</i> fax to Health Resources <i>and</i> fax to Loss Prevention Manager (Casey Parker)	Injured employee and medical facility personnel (Site Supervisor is responsible for verifying forms are completed) <i>Prior to leaving medical facility</i>	<ul style="list-style-type: none"> ◆ Serious injury requiring off-site medical care ◆ If employee states that he/she has been exposed to any chemical or biological substance 	Fax to Health Resources at 800-853-2641 Fax to Loss Prevention Manager (Casey Parker at 225-987-3080)	Site Supervisor or Site Safety Officer must take these forms with him/her to occupational medical facility or hospital (Contained in HS 020)
7. Call Project Manager and notify of incident	Site Supervisor <i>As soon as reasonably possible</i>			Project Manager will report incident to upper levels of Operations/Business Line Management

Incident Reporting and Management Procedure – Federal (continued)

Action	Who? When?	Under what circumstances?	How?	Notes:
8. Call back Regional/Program H&S Manager to report on status of <i>injured/ill employee</i>	Site Supervisor <i>Prior to employee leaving medical facility</i>	All injuries and illnesses requiring off-site medical care	See Federal Incident Notification and Communication Contact List (attached)	
9. Complete forms: <i>OSHA Recordable Cases</i> Supervisor's Employee Injury/Illness Report Form Injured Employee Statement Witness Statement Form(s) <i>First Aid Cases</i> Supervisor's Employee Injury/Illness Report Injured Employee Statement Witness Statement Form(s) Fax completed forms to Shaw Corporate Claims <u>and</u> Regional/Program H&S Manager <u>and</u> Health Resources.	◆ Site Supervisor ◆ Witnesses <i>As soon as possible – no later than 24 hours</i>	All injuries, illnesses, and first aid cases	Shaw Corporate Claims Department Fax (225-932-2636) Health Resources Fax 800-853-2641 See Federal Incident Notification and Communication Contact List (attached)	Site Supervisor should have these forms with him/her at all times (Contained in HS 020)
10. Complete forms: <i>Chargeable Vehicle Accidents</i> Vehicle Accident Report Witness Statement Form(s) Driving Record Certification (Procedure HS800) <i>Non-Chargeable Vehicle Accidents</i> Vehicle Accident Report Witness Statement Form(s) <i>Equipment, Property Damage and General Liability Incidents</i> Equipment, Property Damage and General Liability Loss Report Witness Statement Form(s)	◆ Site Lead / Supervisor ◆ Witnesses <i>As soon as possible – no later than 24 hours</i>	All vehicle accidents and /or all property damage	Shaw Corporate Claims Department (225-932-2636) See Federal Incident Notification and Communication Contact List (attached)	Supervisor should have these forms with him/her at all times (Contained in HS 020)

Fax completed forms to Shaw Corporate Claims and Regional/Program H&S Manager.

Incident Reporting and Management Procedure – Federal (continued)

Action	Who? When?	Under what circumstances?	How?	Notes:
<p>11. Complete forms:</p> <p>OSHA Recordable Cases Incident Investigation Report</p> <p>First Aid Cases Incident Investigation Report</p> <p>Chargeable Vehicle Accidents Incident Investigation Report</p> <p>Non-Chargeable Vehicle Accidents Incident Investigation Report</p> <p>Equipment, Property Damage and General Liability Incidents Incident Investigation Report</p> <p>Near Miss Incident Investigation Report</p> <p>Fax completed forms to Regional/Program H&S Manager</p>	<p>Site Supervisor <i>As soon as possible – no later than 72 hours of incident</i></p>		<p>Shaw Corporate Claims Department (225-932-2636)</p> <p>See Federal Incident Notification and Communication Contact List (attached)</p>	<p>Supervisor should have these forms with him/her at all times (Contained in HS 020)</p>
<p>12. Perform "Accident Review Board" (ARB) and fax to Regional/Program H&S Manager.</p>	<p>Site Supervisor/Project Manager <i>Within 10 days of incident</i></p>	<p>OSHA Recordable Cases</p> <p>Chargeable Vehicle Accidents</p>		<p>ARB must include: Regional Manager, Project Manager, Employee's Direct Supervisor, Regional/Program H&S Manager, and Employee(s) involved in the incident. Lost time injuries will require Bill Winkler and Mike Zustra.</p>

FEDERAL INCIDENT NOTIFICATION AND COMMUNICATION CONTACT LIST

Project Number: 796887 Project: Fort McClellan Office: Fort McClellan Field Office Facility Location: Anniston AL

Name	Phone Number(s)	Fax Number	E-mail
Shaw Notification Hotline / Helpdesk	866-299-3445 225-215-5056 (Outside Continental US)	N/A	N/A
Health Resources	800-350-4511	800-853-2641	
Shaw Corporate Claims Department		225-932-2636	
Program/Project H&S Manager – Doug Russell	865-692-3584 (office) / 865-414-9545 (cell)	865-690-3626	winston.russell@shawgrp.com
East Region Army H&S Manager - Doug Russell	865-692-3584	865-690-3626	winston.russell@shawgrp.com
Shaw E&I Health & Safety Director – Mike Zustra	614-834-4819 (office) / 740-215-3431 (cell)	614-834-4819	mike.zustra@shawgrp.com
ERC Division H&S Manager-Dave Mummert	419-425-6129 (office) / 419-348-1544 (cell)	419-425-6039	david.mummert@shawgrp.com
Project Manager – Steve Moran	865-694-7361 (office) / 865-607-9148	865-690-3626	steve.g.moran@shawgrp.com
Army Program Manager – Bob Culbertson	865-694-4702 (office) / 865-717-3293 (cell)	865-690-3626	bob.culbertson@shawgrp.com
Loss Prevention Manager (Casey Parker)	225-932-2763 (office) / 225-405-1246 (cell)	225-987-3080	casey.parker@shawgrp.com
(Troy Allen)	225-932-2579 (office) / 225-229-1759 (cell)	225-987-3454	troy.allen@shawgrp.com

Note: Notifications to operations chain will be verbal and as soon as reasonably possible, but no later than 24-hours following the incident.