DETAILED WORK PLAN
ABOVE AND BELOW GROUND TANKS
REMOVAL PROJECT
FULTON TERMINALS SITE
OSWEGO COUNTY, NEW YORK

PREPARED ON BEHALF OF THE CONSENTING RESPONDENTS PURSUANT TO UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION II, ADMINISTRATIVE ORDER ON CONSENT
INDEX NO. II
CERCLA-60209

CWM-ENRAC CONTROL NO. 579-1192

(Revision 2, dated November 6, 1986)

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1.0 INTRODUCTION

The Fulton Terminals site is located within the Corporate limits of the City of Fulton, Oswego County, New York.

The project objectives are to remove two (2) above ground and two (2) below ground tanks from service via emptying, excavation, dismantling, and removing. The work is being undertaken on behalf of the companies and other entities that have consented to the issuance by the United States Environmental Protection Agency, Region II, of Administrative Order on Consent Index No. II CERCLA-60209 (the "Consent Order"). The work will be performed in accordance with the requirements of the Consent Order and the "Agreement for Fulton Site Mitigation Activities" entered into between CWM-ENRAC and the Fulton Trust Fund.

The following summary gives the specific details regarding the tanks to be removed:

TANK SUMMARY

Tank No.	Capacity (Gals)	Contents	Contents Volume (Est)
1	1.0 million	Sludge	18,000 gallons
5	20,000	Tar-like material	15,000 gallons
6*	10,000	Sludge/Liquid	10,000 gallons
8*	10,000	Sludge/Liquid	3,000 gallons

*Underground Tanks

CWM-ENRAC has developed the following Technical Proposal for the removal activities at the Fulton Terminals Site. This document constitutes the "Detailed Work Plan" required by Paragraphs 29 and 30 of the Consent Order. The technical approach described in the following sections presents a project that effectively accomplishes the objectives set forth above at the site, and which is safe and environmentally sound.

2.0 SCOPE OF WORK

Based upon a site visit, analytical reports and review of the site investigation report, CWM-ENRAC has developed the following generic Scope of Work which establishes the foundation of a comprehensive operations plan for this project. The Scope of Work outlines the basic tasks which CWM-ENRAC will undertake for the safe and orderly processing, removal, transportation and disposal of the tanks and tank contents. These site specific tasks are as follows:

2.1 Site Preparation

2.1.1 Support trailers (Decon, office and equipment trailer) and equipment will be brought in and set-up. A site plan is attached.

2.1.2 Emergency response stations will be established in close proximity to the active work areas. These stations will be supplied with spill response materials, fire fighting equipment, (wet and dry) and emergency first aid supplies (stretchers, showers, first-aid kits, etc.).

2.1.3 Barricades and flagging will be placed to keep unauthorized personnel out of the potentially hazardous work areas. Everything inside the chain link fence will be considered the hot zone. The hot zone will be delineated from the remainder of the site by chain link fencing. In addition, a high visibility fence will be installed between the existing fence and the warehouse and along N. First Street.

2.1.4 Berms will be constructed in front of the catch basin (west of Tank #1) in order to control surface run-off from the site.

2.1.5 The waste on soil will be removed and placed in roll-off containers staged at the site by the EPA. The areas in which

waste on soil has been removed will then be covered with Poly (Visqueen) sheets. No contaminated soil will be removed.

2.2 Initial Tank Survey

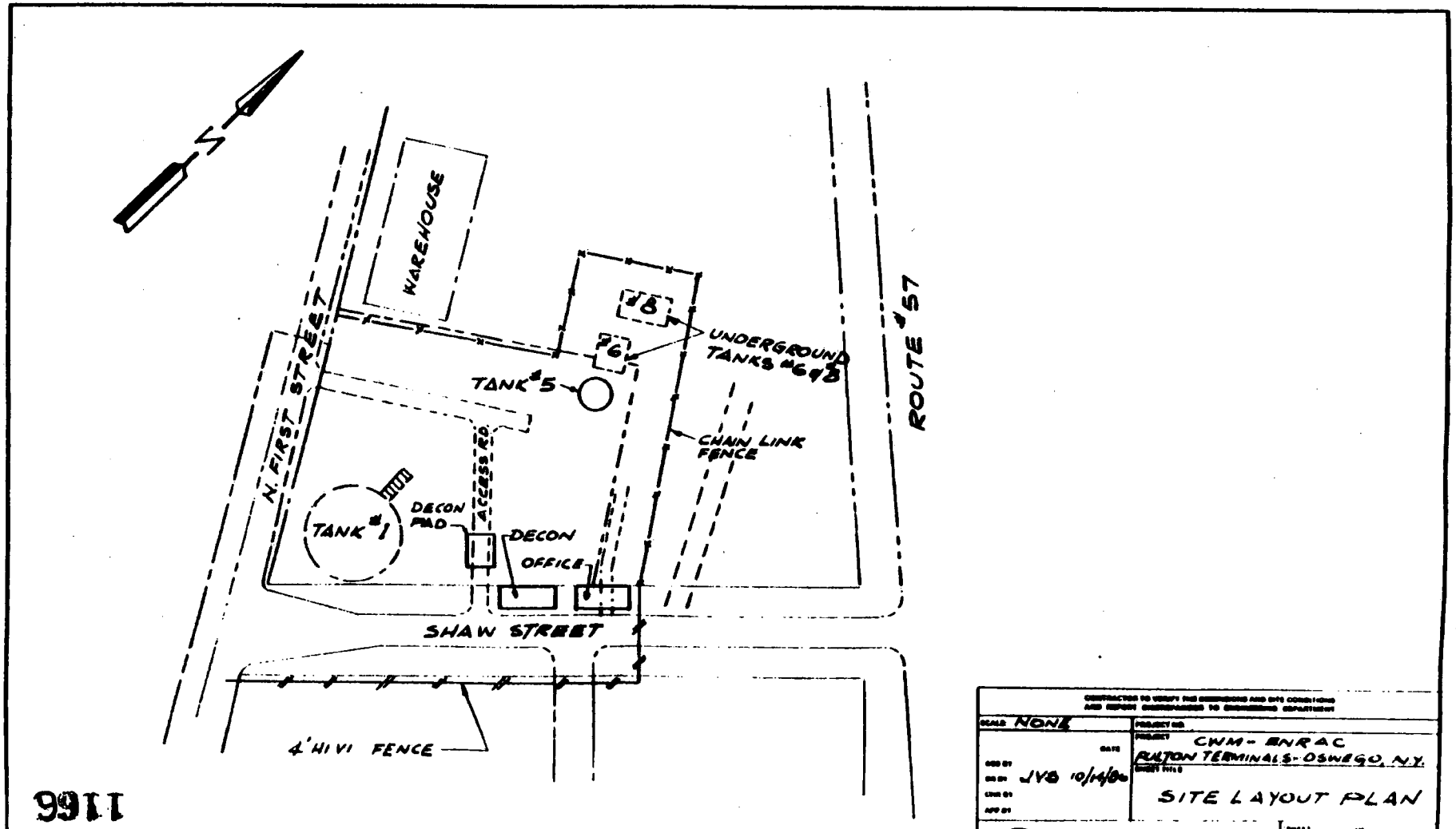
2.2.1 Number and identify tanks by size, contents and location.

2.2.2 Identify and expose piping, valves, fittings, pumps, etc. which will need to be dismantled, including internal heating coils. All piping, valves, fittings, and heating coils leading into and out of the tanks will be severed at the tank wall. All piping, valves, fittings, and heating coils will be removed and placed in roll-off containers for disposal at the SCA Chemical Services SLF in Model City, NY.

2.2.3 Perform background monitoring including LEL, oxygen deficiency and specific organic vapors concentrations using a photoionizing potential detecting equipment. In addition, air monitoring will be conducted in order to establish a baseline. Also, continuous air monitoring downwind of the site will be employed during site activities.

The air monitoring activities will be performed using an Organic Vapor Analyzer (OVA) with continuous strip chart recorder. The strip chart will be checked routinely at a frequency of at least once every 30 minutes.

The air monitoring activities will provide for the establishment of stop work levels as well as a trigger mechanism for changes in levels of protective equipment for active on-site personnel. The stop work levels will be established by the EPA OSC in consultation with the CWM Project Manager.



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SCALE NONE	PROJECT CWM - ENRAC
DRN BY JVB 10/14/86	RULTON TERMINALS - OSWEGO, N.Y.
	SITE LAYOUT PLAN

Chemical Waste Management, Inc

2.3 Excavation

Where necessary, a pavement breaker will be used to break up any concrete or asphalt. A backhoe equipped with a toothless bucket may be used to expose the top and sides of the underground tanks. The walls of the excavation will be sloped as much as possible to minimize the potential of cave-in. In view of the tight working quarters, shoring may need to be installed where adequate sloping is not feasible as per 29 CFR 1926.650 (shoring and trenching). The excavation will be considered a confined space with respect to personnel entry with the necessity for shoring being determined in the field.

2.3.1 CWM-ENRAC's experience indicates that a water management program will be initiated as a contingency in all excavation work.

2.3.1.1 The areas of excavation will be bermed. Diversionary swales will be constructed on the upgrade side of the excavation to eliminate any water run-in.

2.3.1.2 In the event that groundwater or rain accumulates in the open excavation, this water will be pumped to portable storage tanks and analyzed prior to discharge. If contaminants are detected, it may need to be handled as a regulated material.

2.4 Tank Opening

2.4.1 All items identified in 2.2.2 will be dismantled following line breaking procedures.

2.4.2 Manways will be accessed using conventional hand held tools to remove the nuts and bolts. If this is not possible, hydraulic sheet and/or cutting equipment may be utilized. Sparkless tools and grounding will be used whenever applicable.

2.5 Tank Sampling and Analysis

2.5.1 The atmosphere of the tank interiors will be monitored as specified in Section 2.2.3.

2.5.2 Two samples of the tank contents, if present, will be taken. These samples will be fingerprint tested and visually inspected to identify proper handling/packaging procedures (oil, water, gasoline, etc). The sample will then be forwarded to the CWM (or WMI) ultimate management facility for detailed disposal decision analysis prior to shipment off-site.

2.5.2.1 If tank entry is required, confined space entry procedures will be performed.

2.6 Content Removal

Using the information obtained in 2.5.2 above, the contents of the tanks will be removed using vacuum equipment or conventional pumps if possible. The material will be containerized in tank trucks, FRAC tanks (mobile storage tanks) or drums depending on their volume and chemical characteristics. In addition, it may be possible to utilize gas or liquid freezing technology to aid in removal of the tar-like material. This material would then be removed in a solid phase.

2.7 Inspection & Testing

Visual inspection of the tanks will be conducted to identify any evidence of additional leaks.

2.7.1 If leaks are detected, the EPA OSC will be notified. In addition, notification requirements will be made as set forth in paragraph 39 of the Administrative Order on Consent.

2.8 Tank Removal

Using heavy equipment, the underground tanks will be lifted out of the excavation.

2.8.1 Prior to movement, procedures outlined in Section 2.5.1 will be conducted. If this procedure is not sufficient in handling the hazardous vapors within the tank, purging may take place using carbon dioxide or nitrogen. Action levels for purging will be established by the EPA OSC in consultation with the CWM Project Manager. They will be based upon instrument readings with the Organic Vapor Analyzer (OVA).

2.8.1.1 If monitoring indicates an explosive atmosphere or other hazards are present, compressor-driven, explosion proof, sparkless fans will be installed to vent the tanks.

2.8.2 If necessary, any residual material will be removed and the tank cleaned. Residues and resultant washings will be loaded-out in bulk if possible. Odor control during this task will be established or utilized by the CWM Project Manager as deemed appropriate by the EPA OSC.

2.9 Tank Cutting & Removal

Upon tank removal, a gas free atmosphere will be obtained prior to tank cutting to avoid the possibility of having volatile fumes trapped in the steel shell. The two 10,000, one 20,000 and one 1,000,000 gallon tanks will gas-freed, dismantled, disposed of as scrap (pending approval). If the tanks cannot be disposed of as scrap, they will then be disposed of as regulated waste pending approval of a secure landfill facility.

2.9.1 During the tank cutting and removal, emissions from the tanks will be monitored with an Organic Vapor Analyzer (OVA) with strip chart recorder. If air monitoring instrument data

indicates that the treatment of air emissions is warranted, the EPA OSC may impose this additional requirement.

2.10 Transportation

All transportation will be in fully permitted and licensed vehicles.

2.10.1 SOLIDS:

2.10.1.1 Tank contents, when drummed, may be transported using box-van trailers;

2.10.1.2 Dismantled tanks may be transported using flatbed or dump trailers.

2.10.2 LIQUIDS:

2.10.2.1 Vacuum or bulk tanker trailers will be utilized to transport bulk liquids when possible. Drummed liquids will be handled as in 2.10.1.1.

2.11 Disposal

2.11.1 LIQUIDS: (drum or bulk)

2.11.1.1 Residual organics and cleaning rinsates will be managed at CWM's TSD facility in Newark, New Jersey, our Solvent Resource Recovery facility in West Carrollton, Ohio, our SCA/Chicago, Illinois Incinerator, and/or our TWI/Sauget, Illinois Incinerator. Use of the above facilities are contingent upon EPA approval as set forth in paragraphs 46 through 48 of the Administrative Order on Consent.

2.11.2 SOLIDS: (tank carcasses and debris)

2.11.2.1 Tank carcasses and debris will be managed at CWM's Model City, New York facility as a regulated waste, pending approved by the facility. Use of the above facilities are contingent upon EPA approval as set forth in paragraphs 46 through 48 of the Administrative Order on Consent.

3.0 OPERATIONS

The operations plan which follows addresses in detail each of the tank handling tasks which CWM-ENRAC will undertake in the implementation of removal activities at the Fulton Site. The plan has been developed to specifically address key factors associated with the project, while remaining flexible enough to meet changing site conditions.

3.1 Mobilization

During the initial phase of the site mitigation activities CWM-ENRAC will mobilize the necessary personnel and equipment to undertake the project safely and effectively with the overall goal of maintaining project scheduling. An equipment trailer and support equipment will be established near the tank excavation area.

Upon completion of mobilization activities outlined in Section 2.1 and 3.1 the actual on-site removal procedures will commence.

Heavy equipment (crane, backhoe, dozer, etc.) and trucks will be scheduled as needed. A backhoe will be assigned to the project full time.

3.2 ENRAC Personnel/Responsibilities

ENRAC is staffed by thoroughly experienced, degreed scientists and technicians. The select team of professionals who staff the ENRAC Division holds degrees in Chemical Engineering, Civil Engineering, Biochemistry, Environmental and Ecological Sciences, Analytical Chemistry and Geology as well as various business disciplines of accountancy, administration, etc. The following describes the responsibilities of key project personnel. It should be noted that while these individuals remain accountable for their various areas of responsibility, the tasks associated with those areas may be assigned to other project personnel.

ENRAC Project Manager - Richard Young

Removal actions at all sites are under the direction of an ENRAC Project Manager. The ENRAC Project Manager is responsible for:

- Coordination of the activities and efforts of the Operations Coordinator in order to ensure efficient and effective project performance;

- Coordinate and schedule the project (determine when and where to move the crew, ensure that proper equipment is at the site when crew arrives, ensure all necessary details are handled prior to crew moving to site, etc.);

- Assist Operations Coordinator with any on-site problems encountered (make arrangements for additional personnel if needed, additional or alternative types of equipment, operational problems, etc.);

- Periodically inspect the work at the site to ensure proper performance;

- Maintain complete awareness of current status of the project;

- Schedule, specify, and coordinate the appropriate type of equipment needed to perform work.

ENRAC Operations Coordinator - Richard Kilmer

The ENRAC Operations Coordinator will be at the site whenever work is being done. He is responsible for:

- Complete on-site responsibility reporting to the Project Manager;

- Supervising personnel;
- Assigning work duties;
- Assuring proper safety equipment and procedures are used;
- Resolving disputes/problems among personnel;
- Handling day-to-day operational problems involved with the job;
- Assuring equipment is maintained;
- Maintaining log book of clean-up activities;
- Establishing starting and quitting time (number of days worked per week, etc.);
- Recording all time expended, material and expenses;
- Handling all paperwork (Manifests, Bill of Ladings, etc.);

ENRAC Safety Representative - Peter Larson

The ENRAC Safety Representative reports to the Project Manager and is on site whenever operations are in progress.

The ENRAC Safety Representative's responsibilities include:

- Coordinating health surveillance of all ENRAC employees;
- Assuring that safety procedures in effect are in compliance with all appropriate federal, state and company regulations (following the most stringent);

- Maintaining personnel exposure records;
- Assuring appropriate personnel protection equipment is adequate for actual hazards of on-site working conditions;
- Assuring appropriate hazard areas are identified and well marked;
- Assuring all personnel entering hazard areas are in appropriate levels of protection;
- Assuring that all personnel and equipment existing hazard areas are properly decontaminated;
- Supervising the establishment and operation of the decontamination area;
- Conducting personnel hazard exposure surveillance using personal air sampling devices, film badges, dosimeters, etc.;
- Conducting ambient air monitoring at the work site and at the down-wind edge of the hazard areas;
- Coordinating health emergency plans;
- Coordinating evacuation plans;
- Establishing and supervising emergency response stations;
- Assuring adequate supplies of personnel protective equipment are maintained and replaced for the operations being conducted;
- Assuring all supplied air equipment is functioning properly;

- Conducting safety meetings with employees;

- Establishing and coordinating fit testing for all respiratory protective equipment to be used on site;

- Establishing site specific safety procedures for problems encountered on site.

3.3 Tank Demolition

Once the bulk liquids and sludges (under Level "B" safety) have been removed from the on-site tanks, tank demolition can begin as a follow-on operational phase. Tank demolition procedures will follow a specific operational sequence in order to assure complete safety for personnel during demolition operations. The following paragraphs describe the operational sequence and the protocols that will be applied.

After a tank is opened following removal of bulk wastes, a non-sparking fan will be used to direct fresh air in and force potentially volatile vapors out of the tank. Following the vapor dispension operation, inert gas or air will be pumped into the tank to force out remaining vapors. Additionally, it may be necessary to blanket tank residuals with foam, absorbent, or water in order to minimize reactivity.

All work on tanks will be done in teams of at least two persons. At least one person is, at all times, assigned to monitor actual tank cutting activities. Conditions in, on and around tanks are continuously monitored for change or reaction. Safety equipment and emergency response equipment will be readily available at all times. Such equipment may include portable high pressure foam dispersion units, a mobile fire-fighting unit, and a high pressure water delivery system.

Cold cutting will be performed on tanks with flammable contents. Cold cutting saws and drills are designed to cut in controlled revolutions to minimize sparking. Hot cutting involves the use of a torch and is used only on tanks with non-flammable contents.

Work on all tanks will be done as close to the ground as possible to minimize the risk of personal injury. One person oversees the instruments, tools, fire equipment and water supply and cools the tank with water as necessary while the other team member is cutting.

Cables will be attached to the tank as necessary and secured by heavy equipment to eliminate toppling of tanks during cutting operation. Tanks will always be oriented horizontally prior to commencing with cutting operations.

Following the cutting of the tanks, the resulting materials will be loaded into transportation vehicles. The vehicles will be tarped and, after completion of necessary paperwork and documentation, the trucks will be dispatched to the designated ultimate management facility.

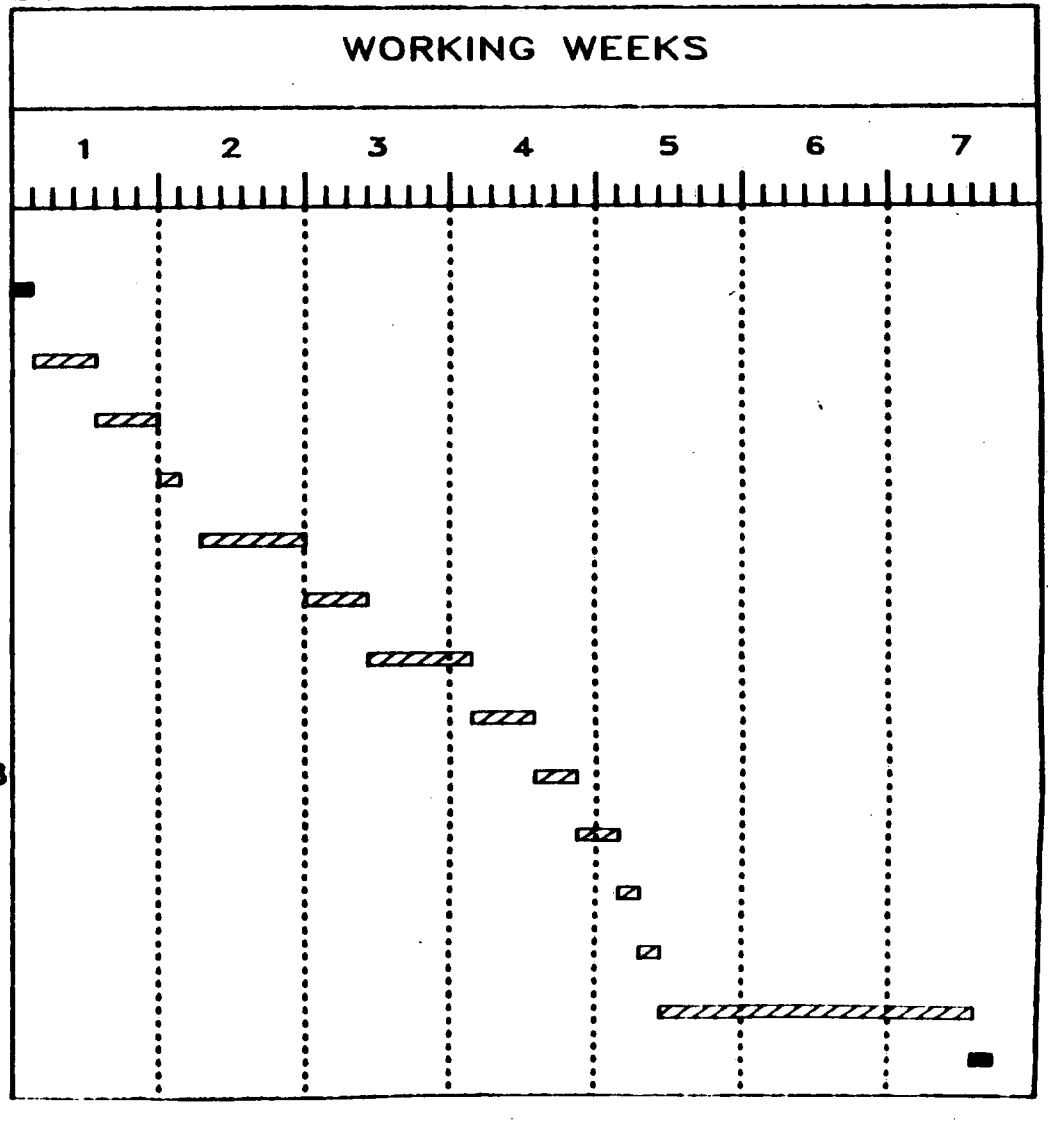
3.4 Demobilization

All equipment and personnel will be demobilized in a timely fashion upon completion of on-site activities. In addition, demobilization shall include those items as specified in paragraph 50 of the Administrative Order on Consent.

PROPOSED TANK REMOVAL SCHEDULE

FULTON TERMINALS SITE - OSWEGO COUNTY, NEW YORK

CWM - ENRAC CONTROL NO. 579-1192



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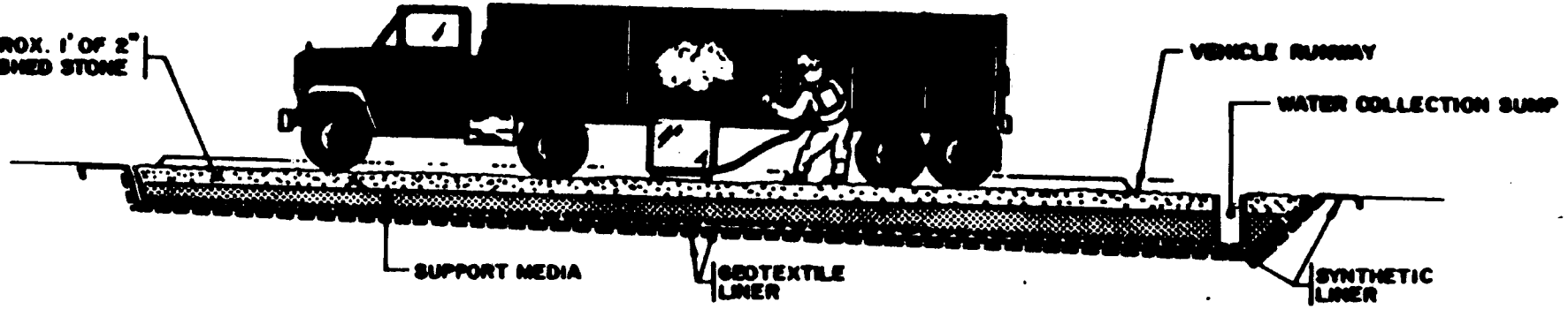

NOTE: CWM-ENRAC TECHNICIANS WILL DECONTAMINATE WHEELS AND UNDERCARRIAGES OF LOADED VEHICLES AND/OR EQUIPMENT USING PORTABLE STEAM/HIGH PRESSURE WATER UNITS.

WASH WATER GENERATED DURING THIS OPERATION WILL BE COLLECTED AT A COMMON SUMP AND PUMPED DIRECTLY TO A BULK LIQUID TRAILER OR ABOVE GRADE STORAGE TANK FOR ON-SITE PROCESSING OR OFF-SITE TREATMENT AND/OR DISPOSAL.

CONCEPTUAL DESIGN (Not to Scale)

VEHICLE AND EQUIPMENT DECONTAMINATION STATION

Chemical Waste Management, Inc.
ENRAC DIVISION

6/11

ENVIRONMENTAL HEALTH & SAFETY PLAN
(Including Emergency/Contingency Plan)

1.0 Purpose and Scope

This health and safety plan for environmental remedial activities is intended to prescribe minimum procedural and equipment requirements for worker protection. Operating conditions can be expected to change as the work progresses, requiring some modification of the plan. As appropriate, addenda will be provided by the ENRAC Site Safety Officer and/or the Health and Safety Manager.

The plan is designed to comply with established ENRAC policies and procedures, and applicable state and federal OSHA regulations. Therefore, no changes to the plan will be authorized without prior approval of the ENRAC Health and Safety Department. All ENRAC site personnel, site visitors, and subcontractor personnel are subject to the provisions of this directive.

2.0 Key Personnel and Responsibilities

Clear lines of authority shall be established for enforcing compliance with the health and safety procedures, consistent with industry policies and procedures.

Designated ENRAC personnel are responsible for field implementation of the health and safety plan. This includes field supervision, maintaining contamination control zones, enforcing safe work practices and decontamination procedures, ensuring proper use of personal protective equipment, and communicating modified safety requirements to site personnel.

The ENRAC Safety Officer is responsible for field technical coordination of the health and safety program. Specific site

duties will include: establishing site work zones and decontamination stations, conducting periodic safety inspections, establishing emergency egress points, assembly areas, and first-aid stations, implementing a site emergency warning/communications system(s), maintaining the local medical surveillance and emergency medical treatment programs, conducting site specific employee training and information sessions, conducting air monitoring, assigning appropriate protection levels for site personnel, auditing safety recordkeeping compliance, service as technical liaison to regulatory agency personnel on matters related to occupational safety and health.

3.0 Medical Surveillance

3.1 Examination Requirements

All site personnel, including any subcontractors, shall have successfully completed a preplacement or periodic/ update medical examination prior to their assignment to the project. The evaluation shall include, at a minimum:

3.1.1 A review of medical, personal, family and occupational histories;

3.1.2 Physical examination and clinical evaluation of the employee's ability to: Wear respiratory protective devices and protective apparel, to tolerate strenuous work and heat stress conditions and to work with hazardous materials;

3.1.3 Clinical tests:

a. PA chest x-ray
b. Pulmonary function (FEV 1.0) and (FVC)
c. Audiometry (approved booth)

d. CBC with differential, hematocrit
e. Blood chemistry (SMAC 23 test survey)
f. Urinalysis
g. Vision screening; and

3.1.4 Any other tests deemed appropriate by the examining physician.

3.2 Emergency Medical Treatment

Emergency medical treatment is integrated into the overall emergency contingency plan. The provisions for emergency medical treatment include:

3.2.1 Training in first-aid and CPR for key project personnel.

3.2.2 Appropriate first-aid and CPR supplies and equipment.

3.2.3 Specific written medical emergency decontamination procedures, including written instructions for ambulance crews and hospital personnel as appropriate.

3.2.4 Conspicuously posted notices giving the names, phone numbers, addresses, and procedures for contacting the on-call physician, ambulance, medical facility, emergency fire and police services, and poison control hotlines.

3.2.5 Appropriate maps and directions to emergency medical facilities.

3.2.6 Periodic review with site personnel of the emergency medical treatment procedures.

3.2.7 Prompt and accurate reporting of all accidents and incidents consistent with established procedures.

4.0 Employee Training and Information

4.1 Initial Training

4.1.1 All project employees must be familiar with an approved orientation and basic safety program before their assignment to the remedial project.

4.1.2 This coursework shall be a combination of formal classroom instruction, demonstration, and practical exercises in the following subject areas:

a. Hazard Awareness: describing the chemical, physical, biological and radiological hazards that may be encountered in the workplace. (Generic)

b. Employee Rights and Responsibilities: describing corporate safety operating philosophy, employee information sources, and material safety data sheets.

c. Safe Work Practices: including the purpose for and application of work zones, contamination control and decontamination procedures.

d. Personal Protective Equipment: including instruction in the selection use, maintenance, and limitations of the equipment; demonstration of proper use; and practice drills.

e. Emergency Preparedness: describing the employee's site specific duties during emergency conditions.

f. Training Evaluation: including a written examination of all material concerns in the training course.

4.2 Refresher Training

Regular refresher training in basic hazard awareness shall be provided to employees at least annually.

4.3 Special Training

Many standards promulgated by OSHA explicitly require the employer to train employees in specific health and safety aspects of their jobs. Some OSHA standards require employers to limit certain job assignments to employees who are "certified", "competent", or "qualified", meaning that they have had special previous training. Examples of job assignments that require special training include, but are not limited to:

a. Welding, cutting and other hot work.
b. Confined space entry.
c. Fork lift truck operation.
d. Hazardous materials handling (e.g. - PCB's)
e. First aid and CPR.
f. Fire fighting
g. Compressed gas and compressed air equipment use.

4.4 Site Safety Officer Training

The minimum requirements for designation as a Site Safety Officer include successful completion of an approved

program training and a minimum of two years work experience in the areas of hazardous chemical handling, transportation and disposal.

4.5 Employee Notification/Information

The Site Safety Officer shall provide proper employee information and notification including air sampling results and material safety data sheet information for all related site activities.

4.6 Recordkeeping

The Site Safety Officer or his designee shall maintain appropriate training records on-site, in accordance with approved requirements.

5.0 General Safe Work Practices

5.0.1 Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of material is prohibited in any area where the possibility of contamination exists.

5.0.2 Hands must be thoroughly washed upon leaving a contaminated or potentially contaminated area before eating, drinking, or any other activities transpire.

5.0.3 Employees shall be required to shower at the end of the work shift whenever decontamination procedures for outer garments are in effect.

5.0.4 Legible and understandable precautionary labels shall

be prominently affixed to containers of materials, mixtures, scrap, wastes, debris, and contaminated clothing.

5.0.5 Contaminated protective equipment shall not be removed from the regulated area until it has been cleaned or properly packaged and labeled for disposal.

5.0.6 Removal of materials from protective clothing or equipment by blowing, shaking, or any other means which may disperse materials into the air is prohibited.

5.0.7 Portable or fixed emergency shower/eyewash stations shall be strategically located throughout the regulated area.

5.0.8 A deluge shower or hose and nozzle shall be available in the Contamination Zone to wash down heavily contaminated personnel before doffing protective clothing.

5.0.9 Personnel will be cautioned to inform each other of subjective symptoms of chemical exposure such as headaches, dizziness, nausea and irritation of the respiratory tract, eyes, or skin.

5.0.10 No excessive facial hair which interferes with a satisfactory fit of the mask-to-face seal, will be allowed on personnel required to wear respiratory protective equipment.

5.0.11 All respiratory protection selection, use, and

maintenance shall meet the requirements of 29 CRF 1910.134 and recognized consensus standards (AIHA, ANSI, NIOSH).

5.0.12 Adverse climatic conditions, heat and cold, are important considerations in planning and conducting site operations. The effects of ambient temperature can cause physical discomfort, loss of efficiency, personal injury, and increased accident probability. In particular, heat stress due to protective clothing decreasing body ventilation is an important factor. One or more of the following recommendations will help reduce heat stress. Their applicability is dependent on evaluating the climatic conditions specific to the operations.

a. Provide plenty of liquids to replace loss of body fluids. Employees should replace water and salts lost from sweating. Use either a 0.1% salt water solution, more heavily salted foods, or commercial mixes such as Gatorade. The commercial mixes may be preferable for employees on low sodium diets.

b. Establish a work schedule that will provide sufficient rest periods for cooling down. This may require shifts of workers when wearing suits and SCBA.

c. Cooling devices, such as vortex coolers and cool vests, may be worn under suits.

d. Establish work regimes consistent with the ACGIH Guidelines.

e. Provide employee monitoring consistent with the OSHA guidelines.

5.0.13 Cold stress control measures will be prescribed and implemented, as necessary.

6.0 Personal Protective Equipment

6.1 General

Selection of appropriate personal protective equipment will be based on the contaminant type(s), concentration(s), and routes of exposure. Selection of appropriate protection levels will consider all potential exposures to provide adequate worker protection.

The major objectives of the Personal Protective Equipment programs are to select equipment appropriate to and approved for the hazards; to ensure that the devices are introduced to users with a clear and complete explanation of their protection value and method of proper use; and to assign supervisory responsibility ensuring proper use and continued maintenance of the devices.

6.2 Levels of Protection and Equipment Requirements

Appropriate personal protection shall be worn according to pre-determined material exposure levels. The required safety equipment and clothing must be available on-site before work is to begin. Protective equipment and criteria is provided below for Levels A, B, and C.

6.2.1 Level A

Level A indicates that the types and concentrations of toxic substances are known to require the highest level of protection to the respiratory tract, skin and eyes.

Criteria includes:

- Atmospheres that are "immediately dangerous to life and health" (IDLH).
- Oxygen deficient atmospheres.
- Exposure to unprotected areas of skin is likely.

NOTE: This level of protection is also required when the specific hazards are unknown.

Level A Equipment

- Open circuit positive pressure SCBA;
- Totally encapsulating suits (boots and gloves attached);
- Chemically resistant inner gloves;
- Chemically protective boots with steel toe and shank worn over suit boot;
- Chemically resistant outer gloves;
- Coveralls worn under suit;

- Two way radio communications;

- Hard hat with face shield.

6.2.2 Level B

Level B indicates that the highest degree of respiratory protection is required, but site materials do not present a danger to small unprotected areas of the skin. The criteria for Level B include:

- Atmospheres are "immediately dangerous to life and health" (IDLH).

- Oxygen deficient atmosphere.

- Exposure of unprotected parts of body is unlikely.

Level B Equipment

- Open circuit positive pressure SCBA or Type C hoseline pressure/demand respirator with escape unit;

- Two piece, hooded, chemically resistant suit;

- Chemically resistant inner gloves;

- Chemically protective outer gloves;

- Chemically protective outer boots with steel toe and shank;

- Two way radio communications;

- Hard hat;
- Face shield;

6.2.3 Level C

Level C indicates that required respiratory and body protection is less than Levels A and B. Criteria for Level C is as follows:

- Vapor reading between 0 ppm and 5 ppm above background and not dangerous to life and health.
- Exposure of unprotected parts of the body is unlikely.

Level C Equipment

- Air purifying respirator (MSHA/NIOSH approved);
- Chemical resistant clothing;
- Overalls and long sleeved jacked or coveralls;
- Two piece hooded, chemically resistant splash suit;
- Chemically protective outer gloves;
- Chemically resistant inner gloves;
- Fire resistant cloth coveralls;

- Hard hat;
- Face shield;
- Chemically protective outer boots;
- Chemically protective inner boots with steel toe and shank;
- Two way radio communications or work done on "buddy" system.

7.0 Work Zones and Decontamination Procedures

7.1 General

The possibility of exposure or translocation of contaminants is reduced or eliminated in a number of ways, including:

a. Setting up security or physical barriers to exclude unnecessary personnel from the general area.

b. Minimizing the number of personnel and equipment on site consistent with effective operations.

c. Establishing work zones within the site.

d. Establishing control points to regulate access to work zones.

e. Conducting operations in a manner to reduce the exposure of personnel and equipment.

f. Minimizing the airborne dispersion of contaminant(s).

g. Implementing appropriate decontamination procedures.

7.2 Field Operations Work Areas

Work areas (zones) will be established based on anticipated contamination. Within these zones, prescribed operations will occur utilizing appropriate personnel protective equipment. Movement between areas will be controlled at check points. The planned zones are discussed below:

7.2.1 Exclusion Area

The Exclusion Area is the innermost area of three concentric rings and is considered contaminated, dirty or "hot". An entry check point will be established at the periphery of the Exclusion Area to control the flow of personnel and equipment between contiguous zones and to ascertain that the procedures established to enter and exit the zones are followed. Subsequent to initial entry and as cleaning proceeds, the boundary will be readjusted based on observations and/or measurements. The boundary will be physically secure and posted.

7.2.2 Contamination Reduction Area

Between the Exclusion Area and the Support Area is the

Contamination Reduction Area. The purpose of this zone is to provide an area to prevent or reduce the transfer of contaminants which may have been picked up by personnel or equipment working in the Exclusion Area. All personnel and equipment decontamination occurs in the Contamination Reduction Area.

The boundary between the Support Area and the Contamination Reduction Area is the "contamination control line". This boundary separates the potentially contaminated area from the clean zone. Entry into the Contamination Reduction Area from the Exclusion Area will be through an access control point.

Personnel entering this station will be wearing the prescribed personal protective equipment for activities in the Contamination Reduction Area. Exiting the Contamination Reduction Area to the Support Area mandates the removal of any suspected, or known, contaminated personal protective equipment and/or compliance with the decontamination procedures. At the boundary between the Contamination Reduction Area and the Exclusion Area is the "hot line" and access control station. Entrance into the Exclusion Area requires the wearing of the prescribed personal protective equipment.

7.2.3 Support Area

The Support Area is the outermost of the three rings and is considered a non-contaminated or clean area. It contains the Command Post and/or field headquarters trailer for field operations and other elements necessary to support site activities. Normal street work clothes

are the appropriate apparel within this zone. The Support Area will also contain parking facilities and a materials receiving area.

8.0 Decontamination Procedures

8.1 Introduction

As part of the system to prevent or reduce the physical transfer of contaminants by personnel and/or equipment from on-site, safety procedures will be instituted for decontaminating anything leaving the Exclusion Area and Contamination Reduction Area. These procedures include the decontamination of personnel, protective equipment, monitoring equipment, clean-up equipment, etc. Unless otherwise demonstrated, everything leaving the Exclusion Area should be considered contaminated and appropriate methods established for decontamination. In general, decontamination at the site consists of rinsing equipment, personnel, etc., with detergent/water solution. If contaminants are known, then a specific detergent and/or solvent can be used for decontamination. The spent solution, contaminated clothing, brushes, sponges, containers, stands, etc., used in the decontamination process will, unless shown otherwise, be considered contaminated and must be properly disposed. Disposal will involve placing all contaminated articles in DOT specified drums, affixing proper labels and disposal as a hazardous waste.

8.2 Personnel Decontamination

ENRAC may mobilize Personnel Decontamination Trailers (PDT's) to the site as required for personnel

decontamination. The PDT's are self-contained units which have facilities for showering and changing. Once on-site, the PDT forms the control for the worker access to the exclusion area. In order to enter the Exclusion Area, all personnel and visitors are required to proceed through the PDT to don the appropriate level of personal protective equipment.

At the end of a shift and whenever leaving the Exclusion Area, all personnel will be required to remove protective equipment and discard disposable garments and equipment in drums for disposal as hazardous waste. Reusable equipment will be pressure washed and will remain in the Contamination Reduction Area. All wash water generated from this process will be containerized for proper handling and disposal. All personnel will shower and change into clean clothes before leaving the PDT.

9.0 Emergency Contingency Plan

9.1 At least one qualified person will be designated to serve as Emergency Coordinator. A list of suitable alternatives will be prepared which designates substitutes for times that the primary Emergency Coordinator is unavailable.. Duties of the Emergency Coordinator(s) include:

9.1.1 Assessing the situation and determining whether an emergency exists which requires activating the plan;

9.1.2 Directing all efforts in the area including evacuating personnel and minimizing property loss;

9.1.3 Ensuring that outside emergency services such as fire departments, police, ambulance, and hospitals are notified when necessary;

9.1.4 Directing the shutdown of site operations when necessary;

9.1.5 Notifying regulatory agencies as necessary.

9.2 A list of key response personnel, including after-hour telephone numbers, for all response groups having responsibility for the site.

9.3 A list of site conditions which would require implementation of the plan, including, but not limited to:

9.3.1 Fire or explosion on site;

9.3.2 Serious employee injury;

9.3.3 Accumulation of combustible gases or vapors at concentrations greater than background;

9.3.4 Oxygen concentration below 19.5%;

9.3.5 Unsafe working conditions, such as inclement weather, or hazardous material releases;

9.4 Specific locations of wind direction indicators placed on site will be identified and reviewed with all personnel on a daily basis.

9.5 Specific written procedures to be followed when there is a release of hazardous materials, both on-site and off-site will be posted;

9.6 Specific written procedures for emergency site evacuation including evacuation routes and designated assembly areas, and procedures to account for all employees after evacuation has been completed.

9.7 Specific written procedures to be followed by employees who remain on-site to perform (or shut down) critical site operations before they evacuate.

9.8 Rescue and medical duties for those employees who are to perform them.

9.9 A list of the available emergency equipment, such as SCBA's, first-aid kits, fire extinguishers, emergency showers/eyewashes, etc.; and site diagrams indicating the location of the equipment on site.

9.10 Specific communication procedures to be followed by all personnel with two-way radios.

9.11 Procedures for contacting the necessary regulatory agencies.

10.0 EMERGENCY RESPONSE PLAN

10.1 Site Emergency Warning System

Several warning systems may be utilized depending on the worksite conditions or emergency involved:

a. Verbal communications;
b. Verbal communications assisted with a bull horn;
c. Radio communications;
d. Vehicle horns;
e. Portable hand-held compressed gas horns.

Verbal instructions with or without assistance are used to deal with specific incidents.

Radio communications are used on-site to give instructions and directions. Emergency radio communications are prefixed as such and have priority over operations communications.

Horn signals are used to signify an emergency warning. One long blast is used on-site to signify emergency evacuation of the immediate work area to a predetermined location upwind, where a head count will be taken and further instructions given.

Repeated short blasts are used on-site or from off-site to signify evacuation of all personnel from the site to the hot line where further instructions will be given after a head count is taken.

10.2 Emergency Equipment

The following equipment may be available at the work sites depending on the nature of the remedial activites to be performed:

a. Fire extinguishers - dry chemical
b. First aid kits (including chemical burn kit)
c. Emergency oxygen kit
d. Emergency shower kit (pressurized)
e. P.D.T. (Personal Decontamination Trailer)
f. Non-sparking tool kit
g. Fire Blankets
h. Litters
i. Portable two-way radio equipment
j. Combustible gas and oxygen detector alarm.
k. Organic vapor detection instruments - HNU photo-ionizer detector or Foxboro Analytical (formerly Century Systems) OVA
l. Inorganic vapor detector tubes and air supply pumps - Draeger and/or MSA
m. Hand-held compressed gas horns
n. Bull horns
o. Appropriate spill cleanup supplies and equipment

10.3 General Emergency Procedures

In case of an emergency or hazardous situation, the team member that observes this condition shall immediately give the alarm. The chain-of-events will be:

a. Upon hearing an alarm, all non-emergency communications will cease and the member giving the alarm will proceed to give the Project Manager all pertinent information.

b. Actions to be taken will be dictated by the emergency.

c. Power equipment will be shut down and operators will stand by for instruction.

d. Injured personnel will be transported to the Personnel Decontamination Trailer (PDT).

e. ENRAC Command Post (CP) will be notified immediately.

f. In case of a fire, explosion or hazard alarm, individuals will proceed immediately to assigned pre-located safe sites.

g. Upon arrival at the safe sites, a complete head count will be given to the Project Manager and individuals will stay at the safe site until the area is secured.

10.4 Personal Injury

If an injury occurs due to an accident or exposure to a hazardous substance, the ENRAC CP will be immediately notified by radio. The Site Safety Officer will be given all appropriate information concerning the nature and cause of the injury so that treatment preparations can be initiated. The injured person will be transported to the "hot line" where appropriate first aid and treatment can begin. The Project Manager will be informed and will investigate the cause of the injury and make any necessary changes in work procedures.

10.5 Air Monitoring Plan

The objective of ENRAC air monitoring programs is to measure potential volatile emissions into the ambient air

surrounding a remedial action site. An air monitoring program is designed to assess both real time and time weighted concentrations of volatile pollutants. Monitors are placed downwind of the work area in order to measure concentrations of pollutants that may be released from the site to surrounding areas. Secondly, vapor concentrations are measured in the immediate vicinity of each exhumation and/or activity to ensure that workers are not exposed to harmful levels of airborne contaminants. Finally, to further protect the health and safety of site personnel, organic vapor badges (3M or equivalent) are placed on all on-site individuals to monitor their exposure to airborne organics. Data from these monitors are interpreted and analyzed with respect to the above objectives.

10.6 Ambient Monitoring Contingencies

When ambient monitoring on the downwind edge of the site indicates higher than background levels of any contaminant, the Safety Officer and Project Manager will immediately determine the cause, make changes to work practices or procedures, and if necessary, make changes in site layout (i.e., change the location of the CP, Decontamination Area, or Exclusion Area), warn unprotected personnel to evacuate or don protective equipment, and coordinate with local authorities to effect off-site evacuation, as required.

CONTINGENCY PLAN AND EMERGENCY PROCEDURES

FULTON TERMINAL
FULTON, NY

CONTINGENCY PLAN AND EMERGENCY PROCEDURES

Whenever there is an immenent or actual emergency situation, the following steps will be followed:

1. The person witnessing the emergency will contact the Emergency Coordinator or his alternate.

2. The EC shall immedicately notify the following personnel and activate the appropriate response measures:

   - CASUALTY CONTROL OFFICER (CCO) on duty- the CCO proceeds with notification of the Oswego County Control Center (695-2085 or 2086) if casualties are involved.

   - PERSONNEL COORDINATOR (PC) on duty.

   - COMMUNICATIONS COORDINATOR (CC) on duty.

3. If EC determines that evacuation is required, activate the EVACUATION PLAN.

4. The PC initiates a head count from the sign-in/sign-out list and notifies the CCO.

5. The CC will immediately notify one of the following persons at WMI Corporate headquarters of the emergency:
then will communicate with that contact during the duration of the emergency
To be called in order shown until contact is made:

Dick Young, Project Manager Pager # (640-6395) Business: 315-593-1819
After Hours 315-447-7684
Home: 716-754-7798

DAVE STAFFORD
business: 312-841-8360
home:312 312-389-3986

WILL BROCKER
business: 312-841-8360
home: 312-460-0663

Bruce mcglasson
business: 312-841-8360
home: 312-335-0904

VIRGIL POLAND
business: 716-754-8231
home: 716-745-3089

LYNN KLEINVEHN
business: 312-571-5460
home: 312-462-0853

KEN BANASZEK
business: 312-571-5460
home: 312-941-0069

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CONTINGENCY PLAN AND EMERGENCY PROCEDURES

NOTIFICATION PROCEDURES

INTERNAL NOTIFICATION

EMERGENCY COORDINATOR (EC)	PHONE #	PAGER	ADDRESS
Dick Young	315/593-1819		
After Business Hrs	315/447-7684	640-6395	RD #3, Box 350 So. Granby RD. Fulton, NY 13069
Rich Kilmer (ALT.)	315/593-1819		
After Business hrs	315/598-2224	640-6375	SAME AS ABOVE
Peter Larson	315/593-1819		
After Business hrs	315/695-2709	640-6376	SAME AS ABOVE

CASUALTY CONTROL OFFICER (CCO)		
Dick Young	640-6395	SAME AS ABOVE
Peter Larson (ALT.)	640-6375	SAME AS ABOVE

PERSONNEL COORDINATOR (PC)		
Rich Kilmer	640-6375	SAME AS ABOVE

COMMUNICATION COORDINATOR (CC)		
Rich Kimer	640-6375	SAME AS ABOVE
Peter Larson (ALT.)	640-6376	SAME AS ABOVE

EXTERNAL NOTIFICATION BY EMERGENCY COORDINATOR

Emergency Response Agencies

1.	Oswego Control Center (For all emergencies)	695-2085 695-2086
2.	Lee Memorial Hospital Oswego Hospital Menters Ambulance	598-2222 349-5522 592-4145
3.	N.Y. State Police Fulton Police	593-1223 598-2111
4.	NYS D.E.C. Dept. of Environmental Conservation Albany, N.Y. Chris Allen	518-457-5677
5.	United States Environmental Protection Agency (EPA) Edison, New Jersey Joe Rotolla	201-548-8730
6.	National Response Center	800-424-8802
7.	Chem Trec	800-424-9300
8.	Syracuse Poison Control Center	476-4766

When calling any response agency, give the following information:

- Name and telephone number of reporter.
- Name and address of facility.
- Time and type of incident(e.g., release, fire).
- Name and quantity of material (s) involved, to the extent known.
- The extent of injuries, if any.
- The possible hazards to human health, or the environment, outside the facility.

CASUALTY CONTROL PLAN

The Emergency Coordinator (EC) shall determine the existence or probability of on-site casualties and is responsible for activating the Casualty Control Plan (CCP). After notifying the CCO:

1. The CCO will assess the casualty situation and advise the EC on the need to summon emergency medical assistance.

2. When directed, the CCO shall request emergency medical assistance from:

   Homer Bowman
   Fire Coordinator
   Oswego Control Center
   695-2085-2086.

Be prepared to tell:

- This is a request for emergency medical assistance needed by
  Fulton Terminal
  No. 1st Street and Shaw Street
  Fulton, NY
- The nature of the emergency.
- An estimate of the numbers, types, and conditions of casualties.
- The existence of hazardous conditions or special risks.
- The name, location, and telephone number of the caller.

3. The CCO shall provide assistance to coordinate search and rescue efforts.

4. The CCO shall designate the location of the first-aid station and inform the EC and search and rescue staff.

THE REGULAR FIRST-AID STATION WILL BE LOCATED AT:

Fulton Site Decon Trailer

In case the regular first-aid station cannot be used, the first ALTERNATE AID STATION LOCATION IS:

Fulton Site Office Trailer

If neither aid station is usable, the CCO shall designate the emergency location of the aid station.

5. Casualties who can safely walk shall be directed to the first-aid station.

6. The CCO will designate, organize, and direct available first- aid personnel.

7. The CCO shall designate a technical person to help identify injury-causing hazardous agents and provide information on agent toxicity and decontamination.

   The following organizations can provide emergency chemical information:

   CHEM TREC 800-424-9300

   SYRACUSE POISON CONTROL CENTER 476-4766

8. The CCO will have incoming emergency/medical assistance met and guided to the first-aid station or location of on-site emergency.

9. Upon arrival of the FULTON Fire Department (FFD) unit, the control of casualty treatment and disposition will transfer to the (FFD) person in charge. The CCO will promptly notify the EC of (FFD) arrival and any transfer of casualty control. The CCO shall place himself/herself and the Fulton Terminal casualty control resources under the direction of the (FFD) person in charge.

10. After (FFD) determines where casualties will be taken, notify the appropriate Emergency Room of the arrival of casualties, nature of injury, information on toxicity and decontamination, and any other pertinent information.

11. The CCO shall keep a log of all casualties, listing for each: name, nature of injury, disposition, and time of departure.

EVACUATION PLAN

This section is applicable when an incident has occurred and after the EC has determined that site evacuation is required.

1. The EC contacts site personnel via two way radio or the EC activates the general evacuation alarm signal. One long blast is used on-site to signify emergency evacuation of the immediate work area.

   In the event of AIR HORN FAILURE, the EC will broadcast evacuation instructions to area supervisors via radio devices.

EVACUATION PLAN (Cont'd.)

2. Personnel evacuation should proceed as follows:

   - Quickly check the area for other personnel, including contractor personnel.
   - If downwind of incident evacuate perpendicularly to the wind direction over the most accessible route.
   - If upwind of incident evacuate in upwind direction.

3. Reassemble and remain at pre-established regrouping area (s) upwind of incident location until PC has accounted for all persons on site. The three off-site regrouping areas are:

   a) Frontgate office trailer area. Shaw Street (support area)

   b) Side gate No. First Street

   See Map

4. The EC activates the Casualty Control Plan, if appropriate.

SAFETY EQUIPMENT

The ENRAC Site Safety Officer will maintain an up-to-date listing of all safety equipment, its location, and the number of each item. The type of safety equipment available is described below:

- Cartridge type respirators.
- Self-contained airpacks.
- Tyvec coveralls.
- Disposable gloves, hard hats, booties and boots.
- Fire extinguishers.
- Fire blankets, emergency eyewash and shower.
- First aid kits.

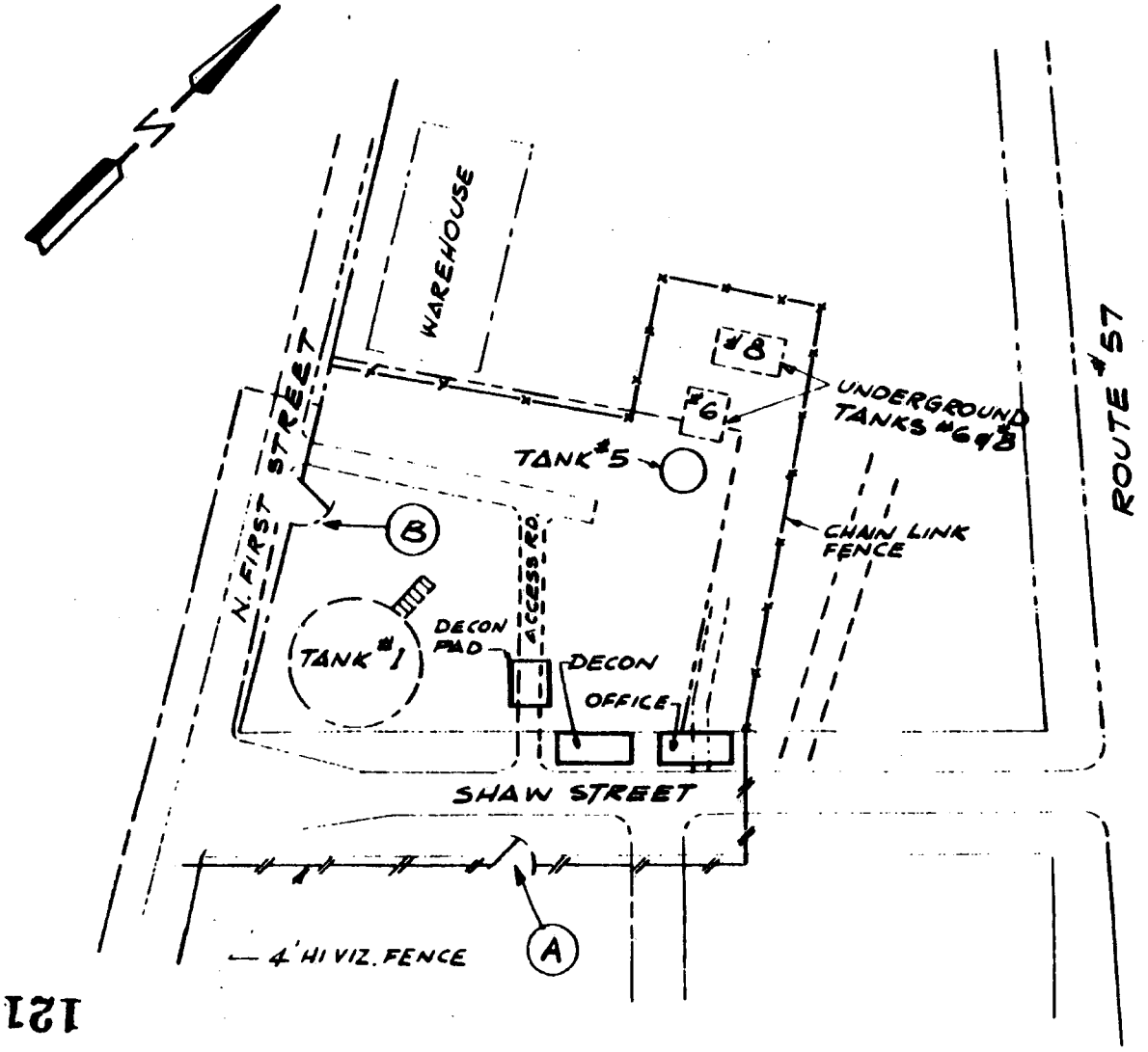
CLEAN-UP PROCEDURES

Actions to control, contain, remove, and clean up spills must begin when a spill is observed.

1. Immediately notify the site EC.

2. The EC will assess the size of the spill and attempt to halt any further spillage, without endangering any person.

3. The EC can obtain technical assistance, if required, to determine the type of material, toxicity, and other potential problems.



A & B = EMERGENCY EGRESS POINTS.

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CONTRACTOR TO VERIFY THE DIMENSIONS AND SITE CONDITIONS AND REPORT DISCREPANCIES TO ENGINEERING DEPARTMENT

SCALE NONE

DES BY
DR BY JVS 10/14/86
CHK BY
APP BY

PROJECT NO

PROJECT CWM - ENRAC
FULTON TERMINALS - OSWEGO, N.Y.

SHEET TITLE EMERGENCY EGRESS POINTS

Chemical Waste Management, Inc
Technical Center
Riverdale, IL 60827

SHEET

DRAWING NO. EP-1

CLEAN-UP PROCEDURES (Cont'd.)

4. If there is risk of fire, the EC will notify local fire and police departments.

5. If there is any potential hazard to humans or the environment, the EC should take proper precautions and notify appropriate agencies.

6. The EC will direct personnel and equipment to control and clean up the spill. If conditions warrant, arrange for vacuum trucks or cover with cement dust, absorbent or dirt.

7. Clean-up will continue until all material, visibly contaminated soil and absorbent can be removed with the proper equipment for off-site disposal.

POST-INCIDENT ACTIONS

Spill Report

ENRAC-Fulton site must file a written report for reportable quantities immediately with the NYSDEC and within 24 hours with the regional office of the Environmental Protection Agency. A suggested format for reporting all incidents is presented as Figure # 1. Completed copies of this form will be sent to WMI headquarters and retained in the project records.

Industrial Hygiene Actions

All emergency and personal protective equipment must be decontaminated, cleaned, and repaired or replaced, as necessary, before operations are resumed.

Casualty Control Actions

As soon as possible for an incident involving casualties, the casualty control officer shall prepare a written report on actions taken under the plan, including the names of casualties, their disposition, and an analysis of types of injuries. This report is to be sent to CWMI's Corporate Safety Manager. A copy shall be retained at the project. A report on the extent of injuries, if any, shall be submitted to the EPA Regional Administrator (RCRA Regulations 40 CFR Part 264.56j(5) Additional actions are as follows:

1. Conduct a "debriefing" of persons involved in casualty control, and analyze plan failures and deficiencies. Modify the CCP accordingly.

2. Replace or repair expended or damaged supplies and equipment. Ready all resources for use.

3. Rehearse the Casualty Control Plan while the experience and lessons learned are still fresh in everyone's mind.

POST-INCIDENT ACTIONS (Cont'd.)

Reports to EPA Required by RCRA

ENRAC Fulton site must notify the Regional Administrator and appropriate State and local authorities, that the facility is in compliance with RCRA before operations are resumed in the affected area(s) of the facility. This report will be initiated by the Plant Manager and submitted to CWMI's Corporate Safety Manager for review and submission.

The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. The ENRAC Project Manager will insure that this is done and that a report is submitted to CWMI's Corporate Safety Manager for review. Within 15 days after the incident, the CWMI Corporate Safety Manager must submit a written report on the incident to the Regional Administrator. The report must include:

- Name, address, and telephone number of the owner of operator.
- Date, time, and type of incident (e.g., fire, explosion).
- Name and quantity of material(s) involved.
- The extent of injuries, if any.
- An assessment of actual or potential hazards to human health or the environment, where this is applicable.
- Estimated quantity and disposition of recovered material that resulted from the incident.

FIGURE # 1
INCIDENT REPORT

1. Time incident discovered_____Date_____By_____.

2. Time incident contained_____Date_____.

3. Approximate location of incident or equipment number where incident occurred.

_____

4. Material released_____Approximate Quantity_____

5. Did the release affect the environment: Yes____No____

Describe:_____

_____

_____

_____

6. Corrective action taken to contain release:_____

_____

_____

_____

_____

7. Corrective action taken or to be taken to prevent future incidents:

_____

_____

_____

_____

8. Title_____Signature_____

9. Reviewed by ENRAC Project Manager:

Date_____Signature_____

10. Instructions - In compliance with Federal Laws, Waste Management must report incidents immediately to the Pennsylvania Department of Environmental Resources, and within 24 hours to the regional office of the Environmental Protection Agency. This form is to be filled out and returned to the Plant Manager if a release occurs.

SAFETY EQUIPMENT

DESCRIPTION	QUALITY AVAILABLE	LOCATION OF UNITS
Fire Extinguishers		
10 lb ABC	2	On site
20 lb ABC		
1 Lg. AFFF Wheeled	13	
1 Med. ABC Wheeled	1	
Hard Hats**	14	
Face Shields	6	
Safety Glasses**	10	
Goggles**	6	
First Aid Kits		
Small	1	
Large	3	
Signs*** (Assortment)		
Mis. Safety Signs	8	
Fire Extinguisher	9	
No Smoking	10	
Danger	15	
Rubber Gloves	12 dozen	
Self Contained Breathing Apparatus		
Scott Model, Pressure Demand Type	4	
MSA Model, Pressure demand type	5	
MSA Full Face Respirators	14	
MSA 1/2 Face Respirators	7	
Breathing air lines (SCOTT)	14	
Fully encapsulated suits (Level A)	2	
MSA Cartridges	72	On Site
MSHA PT #460844		
Comfo II Type GMC-H		
Eagle Air Breathing Unit	1	
Disposable Coveralls to be worn during decontamination procedures	20 Cases	On Site
Fire resistant/retardant clothing	None available at this time.	

SAFETY EQUIPMENT (Continued)

Eye Wash Stations	5	On Site
Emergency Response Trailer	1	Mobile-Safety Equipment Contained within.
Absorbent Material	50 bags	On Site
Camera/Photo Equipment	1	Office Trailer
Fuel Supply	1-300 gal. tank	On Site
Tool Box	3	E.R. Trailer
Water Pumps	1 - 2" Dia.	E.R. Trailer

SAFETY PLAN ADDENDUM

NUMBER: _____

PREPARED BY: P. LARSON DATE: _____

CREW BRIEFING BY: _____ DATE: _____

DESCRIPTION: Lee Memorial Hospital directions (approximate 1-4 miles);

Exit site making a left turn onto Shaw Street;

Follow to intersection making a right turn on to

RT 481 South go past four traffic lights

(one is a blinking Amber);

At 4th light make a left turn onto Broadway;

Go one light and make a right turn onto No. 4th Street;

Go four blocks, the hospital is on right side.

Phone Number 598-2222

APPROVALS:

PROJECT MANAGER: _____ SAFETY OFFICER: _____

SAFETY PLAN ADDENDUM

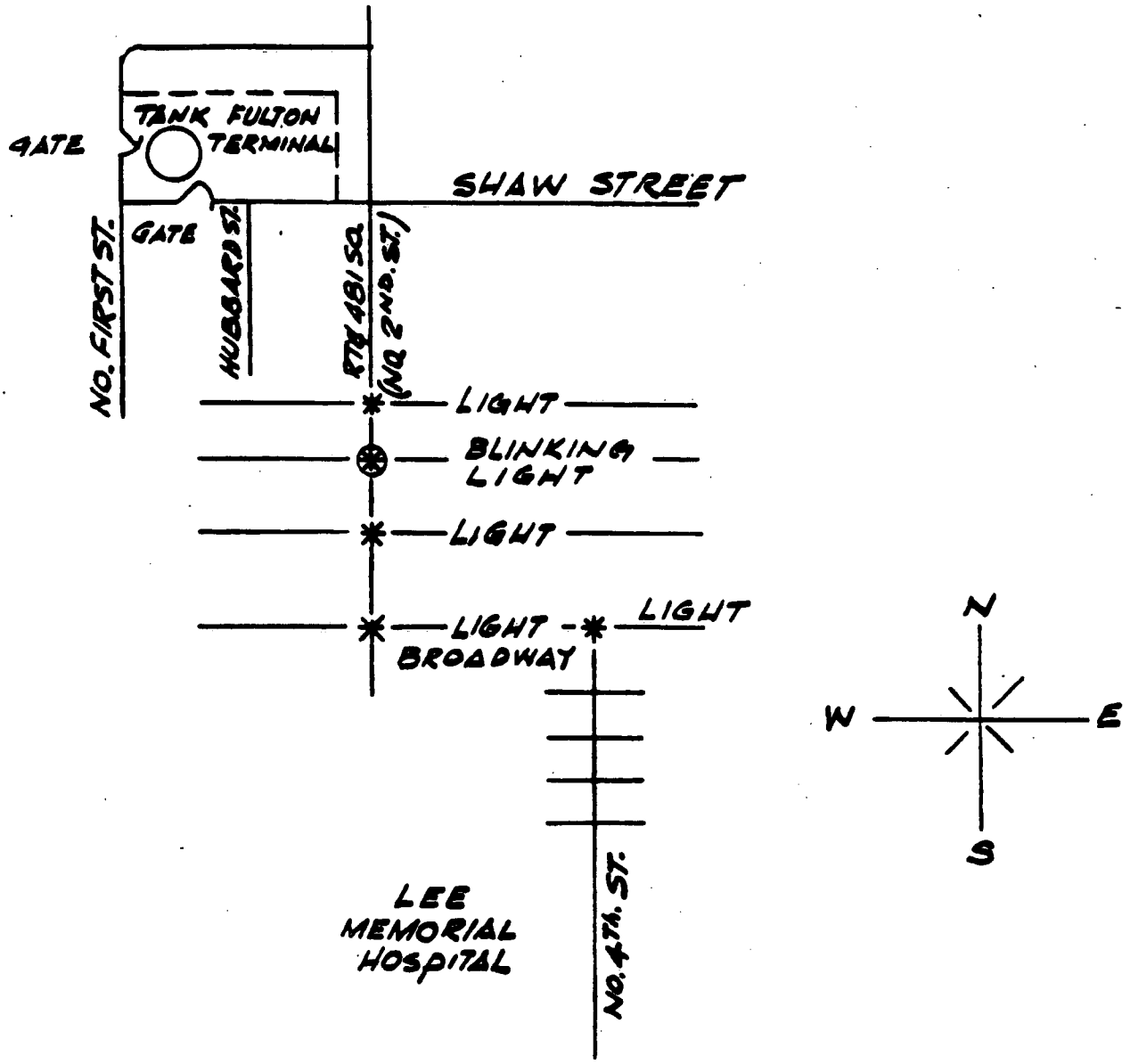
NUMBER: _____

PREPARED BY: P. LARSON _____ DATE: _____

CREW BRIEFING BY: _____ DATE: _____

DESCRIPTION: Lee Memorial Hospital Map (approximate 1-4 miles);

Phone Number 598-2222



APPROVALS:

PROJECT MANAGER: _____ SAFETY OFFICER: _____

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SAFETY PLAN ADDENDUM

NUMBER: _____

PREPARED BY: P. LARSON _____ DATE: _____

CREW BRIEFING BY: _____ DATE: _____

DESCRIPTION: Oswego Hospital Directions (approximately 6 miles);
Exit site making a left turn onto Shaw Street;
Go to intersection making a left turn onto Rt. 481 No.
(No. 2nd Street); Follow to Rt. 104 (Approximately 5 miles);
Make a left onto Rt. 104; Go 8 blocks, make a left onto
West 7th Street; hospital is on left side corner.

Phone number 349-5522

APPROVALS:

PROJECT MANAGER: _____ SAFETY OFFICER: _____

Chemical Waste Management Inc

GENERAL SAFE WORK PRACTICES FOR CWM SITE EMPLOYEES

1. No smoking in the Decon Trailer
2. ALL EMPLOYEES ARE TO SIGN IN AND OUT DAILY
3. All field employees must attend all Safety Meetings and Training Sessions.
4. NO SMOKING EATING CHEWING OR DRINKING IN DECON OR LAB TRAILERS
5. You must wash face and hands prior to eating, drinking and smoking in specified areas only.
6. You must shower at the end of your work shift if you have been in the HOT area.
7. No horseplay anywhere on site or in the Decon Trailer.
8. NO FIGHTING
9. Weapons are not allowed, knives in excess of 3½", guns of any type.
10. No alcoholic beverages or controlled substances consumed or will be allowed on site.
11. Use of the buddy system will be strictly adhered to in HOT areas.
12. You will leave the exclusion area only through the Decon Line except in emergencies.
13. You will wear your protective equipment in proper and safe manner.
14. DO NOT change or modify any health and safety equipment.
15. Report all accidents and near misses immediately.
16. Report all spills immediately. (However small)
17. Report all faulty and unsafe equipment immediately.
18. Report all unsafe conditions and areas. Know where all safety equipment is stationed (eg. fire extinguisher, first aid, eye wash station, egress routes).
19. Be familiar with site Contingency Plan.
20. If you are going to be tardy or absent from work call in each day between 6:45 and 7:00 A.M. at the hotel. If it will be a prolonged absence make arrangements with Project Coordinator.

VIOLATION OF THE ABOVE RULES WILL MAKE YOU SUBJECT TO DISCIPLINARY ACTION UP TO AND INCLUDING DISCHARGE.

DECON TRAILER TO BE ENTERED BY EMPLOYEES ONLY

DRESS OUT: DONNING

1. Enter clean side of Decon Trailer, take off street clothes and boots down to your underwear. Cross over to the hot side of the Decon Trailer and put on your work clothes and work boots.

2. Proceed to the Donning Station (PP Sta).

3. Once finished donning protective equipment check all taped areas (gloves, boots and respirator). After equipment check proceed to HOT area for the days work.

UNDRESSING: DOFFING

IN HOT AREA

1. Before leaving work area knock off all heavy soils from gloves and boots.

2. Proceed to HOT line personnel decon station. Step into boot wash station, wash gloves and boots, wipe off respirator and hood if needed.

3. After boot wash station remove outer gloves and throw gloves away into Hazardous Waste Cans.

4. Remove outer boots and hang on boot rack (respirator still on).

5. Proceed to remove outer suit and throw away into Hazardous Waste Can.

6. Remove inner boot liners and throw away into Hazardous Waste Cans.

7. Remove laytex inner gloves and throw away into waste cans.

8. Once clear of Decon Station remove respirator and throw cartridges into Hazardous Waste Can.

9. Enter HOT side of Decon Trailer with respirator.

10. Clean respirator and hang up to dry.

11A. If taking a break wash hands and face, get dressed and take your break in the Break Trailer.

11B. If it is the end of the day take a full shower and wash hair.

12. After shower get dressed and leave Decon Trailer.

NO SMOKING, EATING, CHEWING OR DRINKING IN DECON TRAILER, HOT ZONE OR CONTAMINATION REDUCTION ZONE.

Chemical Waste Management Inc

SAFETY RULES ON SITE

DRIVERS

1. All drivers entering gate must sign in.
2. Smoking in designated areas only.
3. No eating or drinking in trucks while in loading, weighing and tarping area.
4. No beards or engrossed mustaches and sideburns.
5. All drivers must have hard hat and glasses, respirator, steel toe work boots, tyvek suits and gloves.
6. Weapons are not allowed on site, knives in excess of 3½" or guns of any type.
7. No alcoholic beverages will be allowed on site or consumed within 8 hours before entering site.
8. Report to CWM Transportation Coordinator upon arrival on site.
9. Follow only specified truck routes to and from loading area.
10. Once truck is pulled into loading, weighing and tarping area, do not get out of the truck until it is clear of work area.
11. Make sure all paper work is in order before leaving site. With incomplete or improper paper work you are subject to arrest and prosecution.

SAFETY RULES ON SITE

VISITORS

1 ALL PERSONS ENTERING GATE MUST SIGN IN

2 ALL PERSONS ENTERING SITE MUST HAVE HARD HAT AND GLASSES
(WILL BE ISSUED AT GATE TO VISITORS)

3 VISITORS MUST BE CLEAN SHAVEN

4 SMOKING IN DESIGNATED AREAS ONLY

5 DO NOT LEAVE GATE AREA UNTILL AUTHORIZED TO DO SO

6 WEAPONS ARE NOT ALLOWED ON SITE.

KNIVES IN EXCESS OF 3.5" OR GUNS

7 NO ALCOHOLIC BEVERAGES OR CONTROLLED SUBSTANCES WILL BE ALLOWED

8 ONCE AUTHORIZED TO LEAVE GATE AREA GO DIRECTLY TO
OFFICE TRAILER

9ONCE AT OFFICE AREA DO NOT STRAY FROM OFFICE AREA UNLESS

AUTHORIZED TO DO SO AND THEN ONLY WITH A CWM ESCORT

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Chemical Waste Management Inc

EMERGENCY DECON PROCEDURES

PERSONAL INJURY

In the event that a person has been injured and/or unconscious and needs to be taken from Hot Area the following Decon Procedures will be followed:

1. The person witnessing the emergency will contact the Emergency Coordinator or his alternate.

2. The EC will then decide whether the injured personnel should be decontaminated, if possible, depending on the severity of the injury.

DECON PROCEDURES

1. The injured person will be taken to the Hot Line Area.

2. If possible, all external contaminated clothing should be removed by cutting: (gloves, boots and suits) and the worker covered with clean garments (blanket) upon removal from the exclusion (HOT) area. If practical the injured party should be showered.

3. Trained ENRAC personnel should be prepared to give emergency medical treatment if required.

4. It should be assumed that the community emergency response personnel have no knowledge of decontamination procedures. The hospital and/or emergency response personnel must be informed concerning the contaminating materials and decontamination procedures.

5. The members of the response team responsible for the incident reporting (E.C. and C.C.O) must provide the hospital and ambulance personnel with pertinent information concerning the injury and identification of the injured personnel.

EMERGENCIES

- Warning/Notification System:

  - One long horn blast denoting evacuation of the immediate work area to central assembly points A & B
    A. Frontgate, support area (Shaw Street)
    B. No. 1st Street gate
    See map

- Emergency Response:

The general notification response is as follows:

- General warning and notification is given.
- The emergency response team is mobilized. Specific responsibilities are assumed.
- Local authorities should be notified, if necessary, along with hospital and ambulance service.
- The hazard should be located and contained, if possible.
- All unnecessary communications should cease.
- Personnel injuries should be identified and treated.
- Equipment should be shut down and secured.
- Evacuation should take place according to emergency guidelines, high priority should be given to injured personnel.
- Decon procedures should be adhered to within reason; at a minimum contaminated outer garments should be removed.
- Complete headcounts are taken and unaccounted personnel are located.
- Emergency response tasks should be performed in teams of two.
- The work plan may be altered, if necessary, to avoid further hazards.

SAFETY PLAN ADDENDUM

NUMBER: _____

PREPARED BY: _____ DATE: _____

CREW BRIEFING BY: _____ DATE: _____

DESCRIPTION: Level of Protection for entering tanks Level B

Hard Hat - if required

Steel toe shoes

PVC Booties

Overshoe Boots

Yellow Polycoated Tyvek

Double Latex Gloves

Nitrile Gloves

Respiratory Protection - Level B (full air)

Duct tape all exposed or possible exposed skin areas.

Tyvek selection at discretion of Health and Safety and additional charges

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APPROVALS:

PROJECT MANAGER: _____ SAFETY OFFICER: _____

SAFETY PLAN ADDENDUM

NUMBER: _____

PREPARED BY: _____ DATE: _____

CREW BRIEFING BY: _____ DATE: _____

DESCRIPTION: Level of Protection for Field Tech Level C

Hard Hat - if required

Steel toe shoes

PVC Booties

Overshoe Boots

Double Latex Gloves

Nitrile Gloves

Yellow Polycoated Hooded Tyvek

Full Face Respirator

Duct tape all exposed or possible exposed skin areas

*Level B, Tyvek and glove selection at discretion of Health and Safety

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APPROVALS:

PROJECT MANAGER: _____ SAFETY OFFICER: _____

SAFETY PLAN ADDENDUM

NUMBER: _____

PREPARED BY: _____ DATE: _____

CREW BRIEFING BY: _____ DATE: _____

DESCRIPTION: Level of Protection for Operators Level C

Hard Hat - if required

Steel toe shoes

White Hooded Tyvek

Double Latex Gloves

Nitrile Gloves

PVC Booties

Overshoe Boots

Full Face Respirators

Duct tape all exposed or possible exposed skin areas

* Cotton gloves and additional changes at discretion of Health and Safety

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APPROVALS:

PROJECT MANAGER: _____ SAFETY OFFICER: _____

EXHIBIT A
SITE SAFETY OFFICER
TRAINING PROGRAM

SITE SAFETY OFFICER TRAINING
COURSE SCHEDULE

	COURSE	APPROX DURATION MINUTE	TAB/ REFERENCE
DAY ONE			
	Introduction, Administration	30	
	Health and Safety Program Overview	30	1
	Environmental Stresses	45	2
	Modes of Entry of Harmful Agents	30	3
	TLVs and PELs	60	4/TLV Booklet
	Hazard Recognition	60	5
	Chemical Hazards	75	6
	Methods of Evaluation	60	7
DAY TWO			
	Review, Quiz	30	
	Ventilation Principles	60	8
	Basics of Air Monitoring	75	I.H. Sampling Guide
	Bio-Thermal Stress Control	90	9
	Noise Monitoring and Control	60	10
	Fundamentals of Respiratory Protection	75	11
DAY THREE			
	Review, Quiz	30	
	Site Safety Plans, General Requirements	60	12
	Site Safety Responsibilities	45	13
	Job Hazard Analyses	45	14
	Medical Surveillance	45	15
	Employee Training and Information	75	16
	General Safe Work Practices	90	17
DAY FOUR			
	Review, Quiz	30	
	Respiratory Protection	60	18
	Protective Clothing	60	19
	Work Zones and Decontamination	45	20
	Special Hazardous Operations	90	21
	Emergency Contingency Plans	60	22
	Site Security	45	23
DAY FIVE			
	Review, Quiz	30	
	Recordkeeping Requirements	60	24
	Accident Investigation Techniques	45	25
	Case Studies	180	26
	Written Examination	45	

EXHIBIT B
CONFINED SPACE ENTRY PROCEDURES
CWM-035 and 036

POLICY & PROCEDURE MANUAL

Waste Management, Inc.	**TITLE** Confined Space Entry Procedures	**DIST. CODE**	**NUMBER**
	INITIATED BY David Stafford Safety Manager-Eastern Region		Page 1 of **EFFECTIVE D** May 8, 19
APPROVED BY _____ **TITLE** Regional Manager		**SUPERSEDES**	
REQUIRED FORMS Exhibits CWM-035 and CWM-036 (Attached)		**CROSS REFERENCE(S)**	

PURPOSE

To Establish Confined Space Entry Procedures.

I. Confined Space Entry must comply with ANSI Standard Z117.1-1977.

II. Definitions

1. Authorized Person - An authorized person is a person approved or assigned by the employer to perform a specified type of duty or to be at a specified location.

2. Confined Space - Enclosures having limited means of access and egress such as, but not limited to: storage tanks, tank cars, process vessels, bins, silos, boilers and other tank-like compartments usually with only a manhole for entry; open-topped spaces of more than 4 feet in depth such as pits, vaults, vessels, trenches, not subject to good natural ventilation; septic tanks, sewers, pipelines, and underground utility tunnels.

3. Contaminant - A contaminant is any organic or inorganic substance, dust, fume, mist, vapor or gas, the presence of which in air can be harmful or hazardous to human beings.

4. Hot Work - Is riveting, welding, thermal or oxygen cutting, heating and other fire or spark producing operations.

5. LFL and UFL - Lower and upper flammable limits of gas or vapor and air mixtures. See training Session III "Safety in Handling and Storage of Flammable and Combustible Liquids".

6. Qualified Person - Is one who, by reason of training or experience, is familiar with the operation to be performed and the hazards involved.

III. Required Training

1. Respiratory Training

2. First Aid

3. CPR

4. Training in Chemical Hazard Recognition

5. If welding is to be done, then employee(s) must receive training on Section I of this manual.

6. Confined Entry Procedures

IV. General Precautions

1. Confined spaces can become unsafe as a result of:

a. Possible atmospheric contamination by toxic or flammable vapors, or oxygen deficiency or excess.

b. Possible physical hazards when agitators or other moving parts are located therein.

c. The Possiblity of liquids, gases, or solids being admitted during occupancy.

d. The rendering of the occupant isolated from help in case of need.

e. The special hazards of welding or cutting

A qualified person shall determine the protective equipment and procedures that are required to protect employees from such hazards.

V. Testing

1. Examples of some hazardous gases found in confined spaces:

TYPE	DANGEROUS PROPERTY	EFFECT
Manufactured Gas	Carbon Monoxide, Hydrogen	Toxic and Exp.
Mix of Manufactured and Natural Gas	Carbon Monoxide, Hydrogen and Natural Gas	Toxic and Exp.
Natural and Petroleum Gas	Methane, Ethane, Ethylene, Propane, Butane, & Hexene	Suffocating and Explosive
Natural Gas	Methane	Suffocating and Explosive
Carbon Dioxide	Carbon Dioxide	Suffocating
Marsh Gas	Methane	Suffocating and Explosive
Sulphur Dioxide	Sulphur Dioxide	Irritating
Amonia	Amonia	Irritating
Butadiene	Butadiene	Explosive
Hydrogen Sulphide	Hydrogen Sulphide	Toxic and Exp.
Gasoline	Fumes	Toxic and Exp.
Benzoil	Fumes	Toxic and Exp.
Fuel Oils	Fumes	Toxic and Exp.
Oxygen Deficiengy	Lack of Oxygen	Suffocating

2. Every confined space having been closed for any period of time must be tested for the presence of combustible or toxic gas, and oxygen deficiency.

a. Before employees are permitted to enter any confined space that has contained flammable liquids, vapors or gases, a qualified person shall test the atmosphere within the space with a combustible gas indicator to determine the concentration of flammable vapors or gases.

1. The entry cover should be removed with non-sparking tools such as brass, bronze or aluminum.

2. If such vapors are present in excess of 10% of the LFL the space must be ventilated to achieve a concentration below 10% of the LFL.

3. Even under 10% of the LFL may not satisy the TLV (Threshold Limit Values) and therefore respirators must be worn.

b. Before employees are permitted to enter any confined space that contains or previously may have contained an oxygen-deficient atmosphere, the atmosphere shall contain at least 20% oxygen by volume.

1. Before employees enter spaces suspected of containing excessive carbon dioxide, a qualified person shall test of oxygen deficiency at various levels from top to bottom of the space.

2. The confined space shall be ventilated until tests indicate appropriate oxygen content.

3. A qualified person shall periodically test for atmospheric contaminants from the lowest to the highest elevations of the confined space to determine the conditions that employees may encounter.

4. ALTHOUGH THE REGULATIONS DO SPELL OUT CONDITIONS WHEREBY A SCBA OR A POSITIVE PRESSURE AIR-SUPPLIED RESPIRATOR ARE NOT REQUIRED, IT IS FELT THAT THE CONDITIONS ARE TOO CUMBERSOME TO MAINTAIN FROM A MONITORING AND ALARM SYSTEM FAIL-SAFE COMPLEXITY. THEREFORE SELF-CONTAINED OXYGEN OR AIR-SUPPLIED RESPIRATORY EQUIPMENT IS REQUIRED FOR ALL CONFINED SPACE ENTRIES.

5. The monitoring device's must continually monitor the confined space atmosphere for the duration of the entry. An audible alarm must sound in the test unit when either the oxygen content falls below 20% or the flammable vapor rises above 10% of the LEL (Lower Explosive Limit).

a. Personnel should not enter a tank which is in the explosive range.

6. Testing must be done before each and every entry.

VI. Purging and Ventilation

Purging

1. The following recommendations for flushing and purging should be carried out in the following order:

   a. Pump out as much sludge and sediment as possible.

   b. Depending upon the type of vessel and its use, various means of flushing should be employed. Water is generally used as the flushing agent. The "flush" may be merely a hosing, or a complete filling and draining, and in some cases the vessel "boiled" for periods of 24 hours or longer.

      NOTE: A check should be made to determine whether or not a vessel is on an even keel. If the vessel is not on an even keel, the tops, sides, and corners may not be properly flushed by the usual procedure, and special flushing methods will have to be employed.

   c. Purging can be accomplished by using steam, nitrogen, inert gas, water or air (air should be used only if other means are not practical and then only if preceded by evacuation to a good vacuum). In some cases chemical additives to de-activate peroxides are necessary. (Additives to de-activate butadiene include polyamine, soap, and sodium bisulfite). The main objective is to reduce the quantity of hazardous material within the vessel. If purged with steam, it should last long enough to raise the temperature of the vessel metal to rid the pores and scale of absorbed materials.

      CAUTION: Vessels which have held certain materials, such as carbon disulphide or butadiene, should not be steamed because static electricity may be generated from dripping condensate.

   d. Purge with air, before entering the vessel and during subsequent operations. Special care should be taken to ensure that circulated air will reach isolated pockets in the corners of the vessel.

2. Check the bottom settlings left in the tank which may be covered with water.

3. The most effective method of purging the vessel atmosphere is to admit air into the vessel near the bottom and to discharge it through an opening at the top. Even though many vapors are heavier than air, it is still essential to discharge them at a point where there will be maximum diffusion and the least chance of their "pocketing" where there may be sources of ignition. Care should be taken to assure the purging of all parts of the vessel, including internal piping.

4. The use of an air siphon is preferred.

5. After the purge has been completed and the vessel atmosphere is free of contamination, fresh air should continue to be circulated during the entire time a person is inside the vessel.

6. Avoid common errors such as:

   a. Failing to test a vessel for oxygen deficiency - or assuming that the vessel does not require ventilation; that persons entering a vessel do not require respiratory protection; or simply because it has not contained toxic materials.

   b. Any vessel in which there has been a fire may be assumed to have an oxygen deficiency. For example, a smoldering fire in a carbon black tank will use up the oxygen and produce carbon monoxide. An oxygen deficiency can also occur in water tanks in which plant growth has used up the oxygen needed to support human life.

   c. Assuming that a combustible gas indicator will detect all harmful concentrations of materials, such as nonflammable toxic gases or vapors.

   d. Using compressed air for vessel ventilation. The volume of air may be inadequate. Static electricity may develop from orifice discharge. The compressed air may contain carbon monoxide or other harmful impurities, or the supply line may be mistakenly connected to an inert gas outlet. Also, air from the air compressor may be contaminated.

   e. Assuming that continued testing for adequate ventilation is not necessary.

f. Locating the air inlet for a supplied-air hose mask where contaminated air may be picked up.

g. Introducing toxic or flammable vapors from spraying, painting, or cleaning materials, after the vessel has been thoroughly purged.

Ventilation

1. All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency.

2. All air replacing that withdrawn shall be clean and respirable.

3. The confined space shall be ventilated to prevent the accumulation of:

   a. Flammables in the atmosphere above 10% of the LFL.

   b. Concentrations of combustible dust.

   c. Toxic and other contaminants in the atmosphere above the TLV.

   d. Oxygen excess or deficient atmosphere.

4. Oxygen shall never be used for ventilation.

5. Some confined spaces may contain pyrophonic material that will ignite flammable vapor in the presence of air. The presence of pyroghonic should be determined prior to ventilation.

6. When flammable contaminants are to be purged, ventilation equipment designed for use in hazardous locations shall be employed and precautions taken to eliminate all soufces of ignition.

   a. Electric motors used to drive air motors must be explosion proof.

   b. The metallic parts of air moves and ductwork should be bonded electrically to the confined space being ventilated.

c. Blades of exhaust fans should be constructed of nonsparking materials.

7. The removed air must be exhausted to a safe location where it presents no hazard to employees or equipment.

8. The ventilation system must conform to NFPA 70 "The National Electric Code" for Class I Division I locations.

VII. Isolating - Breaking Lines

1. Safe methods of isolating vessels from connecting pipelines are:

   a. Removing a section of all connecting pipelines.

   b. Blanking flanges with blanks heavy enough to hold line pressures, and with gaskets on the incoming sides of the blanks.

   c. Misaligning sections of disconnected small-diameter lines and closing open ends by threaded pipe caps or plugs.

2. The following additional precautions should be taken as required by conditions:

   a. Pumps located on any lines to the vessel should be locked out, since some pumps are strong enough to break the line valves or blanks.

   b. Pipelines containing harmful liquids, such as acids or caustics, should be flushed clean before they are isolated to prevent material, which might otherwise remain inside, from dripping on workmen who enter the vessel.

   c. Where there may be exposure to corrosive substances, suitable protective equipment, such as rubber suits, gloves, eye protection, etc., should be worn.

   d. If no work is to be done on sections of pipelines that remain connected to a vessel they should be filled with water, since it is extremely difficult under any circumstance to ensure that pipelines are gas-free.

e. Disconnected and lines misaligned, and any open lines connecting to the vessel in areas where hot work is being done, should be closed with either pipe plugs or blind flanges to prevent the possibility of flammable vapors entering the vessel.

3. Avoid common errors such as:

a. Allowing valves to continue leaking or remain mistakenly open.

b. Overlooking lines that should be safeguarded, or removing blinds by mistake.

c. Relying on a lubricated plug valve to withhold steam.

d. Relying on two closed valves with a valve open between them to ensure vessel isolation.

4. Before employees are permitted to enter any confined space, which itself can move or in which agitators, fans, or other moving parts of potential hazard to personnel are present, the possibility of movement shall be minimized by a lock out procedure as follows:

a. An authorized person shall place a lock or tag, or both, on the open circuit breaker or line switch controlling moving hazards to indicate that employees are working on equipment. When a lock is used, the key shall be kept in the possession of the employee making entry or his authorized representative. If more than one repairman is working on a circuit, each man shall lock the switch with his own lock, to which only he or his authorized representative has the key.

b. Where a power source cannot be easily controlled, a belt or other mechanical linkage shall be disconnected and tagged to indicate that the employees are working on the equipment.

c. Where (a) and (b) are not practical, components shall be blocked, and switches, clutches, or other controls shall be tagged to indicate that employees are working on the equipment.

d. Prohibiting smoking and the carrying of matches or other sources of ignition into the potentially hazardous area. A safe smoking area should be established nearby to reduce the potential for unauthorized smoking.

2. Where cleaning operations involve the use of chemical solvents, a qualified person shall determine the flammable or toxic properties, or both, of the cleaning solvents as an intergral part of the initial preparations.

3. Employees shall attempt to remove scale, product residue, or cleaning solvent sufficiently to maintain the contaminants below the TLV while working from outside the space.

4. If open-type electric-powered or internal-combustion-engine-driven equipment is used for the removal of sludge and excess water from confined spaces that have contained flammable materials the necessary precautions should be taken.

   a. Equipment should be located on the windward side and out of range of probable vapor travel. The area should be tested for flammable vapors with a combustible gas indicator before any equipment that may be a source of ignition is started.

   b. Any internal-combustion-engine-driven equipment can readily build up a lethal carbon monoxide concentration in areas that are confined or poorly ventilated, or both. Therefore, a qualified person should make sure that where exhaust vapors create a hazard, they are ducted to an area that does not present a hazard. The qualified person should also ensure that the intake for fresh air respiratory protections system is positioned at a safe distance from engine exhausts.

   d. The pump that is used to remove residuals should be monitored and maintained properly for continuous operation during the period of cleaning. Throughout the pumping period, an authorized person should test periodically for flammable vapors near the pump, engine, or motor. He should stop the machinery at any time that flammable vapors are detected until the source has been located and corrected.

5. Cleaning Solvents

a. When toxic substances are used as cleaning solvents in a confined space, the following precaution should be taken.

1. The cleaning operation shall be enclosed completely to prevent the escape of vapor into the working space.

2. Mechanical exhaust ventilation shall be provided to remove vapors at the source, and the concentration of the contaminants in the space shall be maintained below the TLV level.

3. Employees shall place scrapings and rags soaked with solvent in a covered metal container outside the confined space.

IV. Hot work

1. Hot work shall not be started in or on the exterior surfaces of a confined space until a permit has been issued:

2. When a confined space that has contained a flammable or combustible liquid, vapor, or gas is to be gas freed by cleaning, the permit shall be issued only after a qualified person has, through inspection and test, ensured that the following requirements have been achieved:

a. The concentration of flammable vapors or gases in the atmosphere is below 10% of the LFL.

b. The liquid and solid residues have been removed as necessary to prevent the release of flammable vapors or gases that will raise the concentration above 10% of the LFL.

c. All piping within the confined space has been flushed with water, or blown with steam or air, and has been found by test not to contain concentrations of flammable vapor or gas above 10% of the LFL.

3. The conditions in (2) above shall apply to any confined space that has contained flammable liquids, vapors or gases, and is adjacent to the space in which the hot work is to be performed.

4. In a confined space in which flammable vapors or gases have not been present the permit shall be issued only after the qualified person has, by inspection and test, ensured that the following requirements have been met:

   a. Spaces adjacent to the space in which the hot work is to be performed, if they last contained a flammable liquid, vapor, or gas, have been cleaned or inerted to the requirements of (2) above.

   b. The requirements of (2) above have been satisfied for pipelines.

5. Where possible, all combustibles, including any dry residues, in the vicinity of the hot work shall be removed to a safe place; or, if they cannot be moved, such items shall be covered by a noncombustible blanket, flame-resistant tarpaulin, or other means to prevent ignition from heat, sparks and slag.

6. In a confined space having last contained dry material that creates an explosive atmosphere when dispersed in air, the permit shall be issued only after a qualified person, through personal inspection, has ensured that the following requirements are satisfied:

   a. All loose dust has been removed from the confined space and all surfaces have been throughly cleaned.

   b. The confined space has been isolated mechanically to prevent reintroduction of the dry material.

   c. Adequate fire extinguishing equipment is available at the site.

7. It may be necessary to do hot work in a space that has contained a flammable liquid, vapor or gas or is adjacent to such a space. If so, both shall be cleaned or inerted as required by (2) above. Then a qualified person shall test for flammable vapors and gases:

   a. Immediately prior to starting hot work at the beginning of each day, shift, or following a shutdown period.

   b. Periodically after starting hot work to ascertain any increase in the concentration of flammable vapors.

8. If the concentration of flammable vapors exceeds 10% of the LFL, hot work shall be stopped until the source of vapor release is located and removed, or sufficient ventilation is provided to maintain the concentration below 10% of the LFL.

9. Fire Protection - Welding

a. When hot work involves welding, thermal cutting, or heating operations, a qualified person shall consider the assignment of a fire watch while the hot work is being performed and for a period of at least 30 minutes after completion of hot work.

b. When hot work is to be performed on tank shell or conductive boundaries of other confined spaces, the same precautions shall be exercised inside and outside the space where the hot work is being performed. Sparks from direct penetration or heat transfer also may introduce a fire hazard in the adjacent area outside the confined space.

c. When arc welding is suspended for a substantial period of time, such as during lunch periods or overnight, the power source to the machine shall be deenergized, all electrodes removed from holders, and the holders placed so that accidental contact cannot occur.

d. All gas or oxygen cylinders and manifolds shall be located outside the confined space.

e. When gas welding or cutting is suspended for a substantial period of time such as during lunch or overnight, the torch and cylinder valves shall be closed. Where practical, the torch and hose also shall be removed from the confined space.

f. Before welding, thermal cutting, or heating is started on a surface covered with a preservative or protective coating, the flammability and thermal decomposition products of the coating shall be considered.

g. Where coatings are flammable, they shall be stripped from the area of hot work to prevent ignition. A pressurized fire-water hose with nozzle or other extinguishing equipment, or both, shall be available.

h. In confined spaces, all surfaces covered with coatings that would decompose under hot work into toxic, corrosive, or irritant components shall be stripped from the area of heat application for a distance of at least 6 inches.

i. Before welding, thermal cutting, or heating is started in confined spaces whose metal surfaces are covered with greasy preservatives, a qualified person shall test the atmosphere in the confined space to ensure that flammable vapors or gas from preservatives with flash points below the ambient temperature do not exceed 10% of the LFL.

j. Greasy preservatives shall be removed from the hot work area for a sufficient distance from the area to be heated to prevent increasing the temperature of the unstripped metal. If this occurs, artificial cooling of the metal surrounding the hot work area shall be used to limit the size of the area required to cleaned.

NOTE: Also see ANSI 249.1 "Safety in Welding and Cutting" found in Session X.

X. Protective Equipment

1. Employees should be protected as per the following requirements:

a. Head - See ANSI Z89.1 See Section M of this manual.

b. Eyes - See ANSI Z87.1 See Section M of this manual.

c. Feet - See ANSI Z41.1 See Section M of this manual.

d. Respirators - See ANSI Z88.2 See Section N of the manual.

2. Lifelines

a. Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing him in case of emergency. When safety belts and lifelines are used for this purpose they shall be so attached to the welder's body that his body cannot be jammed in a small exit opening. An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

XI. Illumination

1. In confined spaces, temporary lighting shall be used as follows:

a. Temporary lighting shall be equipped with guards to prevent accidental contact with the bulb, except that guards are not required when the bulb is recessed deeply within the reflector.

b. Temporary lighting shall be equipped with heavy-duty flexible electric cords with connections and insulation maintained in safe condition.

c. The lighting shall not be suspended by the electric cords, unless they are designed for this method of suspension.

d. Cords shall be kept clear of working spaces and walkways or other locarions in which they may be exposed to damage.

e. Exposed noncurrent-carrying metal parts of temporary lighting shall be grounded electrically, either through a third wire in the cable containing the circuit conductors or through a separate wire that is grounded at the source of the current.

f. Battery, low-voltage or lighting systems with ground fault circuit interrupters grounded as per (e) above shall be used for work in wet tanks, in tanks partly filled with liquid, and on the water side of boilers.

2. In the absence of temporary lighting, employees shall not be permitted to enter dark, confined spaces without portable lamps, and the use of matches and open-flame lights shall be prohibited.

XII. Rescue

1. Whenever anyone is inside a vessel, an observer should be stationed outside to provide constant observation of the workman inside. Should an emergency occur, it will be immediately recognized, and a rapid rescue effected. Provisions for such monitoring include:

a. Training and drilling in vessel rescue work.

b. Supplying means for obtaining immediate help.

c. Having suitable rescue equipment on hand, such as self-contained oxygen breathing apparatus, spare rope, a rope with a padded loop to aid in removing an unconscious man, harnesses, flashlights, and block and tackle rigged for immediate action.

d. Maintaining an exact record of workmen entering or leaving the vessel, so that the number of workmen inside the vessel is always known.

e. Having a readily accessable communications system available.

f. Removing a supplied-air hose mask while working in a vessel (so as to work with less restriciton).

4. Standby Observer Rules

a. Employees working inside a confined space must be under constant observation of a fully instructed observer. The observer should be trained in first aid procedures in the event rescue becomes necessary.

b. Before anyone enters the confined space the standby observer will be instructed by the supervisor in charge of the enter that:

1. A valid confined space enter permit has been executed and posted.

2. Rescue harness and life lines are available and used.

3. The observer must know the location of the nearest:

a. Telephone or two-way radio.

b. Safety shower.

c. Fire extinguisher.

4. The observer must be able to describe the location where the entry is taking place.

5. The observer must be instructed how to shut down welding/burning equipment.

6. As long as anyone is inside the vessel, the watcher must remain in continuous contact with the worker. HE IS NOT TO LEAVE THE OBSERVATION POINT, EXCEPT TO REPORT AN EMERGENCY, after first sounding his alarm horn.

7. UNDER NO CIRCUMSTANCES SHOULD THE OBSERVER ENTER THE VESSEL. If the worker (s) in the vessel become ill or injured, he will sound the alarm and proceed to the nearest telephone or two-way radio. He should speak clearly and give the details about what has happened and where the emergency is. He is to be sure the message is repeated back correctly before leaving the phone or radio.

8. The observer still DOES NOT ENTER THE VESSEL. He returns to the vessel and directs the rescue team.

XIII. Entry Permit

1. Before entry, the entry permit must be completed in its entirety in ink.

2. Do not leave blanks.

3. The proper signatures must be obtained.

4. The permit must be posted on the tank which is to be entered.

5. An entry permit becomes void if any of the following events occur:

   a. The job is interrupted for more than 60 minutes for any reason.

   b. Upon the completion of the regularly assigned shift.

   c. An employee working in the vessel becomes ill or injured.

   d. A power failure occurs which renders the lighting, telephone or two-way radio inoperative.

   e. Severe weather conditions occur or are imminent.

XIV. Lock-out, Hot work, and Breaking Lines.

1. Lock-out procedures - Also See Section Q of this manual and Safety Training Module Session XVI.

2. Hot work - Also see Section T of this manual and Safety Training Module Session X.

3. Breaking Lines - Also see Section U of this manual

Chemical Waste Management, Inc.

CONFINED SPACE ENTRY PERMIT

BOTH SIDES MUST BE COMPLETED NO.

Permit is required for entering any tank or enclosed space for any purpose; and may be granted only in accordance with the provisions of Supervisor's Safety Manual.

GOOD THIS DATE ONLY		m. TO m.
BLDG. NO.	FLOOR	

EQUIPMENT

PURPOSE

I certify that all necessary precautions have been taken to make this tank safe for entering and carrying on prescribed work during specified time:

PROD. SUPVR.

MAINT. SUPVR.

ATMOSPHERE TESTER

I have been properly instructed for safe entry into this tank and understand my duties:

STANDBY OBSERVER

SIGNATURE AND PAYROLL NUMBER OF PERSONS AUTHORIZED TO ENTER TANK:

PERMIT NOTED - SUPERVISOR

PERMIT GRANTED - MANAGER

MANAGER'S NOTICE OF TANK ENTRY

A properly executed tank entry permit has been completed for the following work at the specified time.

ERMIT NO.	DATE
FROM m.	TO m.
.DG.	FLOOR

UIP.

RPOSE

PRODUCTION SUPERVISOR

BEFORE THIS PERMIT CAN BE SIGNED THE FOLLOWIN RULES MUST BE SATISFACTORILY COMPLIED WITH

1. TANK CLEANED, WASHED AND PURGED:
   ☐ YES ☐ NOT NECESSARY
2. WASH WATER TESTED FOR NEUTRALITY:
   ☐ YES ☐ NOT NECESSARY
3. ALL FUSES OR SAFETY JACKS PULLED, BREAKERS & SWITCHES LOCK OUT AND TAGGED:
   ☐ YES ☐ NOT NECESSARY
4. ALL LINES BROKEN AND/OR BLANKED:
   ☐ YES ☐ NOT NECESSARY
5. ATMOSPHERE TESTED FOR FLAMMABLE CONCENTRATION:
   ☐ YES ☐ NOT NECESSARY TIME
6. SURROUNDING AREA CHECKED FOR FLAMMABLE AND POISONOU GASES:
   ☐ YES ☐ NOT NECESSARY TIME
7. TEST FOR PISONOUS ATMOSPHERE:
   ☐ YES ☐ NOT NECESSARY TIME
8. TEST FOR OXYGEN DEFICIENCY:
   ☐ YES READING ☐ NOT NECESSARY
9. OBSERVER ASSIGNED AND PROPERLY INSTRUCTED:
   ☐ YES
10. EMPLOYEES IN THE IMMEDIATE AREA ALERTED TO HELP IF NEEDED:
    ☐ YES ☐ NOT NECESSARY
11. FRESH AIR SUPPLY PROVIDED:
    ☐ YES ☐ NOT NECESSARY
12. RESCUE HARNESS PROVIDED AND WORN:
    ☐ YES ☐ NOT NECESSARY
13. TIE LINE ATTACHED:
    ☐ YES ☐ NOT NECESSARY
14. RESCUE EQUIPMENT ON THE JOB, EXTRA ROPE, HARNESS, BREATHINC EQUIPMENT & ALARM:
    ☐ YES ☐ NOT NECESSARY
15. SELF CONTAINED BREATHING EQUIPMENT TO BE WORN:
    ☐ YES ☐ NOT NECESSARY
16. PROTECTIVE CLOTHING REQUIRED AND WORN:
    ☐ YES ☐ NOT NECESSARY
17. ADDITIONAL PRECAUTIONARY REMARKS:

REMARKS:

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CONFINED SPACE ENTRY PERMIT

PERMIT IS REQUIRED FOR ENTERING ANY TANK OR ENCLOSED SPACE FOR ANY PURPOSE

Location:

Division_____ Department_____ Specific Area_____

Description of Work:_____

_____

_____

Permit Good on This Date: _____/_____/_____
Month Day Year

For This Time Period: From_____hrs (am/pm) To_____hrs (am/pm)

The General Manager and the Supervisor in charge of the operation must sign that they are satisfied that the following rules were completed:

	Yes	No	N/A
1. Employees were medically certified that they can wear a respirator.	( )	( )	( )
2. Employees have received training on Respirators.....	( )	( )	( )
First Aid.....	( )	( )	( )
CPR.....	( )	( )	( )
Welding.....	( )	( )	( )
Hazardous Recognition	( )	( )	( )
Entry Procedures.....	( )	( )	( )
3. Confined space tested for flammable liquids, vapors, or gases.	( )	( )	( )
4. Confined space tested for oxygen deficiency or excess.	( )	( )	( )
5. Monitoring devices continuously monitor the confined space atmosphere.	( )	( )	( )
6. Monitoring device has an audible alarm.	( )	( )	( )
7. Confined space has been purged.....	( )	( )	( )
ventilated...	( )	( )	( )
Ventilation system is bonded, explosion proof.	( )	( )	( )
9. Isolation/lock-out procedures followed.	( )	( )	( )
10. Welding safety precautions known (hot work).	( )	( )	( )

Exhibit CWM-035

SAFETY DEPARTMENT
EASTERN REGION

Confined Space Entry Permit

	Yes	No	N
11. SCBA or air-supplied respirator to be worn.	( )	( )	(
12. Other protective equipment such as harness, life line, hard hat, safety shoes, gloves worn.	( )	( )	(
13. Spare rescue equipment present (SCBA, harness, life line, fire extinguishers, etc.)	( )	( )	(
14. Illumination standards followed.	( )	( )	(
15. Observer assigned and properly instructed.	( )	( )	(
16. Other (Specify).	( )	( )	(

Requested by (Supervisor) _____ Date: ___/___/___
Day Month Y

Granted by (General Manager) _____ Date: ___/___/___
Day Month Y

I have been properly instructed on Confined Entry Procedures and understand my duties:

Standby Observer _____ Date: ___/___/___
Day Month Y

Employee(s) entering space: _____ Date: ___/___/___
Day Month Y

_____ Date: ___/___/___
Day Month Y

NOTICE: This permit expires at the end of the employees work shift on which it was issu and becomes void if any of the conditions occur as is outlined in the procedure or if hazardous conditions become evident which differ from those conditions ex isting at the time the permit was issued.

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Standby Observer's Check List

	YES	NO	N/A
1. Entry permit posted.	( )	( )	( )
2. Harness and life line used.	( )	( )	( )
3. SCBA or air-supplied respirator used.	( )	( )	( )
4. Communication system available.	( )	( )	( )
5. Knows not to leave job site except to make emergency call.	( )	( )	( )
6. Knows not to enter confined space.	( )	( )	( )
7. Knows location of emergency first aid equipment.	( )	( )	( )
8. Knows proper use of fire extinguishers.	( )	( )	( )
9. Knows proper use of respirators.	( )	( )	( )
10. Understands operation of blower on other fresh air supply.	( )	( )	( )
11. Has alarm horn.	( )	( )	( )
12. Knows how to shut off welding/cutting equipment.	( )	( )	( )
13. Other (Specify).	( )	( )	( )

Supervisors Signature: _____ Date: ___/___/___
Day Month Year

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Exhibit CWM-036

SAFETY DEPARTMENT
EASTERN REGION

American National Standard Safety Requirements for Working in Tanks and Other Confined Spaces

STANDARD REQUIREMENTS

1. Scope, Purpose, and Application

1.1 Scope

1.1.1 This standard sets forth minimum requirements for safe entry, continued work in, and exit from tanks and other confined spaces at normal atmospheric pressure.

1.1.2 This standard does not apply to the building, breaking, operating, and repair of marine vessels; nor to mining or tunnel construction; nor foundry sand silos, bins, and hoppers; nor operations conducted in special breathing chambers, such as in oxygen-enriched atmosphere, with special oxygen blends or above or below normal atmospheric pressures; nor to utility and telecommunications manholes.

1.2 Purpose The purpose of this standard is to establish minimum requirements and procedures for the safety and health of employees who work in, about, and in connection with confined spaces, and to serve as a guide for regulatory agencies.

1.3 Application This standard is designed for voluntary application immediately upon approval as an American National Standard.

2. Definitions

2.1 Authorized Person. An authorized person is a person approved or assigned by the employer to perform a specified type of duty or to be at a specified location.

EXPLANATORY INFORMATION

(Not part of American National Standard Safety Requirements for Working in Tanks and Other Confined Spaces ANSI Z117.1-1977.)

E1.1.1 Confined spaces, such as workplaces, can become unsafe as a result of: (1) possible atmospheric contamination by toxic or flammable vapors, or oxygen deficiency or excess, (2) possible physical hazards when agitators or other moving parts are located therein, (3) the possibility of liquids, gases, or solids being admitted during occupancy; or (4) the rendering of the occupants isolated from help in case of need.

E1.1.2 The areas excluded are not necessarily safe to enter but are covered by other standards or safe work procedures. For example, where cutting and welding are involved, "confined spaces" have slightly different definitions in American National Standard Safety in Welding and Cutting, ANSI Z49.1-1973.

E1.3 Application. Should this standard be made mandatory by adoption by regulatory agencies, the authority having jurisdiction may grant variations from the requirements of this standard, provided that equal safety for employees is assured.

the American Conference of Governmental Industrial Hygienists (ACGIH).[2]

2.19 Toxic Substance. A toxic substance is one whose concentration can exceed the harmful limits, as published by regulatory and authoritative groups – for example, the Toxic Substances List published by the National Institute of Occupational Safety and Health (NIOSH) in 1973.[3]

3. Precautions before Entry

3.1 General. Confined spaces may contain atmospheres that are hazardous to life and health because of the presence of flammable, explosive, or toxic contaminants or because of deficiency or excess of oxygen. Therefore, a qualified person shall test the atmosphere of the space where such hazards may exist or develop, prior to employee entry, to determine the nature and extent of any such hazard. A qualified person shall determine the protective equipment and procedures that are required to protect employees from such hazards.

E3.1 General. Guidance concerning use of personal protective equipment is provided in 5.3.3 and Section 8.

3.2 Isolating

3.2.1 A qualified person shall take positive steps to (1) depressure the confined space; (2) prevent accidental introduction into the confined space of hazardous materials through interconnecting equipment such as piping, ducts, vents, drains, or other means; and (3) deenergize and lockout or tagout, or both, machinery, mixers, agitators, or other equipment containing moving parts that are in the confined space.

E3.2.1 The piping between a confined space and the first valve, blank, or associated equipment may contain hazardous materials. Therefore, a qualified person should ensure that such piping has been cleaned or purged prior to isolation of the space.

3.2.2 Before employees are permitted to enter a confined space, the confined space shall be isolated to preclude the entry of hazardous materials by one of the following methods:

(1) Removing a valve, spool piece, or expansion joint in piping to, and as close as possible to, the confined space, and blanking or capping the open end of the piping leading to the confined space. The blank or cap shall be identified to indicate its purpose. Blanks or caps shall be of a material that is compatible with the liquid, vapor, or gas with which they are in contact. The material shall also have sufficient strength to withstand the maximum operating pressure, including surges, which can be built up in the piping.

(2) Inserting a suitable full-pressure blank in piping between the flanges nearest to the confined space.

E3.2.2 Before a method of isolation is selected, a qualified person should consider the hazards that may exist or develop owing to temperature, pressure, flammability, or toxicity of the material in the piping, including reactions with cleaning or purging agents.

[2] Available from American Conference of Governmental Industrial Hygienists, 1014 Broadway, Cincinnati, Ohio 45202.

[3] Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

3.3.3 Low-suction-pressure-type air movers shall be used to purge containers that are constructed of light-gage metal, or the air flow rate shall be controlled to preclude collapse of the container.

3.3.4 When flammable contaminants are to be purged, ventilation equipment designed for use in hazardous locations shall be employed and precautions taken to eliminate all sources of ignition. A qualified person shall select the equipment.

3.3.5 Oxygen (sometimes improperly called "air") shall not be used to ventilate confined spaces.

3.3.6 A qualified person shall check periodically to ensure that contaminated air from the confined space is exhausted to a location where it presents no hazard to employees or equipment. Any hazardous concentrations shall be diluted by the use of blowers or additional ducting, as necessary.

3.4 Preliminary Precautions to Cleaning

3.4.1 A qualified person shall survey the surrounding area to determine the necessary steps to avoid hazards. He shall conduct a precleaning orientation and training session for each unusual or nontypical job to inform employees of cleaning procedures, potential hazards, sources of ignition, and methods for their control. He shall train employees in the proper use of personal protective and mechanical equipment to be used during the job.

3.4.2 To avoid ignition sources during cleaning where flammable contaminants might be released, an authorized person shall ensure that all necessary precautionary measures are taken.

3.4.3 Where cleaning operations involve the use of chemical solvents, a qualified person shall determine the flammable or toxic properties, or both, of the cleaning solvents as an integral part of the initial preparations.

E3.3.4 Electric motors used to drive air movers should conform to the provisions of American National Standard National Electrical Code, ANSI/NFPA No. 70 [C1]. The metallic parts of air movers and ductwork should be bonded electrically to the confined space being ventilated. Blades of exhaust fans should be constructed of nonsparking materials.

E3.3.5 Excess oxygen can extend the flammable range of gases and vapors. Excess oxygen can also make combustible materials, of which clothing is an example, ignite easily and burn rapidly.

E3.4.1 The following are typical steps that should be taken:

(1) Check the product or products contained in the confined space since the last thorough cleaning, the amount of residual product and sediment, and the overall physical condition of the entire structure.

(2) Check for drifting vapors from other tanks, piping, or sewers.

E3.4.2 Preventive measures in this area might include any or all of the following:

(1) Posting or barricading the area to prevent unauthorized entry of persons or vehicles.

(2) Prohibiting welding, burning, or other work in the area that might create a source of ignition.

(3) Ensuring that electrical equipment and portable lighting that will be used outside the confined space are of a design that will not provide a source of ignition. (Articles 500, 501, and 502, American National Standard National Electrical Code, ANSI/NFPA No. 70 [C1], will provide information concerning selection of appropriate electrical equipment.)

(4) Prohibiting smoking and the carrying of matches or other sources of ignition into the potentially hazardous area. A safe smoking area should be established nearby to reduce the potential for unauthorized smoking.

E3.4.3 For personal protective equipment, see 5.3.3 and Section 8.

If flexible duct is needed, it should be positioned so that the exhaust suction inlet is near the cleaning locations.

checked immediately. If escape of the contaminants constitutes a hazard to employees or equipment, the openings shall be closed until the exhaust ventilation is reestablished.

4. Environmental Hazards

4.1 General Testing Requirements

4.1.1 A qualified person shall periodically test for atmospheric contaminants from the lowest to the highest elevations of the confined space to determine the conditions that employees may encounter.

4.1.2 In addition to testing for pulmonary contaminants, the qualified person shall also check for those that may be absorbed through the skin.

E4.1.1 The nature and source of contamination will dictate the test frequency required to prevent hazardous concentrations of contaminants.

E4.1.2 Further information on skin contaminants will be found in Section II: Means of Contact and Entry of Toxic Agents, by Herbert E. Stokinger, in *Occupational Diseases, A Guide to Their Recognition*, published by National Institute of Occupational Safety and Health, PHS, Department of Health, Education, and Welfare.[4]

Fields of competence for persons responsible for atmospheric testing include:

(1) Maintenance, calibration, and limitations of the test instruments to be used.

(2) Proper method of sampling in the confined space, especially with regard to the elevations and area locations for sampling.

(3) Correct interpretation of the test results.

(4) Knowledge of the pertinent accepted test methods for sampling and analysis of atmospheric contaminants, as evaluated by persons known to be qualified in testing the occupational environment. Data pertinent to carefully selected and practical sampling instruments and analytical methods for many common contaminants are referenced in the Appendixes.

4.2 Oxygen-Deficient Atmospheres

4.2.1 Before employees are permitted to enter any confined space that contains or previously may have contained an oxygen-deficient atmosphere, the atmosphere shall contain at least 18% oxygen by volume. A qualified person shall test the space to be entered with a properly calibrated direct-reading oxygen indicator or other suitable device.

E4.2.1 The oxygen analyzer should be calibrated in accordance with manufacturer's instructions for the altitude for which it will be used.

4.2.2 The decay or fermentation of vegetable material generates carbon dioxide, which is approximately 50% heavier than air. It may exist in hazardous concentrations in farm silos, water meter pits, sewer vaults, or other areas. Therefore, before employees enter spaces suspected of containing excessive carbon dioxide, a qual-

E4.2.2 Another cause of oxygen deficiency may be the result of its displacement by nitrogen dioxide. Heavy nitrogen fertilization of plants may cause the formation of nitrates in the plant. During certain stages of fermentation, these nitrates are converted to nitrogen dioxide. Therefore, hazardous concentrations of nitrogen di-

[4] Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

4.4 Toxic Atmospheres

4.4.1 Before employees are permitted to enter any confined space that has contained liquids, vapors, gases, or solids of toxic, corrosive, or irritant nature (or if the confined space has been fumigated), a qualified person shall inspect the space for the presence of atmospheric contaminants.

4.4.2 The tests may indicate that the atmosphere of the confined space to be entered contains a concentration of toxic substances that is dangerous to life or health. The confined space then shall be ventilated to reduce the concentration below the TLV.

4.4.3 When the atmosphere of the confined space to be entered is found to contain contaminants and ventilation cannot reduce the concentration below the TLV, employees shall be protected in the manner required by 5.3.3 and Section 8. However, ventilation efforts shall be continued to maintain the level of contaminants at as low a concentration as possible.

4.4.4 If the concentration of contaminants cannot be accurately determined by field testing equipment, and if tests for flammability have shown the atmosphere to be safe in this respect, employees shall be permitted to enter the confined space only when protected in accordance with 5.3.3 and Section 8. However, ventilation efforts shall be continued to maintain the contaminants at as low a concentration as possible.

E4.4.3 Cleaning and hot work procedures may generate toxic vapors in the confined space. Therefore, a qualified person should determine the applicable provisions of 5.3.4 and 5.4.1, and Sections 6 and 7.

4.5 Combustible Dust Atmospheres. Confined spaces that contain, or have contained, grain, coal, flour, starch, or any other combustible dust shall be presumed to contain, or to have generated during cleaning, ignitable dust concentrations in the atmosphere. Therefore, when entry must be made in such a confined space, the requirements of 4.2.4 shall apply, and all sources of ignition shall be eliminated.

E4.5 Combustible Dust Atmospheres. It is virtually impossible to prevent flammable dust from being thrown into the atmosphere when entering such bins and silos. It is therefore extremely important that nonmetallic or spark-resistant tools and dust-tight lighting and electrical systems complying with the provisions of American National Standard National Electrical Code, ANSI/NFPA No. 70 [C1], be used exclusively (see 6.1.4).

4.6 Noise and Radiation Exposure

4.6.1 A qualified person shall determine that employees are protected from harmful noise exposure.

E4.6.1 Applicable guidelines will be found in the provisions of 41 *Code of Federal Regulations* (CFR) 50-204.10 (Safety and Health Standards for Federal Supply Contracts) and 29 CFR 1910.95 (Occupational Safety and Health Standards),[5] with any amendment thereto.

4.6.2 A qualified person shall determine that employees are protected from exposure to harmful concentrations of ionizing radiation.

E4.6.2 Reference is made to federal standards in 10 CFR 20 (Standards for Protection against Radiation) and 29 CFR 1910.96 (Occupational Safety and Health Standards).[6] with any amendment thereto.

4.7 Excessive Heat or Cold

A qualified person shall determine that employees are protected from temperature extremes in accordance with accepted methods.

[5] Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

spheric tests during the cleaning operation, depending on the temperature, volatility of the residues, and other conditions within the space, to ensure that the concentration of contaminants does not exceed the limits stated in Section 4. If these limits are exceeded, the qualified person shall ensure that the employees leave the space and appropriate precautions are taken, as outlined in Section 4.

5.4 Cleaning Solvents

5.4.1 When toxic substances are used as cleaning solvents in a confined space, a qualified person shall ensure that one or more of the precautions outlined in 5.4.1.1 through 5.4.1.3 are taken to safeguard the health of the employees.

5.4.1.1 The cleaning operation shall be enclosed completely to prevent the escape of vapor into the working space.

5.4.1.2 Mechanical exhaust ventilation shall be provided to remove vapors at the source, and the concentration of the contaminants in the space shall be maintained below the TLV level.

5.4.1.3 Where neither the requirements of 5.4.1.1 nor 5.4.1.2 can be achieved, employees shall wear protective equipment in accordance with the requirements of 5.3.3 and Section 8.

5.4.2 When solvents, paint, and preservative removers are capable of producing a flammable atmosphere under the conditions of use, the precautions given in 5.4.2.1 through 5.4.2.6 shall be taken.

5.4.2.1 The entry permit shall prohibit smoking, open flames, arcs, and spark-producing equipment in this area.

5.4.2.2 A qualified person shall make frequent tests to ensure that ventilation is sufficient to keep the vapor concentration below 10% of the LFL.

E5.4.2.2 Concentrations of flammable vapors below 10% of the LFL can be toxic. Therefore, a qualified person should determine that the provisions of Section 4 have been satisfied.

5.4.2.3 Employees shall place scrapings and rags soaked with solvent in a covered metal container outside the confined space.

5.4.2.4 Lighting and electrical equipment shall be in accordance with the provisions of American National Standard National Electrical Code, ANSI/NFPA No. 70 [C1].

5.4.2.5 A qualified person shall inspect all power and lighting cables to ensure that they are in good condition and adequate for the service intended.

E5.4.2.5 Power and lighting cables should be inspected for at least the following:

(1) Insulation is free of cracks and worn spots.

(2) No splices are present within the confined space.

(3) Cables are not carrying more current than their rated capacity.

(4) Cables are properly suspended so as to prevent chafing or undue stress.

5.4.2.6 Fire extinguishing equipment shall be available in the work area.

ble liquids, vapors, or gases and is adjacent to the space in which the hot work is to be performed.

6.1.5 In a confined space in which flammable vapors or gases have not been present, the permit shall be issued only after the qualified person has, by inspection and test, ensured that the following requirements have been met:

(1) Spaces adjacent to the space in which the hot work is to be performed, if they last contained a flammable liquid, vapor, or gas, have been cleaned or inerted to the requirements of 6.1.2 or 6.1.3.

(2) The requirements of 6.1.2(3) have been satisfied for pipelines.

6.1.5.1 Where possible, all combustibles, including any dry residues, in the vicinity of the hot work shall be be removed to a safe place; or, if they cannot be moved, such items shall be covered by a noncombustible blanket, flame-resistant tarpaulin, or other means to prevent ignition from heat, sparks, and slag.

6.1.6 In a confined space having last contained dry material that creates an explosive atmosphere when dispersed in air, the permit shall be issued only after a qualified person, through personal inspection, has ensured that the following requirements are satisfied:

(1) All loose dust has been removed from the confined space and all surfaces have been thoroughly cleaned.

(2) The confined space has been isolated mechanically to prevent reintroduction of the dry material.

(3) Adequate fire extinguishing equipment is available at the site (see 6.3.1).

E6.1.6 A common problem in certain "dry" material storage bins is "bridging," where the material "hangs up" on the sides of the bin and does not flow out the bottom. Entry to remove such "bridges" always should be made from the top of the bin, never from the bottom.

(1) Vacuum cleaning is recommended.

6.2 Maintaining Gas-Free Conditions

6.2.1 It may be necessary to do hot work in a space that has contained a flammable liquid, vapor, or gas or is adjacent to such a space. If so, both shall be cleaned or inerted as required by 6.1.2 or 6.1.3. Then a qualified person shall test for flammable vapors or gases:

(1) Immediately prior to starting hot work at the beginning of each day, shift, or following a shutdown period.

(2) Periodically after starting hot work to ascertain any increase in the concentration of flammable vapors.

6.2.2 If the concentration of flammable vapors exceeds 10% of the LFL, hot work shall be stopped until the source of vapor release is located and removed, or sufficient ventilation is provided to maintain the concentration below 10% of the LFL.

6.3 Fire Prevention

6.3.1 In the absence of operable fixed fire extinguishing equipment, portable fire extinguishers shall be available to employees in the confined space in accordance with American National Standard Installation.

6.4.5 Greasy preservatives shall be removed from the hot work area for a sufficient distance from the area to be heated to prevent increasing the temperature of the unstripped metal. If this occurs, artificial cooling of the metal surrounding the hot work area shall be used to limit the size of the area required to be cleaned.

6.4.6 After hot work has started in confined spaces on metal covered by greasy preservatives or protective coatings, a qualified person shall make periodic atmospheric tests to ensure that no flammable or toxic contaminants are being produced by the preservatives or coatings. If these conditions develop, the hot work shall be stopped immediately and shall not be resumed until additional precautions have been taken as required by the provisions of 4.3 and 4.4.

6.5 Hot Work Permit. The hot work permit referred to in 6.1.1 shall certify that the applicable provisions of Section 6 are carried out, and particularly, that:

(1) There is no residual hazard for hot work.

(2) The provisions of 6.1 have been complied with, stating the measures used, the results of tests, and ventilation required.

(3) An indication is given of the frequency of tests needed to ensure that the gas-free condition required by 6.2 will be maintained.

(4) Any necessary precautions have been taken in accordance with 6.4.

7. Removal and Application of Preservative Coatings and Linings

7.1 Flame or Heat Removal

7.1.1 Employees shall not use flame or heat to remove preservative coatings until a qualified person has issued a hot work permit in accordance with the provisions of 6.1.1.

7.1.2 Hardened preservative coatings and linings shall not be removed by heat unless there is sufficient local mechanical exhaust ventilation to remove fumes and smoke at the source. Employees shall wear protective equipment in accordance with Section 8.

7.1.3 Flames shall not be used to remove soft and greasy preservative coatings (see 6.4.4).

7.2 Chemical Removers

7.2.1 Employees shall wear protective equipment to prevent skin contact and eye injury during the handling and application of chemical removers in accordance with 5.3.3 and Section 8.

7.2.2 When using removers that contain flammable or toxic solvents, or both, the provisions of 5.4.2 shall apply.

American National Standard Safety in Welding and Cutting, ANSI Z49.1-1973

American National Standard Practice for Occupational and Educational Eye and Face Protection, ANSI Z87.1-1968.

American National Standard Practices for Respiratory Protection, ANSI Z88.2-1969

American National Standard Safety Requirements for Industrial Head Protection, ANSI Z89.1-1969

American National Standard Fire Prevention in Use of Cutting and Welding Processes, ANSI/NFPA No. 51B-1976 [Z49.2]

Appendixes

(These Appendixes are not a part of American National Standard Safety Requirements for Working in Tanks and Other Confined Spaces, ANSI Z117.1-1977, but are included for information purposes only.)

Appendix A

Reference Material on Instrumentation for Evaluation of Atmospheric Contaminants

Air Sampling Instruments for Evaluation of Atmospheric Contaminants. 4th ed. American Conference of Governmental Industrial Hygienists. Cincinnati, Ohio. 1972

Analytical Guide Series. American Industrial Hygiene Association, Southfield, Mich., 1965.

Field Operations Manual. Industrial Hygiene Section. Occupational Safety and Health Administration. U.S. Department of Labor. (Available through Occupational Safety and Health Subscription Service. Superintendent of Documents. Government Printing Office. Washington, D.C. 20402. Shows sampling, analysis, and evaluation procedures recommended for more than 500 substances.)

Hygienic Guide Series. American Industrial Hygiene Association. Southfield, Mich.

Instruments and Measurements in Industrial Hygiene (Publication No. 595). National Institute of Occupational Safety and Health and the Occupational Safety and Health Administration. Rockville, Md.

Methods of Air Sampling and Analysis. Intersociety Committee. American Public Health Association. Washington, D.C. 1972. 490 pp.

NIOSH Manual of Analytical Methods. National Institute of Occupational Safety and Health. PHS. U.S. Department of Health, Education, and Welfare. Cincinnati, Ohio. 1974

The Industrial Environment - Its Evaluation and Control. National Institute of Occupational Safety and Health. PHS. U.S. Department of Health, Education, and Welfare. Cincinnati, Ohio. 1973

EXHIBIT C
GROUNDING AND BONDING PROCEDURES
CNM-037

POLICY & PROCEDURE MANUAL

Waste Management, Inc.	**TITLE** Grounding/Bonding Procedures	**DIST. CODE**	**NUMBER**
	INITIATED BY David Stafford Safety Manager-Eastern Region		Page 1 of EFFECTIVE D May 8, 1
APPROVED BY _____ **TITLE** Regional Manager		**SUPERSEDES**	
REQUIRED FORMS Exhibit CWM-037 (Attached)		**CROSS REFERENCE(S)**	
PURPOSE To establish a bonding/grounding procedure for transferring flammable/combustible liquids from drum to vehicle, vehicle to vehicle, and vehicle to storage tank.			

BONDING AND GROUNDING PROCEDURES
for Transferring Flammable/Combustible Liquids
from:

(1) Drum to Vehicle
(2) Vehicle to Vehicle
(3) Vehicle to Tank

A. DEFINITIONS

1. Class I flammable liquids are those liquids which have a flash point of less than 100° F.

2. Class II combustible liquids are those liquids which have a flash point greater than or equal to 100° and less than 140° F.

3. Class III combustible liquids are those liquids which have a flash point greater than or equal to 140° F and less than 200° F.

NOTE: Due to uncontrolled factors such as atmospheric conditions, the bonding/grounding procedures shall apply to CWM divisions when transferring liquids having a flash point that is less than 140° F.

4. Bonding - the process of connecting two or more conductive objects together by means of a conductor

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5. Grounding - the process of connecting one or more conductive objects to the ground, and is a specific form of bonding. The words "Bonded: or "Grounded" as they are used in NFPA 77 "Static Electricity 1983", must be understood to mean either that a bond or ground, as defined, has been deliberately defined or that an electrically conductive path having a resistance adequate low for the intended purpose (usually 10^6 ohms or less) is inherently preser by the nature of the installation.

B. DRUM TO VEHICLE

1. Before dispatching truck:

   a. Check continuity of bonding; tank to truck/trailer frame

   b. Check continuity; trailer to tractor. If no continuity:

      1. check fifth wheel to trailer frame
      2. check continuity tractor to trailer

   c. Check continuity of wires to be used for grounding and bonding.

   d. Check continuity of each hose section from fitting to fitting. (No plastic fittings or couplings.)

   e. Check that the drum wand is non-sparking metal (brass, bronze, aluminum, etc. - no plastic)

   f. Maintain a check off sheet of these items including checker's name, date, instrument used

NOTE: A common battery powered Vom may be used for checking continuity.

2. At pick-up location

   a. Inspect for any ignition hazards before spotting truck

   b. Postion truck for unencumbered exit in emergency

   c. Unless the engine of the motor vehicle is to be used for the operation of a pump, the engine must be shut down

   d. Chock wheels

1. Secure vehicles, shut off engines, chock wheel.

2. Ground each vehicle by first connecting the ground strap to the vehicle's tank (not to the tractor), and then to a ground pole at a remote point.

3. Connect the conductive hose to the vehicle to be filled first making sure it is bonded from the hose to the intake (input) valve on the receiving vehicle. No plastic couplings or fittings.

4. Connect the other end of the hose to the vehicle from which the liquid is to be transferred from, again making sure there is a good connection (no plastic couplins or fittings).

5. Engage the pump.

6. After transferring, shut down pump, remove hose and lastly remove vehicle grounds.

D. VEHICLE TO STORAGE TANK

1. Secure vehicle, shut down engine, chock wheels.

2. Ground the vehicle (not the tractor) by first connecting the ground strap to the vehicle, and then to a ground pole at a remote point.

3. The storage tank (receiving tank) must be grounded.

4. Connect the conductive hose first to the storage tank (receiving tank) making sure they are bonded to each other. (No plastic couplings or fittings.)

5. Connect a bond from the other end of the hose to the vehicle, making the hose connection first and then hooking to the edge of the tank opening on the vehicle.

6. If a fill pipe is used, other than a conductive hose, then this pipe must be bonded using the same procedure in Item #5.

7. Open the tank opening (vehicle).

8. Engage the pump.

9. After pumping, remove the conductive hose, secure tank opening, disconnect vehicle ground last.

E. RECOMMENDED BONDING/GROUNDING WIRES/STRAPS

1. Fifth wheel to tractor frame - bare flexible conductor (stranded wire or braided ribbon wire) of No. 8 AWG equivalent or larger located for easy inspection. (Permanent connections may be solid for non-sliding fifth wheels).

2. Tractor to trailer. Bonding continuity may be done via the lighting circuit connections between tractor. If not, bare flexibile conductor NO. 10 AWG or larger with permanent connection to the trailor and spring clamp connection to the tractor.

3. Tank valve to metal wand - preferably integral through hose and couplings otherwise bare flexible conductor, No. 10 AWG or larger firmly taped to the hose, with strong spring clamps or screw clamps at each end.

4. Trailer to ground - permanent or reel mounted to truck bare flexible conductor NO. 10 AWG or larger with stronger spring-clip connector or screw clamp.

5. Wand to drum - bare flexible conductor No. 10 AWG or larger with strong spring clamps or screw clamps at each long enough to permit necessary handling of the wand without disconnection.

6. Drum to ground - bare flexible conductor No. 10 AWG or larger with strong spring clamps or screw clamps on each end.

NOTE: Spring clamps must penetrate painted surfaces for metal to metal contact.

F. RECOMMENDED CLOTHING AND PROTECTIVE EQUIPMENT

1. Cotton outer and under garments avoid static build up from synthetic materials.

2. Lace type 6" safety shoes or boots with oil resistant soles.

3. Splash goggles and face shields (no contact lenses).

4. Impervious gloves.

G. TRUCK SAFETY EQUIPMENT

1. At least one 10 lb. dry chemical or equivalent Halon Extinguisher mounted outside the cab or in a compartment where easily accessible.

2. At least three reflective triangles (no flares or fuses) for traffic warning.

3. Wheel chocks.

CHECK-OFF LIST
for
GROUNDING/BONDING PROCEDURES

Division_____ Date_____

Vehicle Number_____

Type of VOM Used_____

I. Maintenance Items	(Yes)	(No)
1. Continuity between tank and vehicle frame.	( )	( )
2. Continuity between tractor and trailer.	( )	( )
3. Continuity in ground/bond wires.	( )	( )
4. Continuity of each hose section.	( )	( )
5. Plastic fittings and couplings are prohibited.	( )	( )
6. The wand is of non-sparking material.	( )	( )

COMMENTS:_____

_____

_____

Signature(Maintenance Supervisor)_____

II. Driver's Items		
1. Grounding/Bonding procedures in vehicle.	( )	( )
2. Non-synthetic coveralls used.	( )	( )
3. Safety shoes with oil resistant soles.	( )	( )
4. Splash goggles and face shields.	( )	( )
5. Impervious gloves.	( )	( )
6. 10#ABC Extinguisher.	( )	( )
7. Reflective triangles.	( )	( )
8. First aid Kit.	( )	( )

COMMENTS:_____

_____

_____

EXHIBIT D
PRECAUTIONS IN BREAKING LINES
CWM-039

POLICY & PROCEDURE MANUAL

Waste Management, Inc.	TITLE: Precautions in Breaking Lines	DIST. CODE	NUMBER
	INITIATED BY: David Stafford Safety Manager-Eastern Region		Page 1 of EFFECTIVE May 8, 1
APPROVED BY: TITLE: Regional Manager		SUPERSEDES	
REQUIRED FORMS: Exhibit CWM-039		CROSS REFERENCE(S)	

PURPOSE

To establish a procedure to safely break into process piping systems.

I. CONFINED SPACES

For Isolation procedures for use in Confined Space: See Section P of this manual.

II. PROCEDURE

Breaking a line is, in essence, breaking into a closed system. Regardless of the checking done and the instruments employed, it must be assumed that at the point where the line is to be broken there is product or gas that will spurt out.

A. Breaking lines which have ever contained a liquid or gas which is corrosive or toxic, or which presently contains hot material, must be treated as a SPECIAL HAZARD, The following precautions must be taken in line breaking operations:

1. A "line breaking checklist" must be completed (see item 10 below for instructions). This checklist establishes the recommended procedures to be followed in addition to those outlined below.

2. Competent supervision must be on the job site when a hazardous line is broken. Arrangements to provide this supervision on off-shifts and weekends must be made.

3. A water hose shall be provided at the point of line breaking. The water shall be running or the hose valved at the end.

4. Where applicable, the Lockout Procedure, shall be used to deactivate pumps, blowers, etc.

5. The line shall be drained completely, making certain that valves are left open to prevent the possibility of an air lock.

6. The portion of the line being worked on shall be isolated from those adjacent to it in the most effective way. Valves which are closed shall be chained and locked to prevent inadverted opening.

7. Before the moment of breaking occurs, the area shall be set up for maximum protection to passersby and nearby workers. Shielding and roping off shall be effected. A funnel or suitable container to collect drainage will be used where applicable.

8. Protective equipment shall be worn when hot, corrosive or toxic materials are or may be present. THE MINIMUM EYE PROTECTION IS A FULL FACE SHIELD WORN OVER SAFETY GLASSES OR MONOGOGGLES OVER SAFETY GLASSES. The following additional equipment is required.

   a) A hard hat.

   b) A full length raincoat (or jacket and pants) which fastens to the neck. Clothing shall be of suitable, chemically resistant material.

   c) Gauntlet type rubber gloves.

   d) Rubber boots or overshoes high enough to be covered by the raincoat (or pants).

e) Where the possibility of inhalation exists, suitable respiratory protection shall be worn. The type of equipment used will be dictated by the material encountered and the severity of the exposure.

f) Where severe and continuing sprays or heavy gassing occurs or is anticipated, fully enclosed rubber suits with appropriate self contained breathing apparatus will be worn.

9. It is difficult to prescribe a general set of rules covering the precise and safest way to effect all line openings. However, the best standards applicable to the particular job shall be followed including:

a) Loosening the bolts of a flange which are farthest from the mechanic first.

b) Shielding whenever possible, including the partial use of flange covers. Stand aside to avoid any spray.

c) Washing out the lines and fittings with water at least twice. Dismantled lines and fittings should be free of contaminant before being removed from the job site. This applies even if the parts are be scrapped.

d) Flange spreaders shall be used for opening flange joints whenever possible and practical. When not possible (close quarters, size of pipe, etc.), only standard wedges shall be used as an alternative. A chain or strong, flexible wires shall be secured to the wedge, the other end firmly secured to a fixed object to prevent the wedge from flying in the event it slips from the joint.

e) whenever possible, old flange bolts shall be removed one at a time and replaced with new bolts which can be gradually loosened as the wedge is being inserted. This will prevent sudden opening of the joint, particularly when it is under stress. The use of drift pins, cold chisels, spud wrenches and similar tools as alternates is strictly forbidden.

10. Line breaking checklists shall be used as follows:

a) When a checklist is used, it should be filled out completely, both sides, in ink.

b) A checklist covers a single shift only, unless the entire job is completed by the personnel starting it.

c) The signatures of the operating and mechanical department supervisors indicate their approval of the job preparations.

d) A properly completed checklist must be displayed at the job site.

e) When a job is completed the checklist forms need to be forwarded to the site safety officer for review. The review should indicate that the required precautions are being taken on line breaking jobs. Checklist can be disposed of when their retention will serve no useful purpose.

III. SPECIAL PRECAUTION - FLAMMABLE LIQUID OR GAS LINES

A. Where it is necessary to burn flange bolts off, or to use welding equipment for other purposes, the following procedures are mandatory:

1. A welding and burning permit must be issued to cover the hot work.

2. The line must be broken at the nearest flange without the use of a burning torch.

3. If the line cannot be broken without burning flange bolts, all flange bolts must be replaced one at a time without separating the flanged joint.

4. The line, when separated, must remain open to the atmosphere. The remaining portion of the line not being worked on must be blanked.

5. Explosive meter tests must be conducted by a qualified person. If an explosive mixture is found, the line must be purged with an inert gas.

IV. EXCEPTIONS

A. Normally this procedure will not apply to maintenance activities on piping on tank trailers. For this exemption to be valid, all the following precautions must be taken:

1. The trailer and its piping must be thoroughly washed out before being servicing and/or dismantling.

2. Transfer or vacum pumps must be thoroughly washed out before servicing and/or dismantling.

3. Precautions in the lockout procedure must be followed to prevent accidental starting of the power driven component (s) of the pump.

B. If a pump, valve, associated piping or discharge line is blocked by foreign object(s) or solidified/frozen material, all applicable precautions of the line breaking procedure must be followed.

C. In attempting to unblock a line, only water (hot or cold) or low pressure steam may be used to clear the blockage. The introduction of solvents or chemicals is prohibited. NEVER APPLY HEAT FROM A WELDING TORCH OR SIMILAR DEVICE TO ANY COMPONENT OF A TANK TRAILER TO ATTEMPT TO CLEAR A BLOCKAGE.

Chemical Waste Management, Inc.

LINE BREAKING CHECKLIST

From to

Good this date only a.m. p.m.

Department Location

Work To Be Done

Material Possibly In Line

WE CERTIFY that the precautions checked and/or written out on the back have been taken and will be followed for the duration of the job.

Signed
For Operating Department

For Mechanical Department

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Check the precautions to be taken before line opening starts, Indicating by checks the department responsible for carrying out the precaution. Cross out those not applicable.

Mech.	Oper..	
		All necessary protective equipment (rubber suit, face shield, etc. to be worn?
		Respiratory protection required? If so, state type
		Area roped off?
		Welding and burning permit required?
		All valves properly tagged & locked out?
		Lock out procedure required?
		Necessary blanks installed?
		Water provided at job site?
		Steam (or electric) tracing shut off?
		Vents opened to prevent air lock?
		Are special precautions required?

If so, please list:

Exhibit C 939

EXHIBIT E
LOCK OUT PROCEDURES

POLICY & PROCEDURE MANUAL

Waste Management, Inc.	**TITLE** Lock-Out Procedures	**DIST. CODE**	**NUMBER**
	INITIATED BY David Stafford Safety Manager-Eastern Region		Page 1 of **EFFECTIVE** May 8,
	APPROVED BY _____ **TITLE** Regional Manager	**SUPERSEDES**	
	REQUIRED FORMS	**CROSS REFERENCE(S)**	

PURPOSE

To provide a procedure to insure isolation of any electro-mechanical device before repair, replacement, inspection, or testing is performed.

I. Lock-Out procedures must comply with OSHA standards 29 CFR 1910

A. 29CFR1910.261 (OSHA) states that 'Devices such as padlocks shall be provid for locking out the source of power at the main disconnect switch. Before any maintenance, inspection, cleaning, adjusting, or servicing of equipmen (electrical, mechanical, or other) that requires entrance into or close co with the machinery or equipment, the main power disconnect switch or valve both, controlling its source of power or flow of material, shall be locked or blocked off with padlock, blank flange; or similar device".

B. 29CFR1910.145 (F) (3) (iii) states that 'Do not start tags shall be placed such a manner that they effectively block the starting mechanism which cou cause hazardous conditions should the equipment be energized".

C. 29CFR1910.145 (F) (6) states that 'Out of order tags should be used only for the specific purpose of indicating that a piece of equipment, machiner etc. is out of order and to attempt to use it might present a hazard".

II. PROCEDURE

Before anyone works on or in power driven equipment or piping connected to pumps or in tanks, the following procedures must be followed:

A. Stationary Electrically Driven Equipment -

1. All electrical switchgear that energizes moving equipment, such as pumps blowers, screw conveyors, agitators, wringers, centrifuges, compactors, etc. must be locked out.

2. Push buttons which operate the equipment to be worked on must be tried to insure that the proper electrical circuit(s) have been isolated.

3. In cases where pumps or similar equipment are activated by a float valve or where it is impossible to make a positive check on the safety of the lock out, safety jacks must be removed from Rowan starters and fuses pulled from all other type starters.

4. If such pumps, motors or equivalent are actuated by mechanical devices, such as floats, the devices must be tried manually to insure that proper deactivation has been achieved.

5. All drive belts must be removed on multiple line shaft driven equipment.

6. Switches controlling electrical equipment must be locked out using a multiple lock adaptor. One padlock shall be used for each employee involved in the job.

7. Each employee who will work on equipment involving a lockout is to be provided with his or her own lock and key. There shall be no duplicate keys or master keys.

8. A padlock is to be installed by each employee involved in the job at the beginning of the job or work period and removed at the end of the job or work period. The employee or employees doing the work will retain the keys to the padlocks used.

9. When subsequent work shift crews are required on the job, actual changes of padlocks are involved. Incoming shift workers will attach their padlo before the relieved workers remove theirs. In this manner the switch is never without a lock installed.

10. When locks are changed, the supervisor(s) concerned should completely and thoroughly check the lockout as originally made to assure the continued protection of employees.

11. A "DANGER-DO NOT OPERATE" tag must be installed on the switches being locked out. The tag must be filled in with the date and name(s) of personnel involved on each work shift.

B. Engine Driven Vehicles and Equipment -

1. When work must be performed on equipment or vehicles powered by an internal combustion engine, the engine must be rendered inoperable by one of the following means:

   (a) Removal of the iginition or starter actuation key.

   (b) Disconnecting of the battery cables and insertion of a padlock through the disconnected wire terminal.

   (c) Isolation by means of a lockable type battery disconnect switch.

2. Attempt to actuate the equipment by operating the switch, button or lever. Air and hydraulic pressure must be relieved when necessary.

3. The employee(s) working on the equipment will retain the keys to the ignition switch and/or padlocks used.

4. When work continues to a subsequent work shift, the ignition key shall be passed on and padlocks exchanged.

5. A "DANGER - DO NOT OPERATE" tag must be installed on the control panel and/or at the battery disconnect point. The tag must be filled in with the date and name(s) of personnel involved on each work shift.

III. SPECIAL INSTRUCTIONS

A. Removal of Locks -

1. In the event an employee who installed a padlock or removed an ignition key from a piece of equipemnt has left the site on a previous shift, has been injured or otherwise stricken, or left the site for any other reason, the following procedure shall be used:

1. Cont.

(a) The supervisor must be assured that the employee is no longer at work on the equipment in question.

(b) The supervisor may cut the lock from the secured equipment after all other locks are removed by the respective employees.

(c) The supervisor assumes full responsibility for the safe re-energizing of the equipment involved.

(d) A written record should be made of the circumstances surroundir the removal of the lock by the supervisor and forwarded to the site general manager.

B. Interlock Controllers and Starters -

1. Interlocked controllers, Rowan controller and starters should be rendered safe by an electrician or other qualified employee.

2. No fuses shall be removed or replaced unless all internal controller parts are disconnected.

C. Confined Space Entry Procedures - for lock-out procedures related to confined space see section P of this manual.

IV. Training

A. Employees shall be trained in lock-out procedures as per training module XVI.

EXHIBIT F
HOT WORK-WELDING AND CUTTING
PROCEDURES

CWM-038

POLICY & PROCEDURE MANUAL

Waste Management, Inc.	**TITLE** Hot Work - Welding and Cutting Procedures	**DIST. CODE**	**NUMBER**
	INITIATED BY David Stafford Safety Manager-Eastern Region		Page 1 of 1 **EFFECTIVE D.** May 8, 198
APPROVED BY _____ **TITLE** Regional Manager		**SUPERSEDES**	
REQUIRED FORMS Exhibit CWM-038 (Attached)		**CROSS REFERENCE(S)**	

PURPOSE

To provide a procedure to insure that burning and welding operations are performed safely in hazardous locations.

I. Safety procedures in welding and cutting must comply with ANSI Standard Z49.1-1973.

2. Training-Employees must be trained in safe welding and cutting procedures as per training module X.

3. Confined Spaces-For hot work being done in confined spaces also SEE Section P of this manual.

4. Employer-Employee Responsibilities

   a. Workmen in charge of the oxygen of fuel-gas supply equipment. . . . . .shall be instructed and judged competent by their employers. . . . . .before being left in charge.

   b. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment. . . . .shall be readily available.

   c. Employees shall follow the procedure outlined by the manufacturer of the aparatus in use insofar as they deal with the sequence of operations in lighting, adjusting and extinguishing torch flames, and connecting the apparatus to the source of gas supply.

d. Employees shall place welding cable and other equipment so that is it clear of passageways, ladders and stairways.

e. The employer shall provide and the employees shall wear personal protective equipment.

f. The employer shall provide and the employee shall read Federal or State laws governing the safe operating procedures for welding and cutting.

g. The employer shall provide and the employee shall use suitable fire resistant shield guards to protect passing persons from flying sparks.

5. Inspection of Cylinders

a. Cylinders shall be checked for corrosion, general distortion, pitting, or any other defect that might indicate a weakness which would render it unfit for service.

b. Dents are of concern where the metal deformation is sharp and confined, or where they are near a weld. Any dent which includes a weld shall not be deeper than ⅛" inch.

(1) cylinders shall be rejected if dents which are not on welds has a depth greater than 1/10th the diameter of the dent.

c. Any leaking cylinder is cause for rejection.

d. Any cylinder subjected to charring, burning, cindering, or melting due to fire or extreme heat must not be placed in service.

e. Cylinders which have bulges shall be removed from service.

f. Cylinders shall be rejected if the valve is noticably tilted.

g. Cylinder necks which have serious cracks, folds, or flaws shall be rejected.

6. Marking of Cylinders

a. Cylinders shall belegibility marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. The marking shall not be readily removable.

b. Empty cylinders must be marked EMPTY or MT.

7. Testing of Cylinders

a. Connections shall be checked for gas tightness after assembly and before lighting the torch. Use soapy water or the equivalent, not a flame.

b. If a leak is found around the valve stem when the valve on a fuel-gas cylinder is opened, the valve should be closed and the gland nut tightened. If this does not stop the leak, remove it to outdoors and notify the supplier

(1) If there is a leak, open valve slightly to let acetylene escape (outdoor

8. Cylinders "Do's and Don'ts"

a. The temperature of the cylinder contents shall not be allowed to exceed 130°F

b. Only the gas supplier shall refull a cylinder.

c. Only the gas supplier shall mix gases in a cylinder.

d. Nothing shall be placed on top of an acetylene cylinder when in use which may damage the safety device or interfere with the quick closing of the valve.

e. Cylinder valves shall be closed when work is finished.

f. Unless secured on a special truck, regulators shall be removed and valve-protection caps shall be put in place before cylinders are moved.

g. Cylinders not having fixed hand wheels shall have keys, handles, or non-adjustable wrenches on valve stems while in service.

h. Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them.

i. Cylinders shall not be placed where they might become part of an electric circuit.

j. Cylinders shall be kept away from radiators, piping systems, layout tables, etc. that may be used for grounding electrical circuits such as for arc welding machines.

k. Any practice such as the tapping of an electrode against a cylinder to strike an arc shall be prohibited.

l. Cylinders shall never be used as rollers or supports.

m. Cylinders shall not be dropped or otherwise roughly handled.

n. Always keep oxygen cylinders separated from combustible materials (such as oil or greasy substances).

9. Valves

a. Before connecting a regulator to a cylinder valve, the valve shall be opened momentarily and closed immediately.

(1) this action is intended to clear the valve of dust or dirt.

b. Employees shall always stand to one side while opening the valve.

c. Never crack a fuel-gas cylinder valve near other welding work or near sparks, flames, or other possible sources of ignition.

d. Cylinder valves shall not be tampered with nor shall any attempt be made to repair them.

e. Cylinder valves shall be closed when equipment is unattended, when empty, when moving, or when work is completed.

f. Valve cap protection must be used whenever the cylinder is not in use.

g. No one shall tamper with safety devices in valves.

h. A hammer or wrench shall not be used to open cylinder valves. If valves can't be opened by hand, the supplier shall be notified.

i. An acetylene cylinder valve shall not be opened more than one and one-half turns of the spindle, and preferably no more than three-fourths of a turn.

10. Regulators

a. Connect oxygen pressure - reducing regulators to oxygen cylinders and combusti pressure - reducing regulators to acetylene tanks.

b. The threads on regulators and valve outlets should match.

(1) never force connections that do not fit.

c. Do not hang blowpipes or hoses on regulators.

d. If you stop work for 15 minutes of more, disconnect the torch, place it in the tool box and release the pressure in the regulator to prevent the accidental release of gas.

e. When detaching a regulator:

1. Close cylinder valve.

2. Open blowpipe valve.

3. Turn out the pressure adjustment screw.

4. Close blowpipe valve.

5. Uncouple the regulator.
(Always release gas from regulator and close cylinder valve before removing regulator).

f. When testing regulators, do not use any oil product.

g. Always release pressure-adjusting screws on regulators to drain out. all gas before attaching regulator to the cylinder.

11. Gauges

a. Gauges on oxygen regulators shall be marked "USE NO OIL".

b. Acetylene shall in no case be utilized at a pressure in excess of 15 p.s.i.

12. Hoses

a. Red shall be the color for acetylene and other fuel-gas hoses.

b. Green shall be the color for oxygen hose.

c. Black shall be the color the inert-gas and air hoses.

d. When parallel lengths of oxygen and fuel-gas hose are taped together for convenience and to prevent tangling, no more than 4" out of 12" shall be covered by tape. Do not use tape repairs.

e. Hoses showing leaks, burns, worn places or other defects rendering it unfit for service shall be repaired or replaced.

f. If a hose has been used for one gas, never use it for another.

g. Always keep hoses away from grease and oil.

h. Before using a new hose, blow it out with oxygen, never acetylene.

i. Should a flashback occur and burn in a hose, remove and throw away the burned section.

13. Torches

a. To light the torch use the friction lighter, stationary pilot flame, or some other suitable source of ignition.

b. Do not use matches for lighting torches.

c. Do not attempt to light or relight a torch from hot metal.

d. Always point the torch away from persons and combustible materials.

e. Whenever the torch is not used (lunch hour, overnight, etc.) the torch valves should be closed and the fuel-gas and oxygen supply to the torch positively shut off.

f. Correct leakage around torch valve stems by re-packing with the packing supplied by the manufacturer. Do Not Use Oil.

g. Clean clogged tips with the proper size cleaning tool, drill, or copper or brass wire. Never use a sharp, hard tool that could enlarge the orifice. Clean from the larger end.

h. Always use a torch wrench on the torch but - never use pliers.

i. Don't interchange tips with those of other torches.

j. Do not scrape of knock torch tips on an abrasive surface.

c. There must be adquate ventilation ("fume suckers" or exhaust ducts with flexible tubing extensions at the point of welding operation is the best).

d. The heating system should not interfere with the natural or mechanical exhausting of welding fumes.

e. Natural air ventialtion must be supplemented by mechanical ventilation if any of the following conditions exist:

(1) The ceiling is less than 16' high or

(2) There is less that 10,000 cubic feet/welder or

(3) Welding is being done in a confined space or

(4) Cross ventilation is obstructed by balconies, partitions, or other structural barriers.

f. Fire and glare screening should not be permitted to restrict the flow of air under any circumstances.

g. Keep area clear of waste paper, paint residue, oily waste, soiled rags, wood chips, and other combustible material.

16. Protection

A. Personal Protective Equipment

1. Fire-Retardant gauntlet gloves

2. Fire-Restardant aprons of leather, asbestos or other suitable materials to provide protection against sparks, spatter, and radiated heat.

3. 6" high and laced, steel toed safety shoes with puncture resistant soles.

4. Outer clothing must be oil and grease free.

5. Cuffless pants and overalls without pockets.

6. Sleeves and collars whould be buttoned.

7. Leather caps for overhead work.

8. Eye protection.

9. Proper respirator.

10. If there is a danger of falling objects - hard hats.

NOTE: All clothing and equipment must be stored in a clean and dry area.

B. Fire Protection

1. Cylinders must be kept far enough away from the actural welding or cutting operation so that sparks, hot slag, or flame will not reach them, or fire-resistant shields shall be provided.

2. All cylinder carts shall be provided with a portable fire extinguisher.

3. There should be a pail of water available at the area.

4. There shall be no welding or cutting unless the atmosphere is non-flammable and unless combustibles can be separated from or protected from fire hazards.

5. All combustible floors shall be swept clean and protected by wetting with water or covering with damp sand.

6. Sparks shall not be allowed to drop through cracks or openings in the floor.

7. Fire watchers are required whenever:

a. appreciable combustible materials is closer than 35' to the point of operation.

b. appreciable combustibles are easily ignited by sparks.

c. wall or floor openings within 35' radius expose combustible material in adjacent areas.

d. combustible materails are adjacent to the opposite side of metal partitions and are likely to be ignited by conduction or radiation.

8. All containers must be cleaned thoroughly prior to welding or cutting to remove flammables.

C. Electrical Protection

1. Cylinders shall be kept away from radiators, piping systems, layout tables, etc, that may be used for grounding Electrical circuits such for arc welding machines.

2. Provisions shall be made to protect welders from the hazard of shock due to wet floors, broken insulation on cords, etc.

3. Make sure equipment is not wet or damp and that hands are dry.

4. Make sure the power is off before adjusting an electric welding apparatus. Never replace fuses, electrodes, holders, welding wire or wire reels when the current is on.

5. It's potentially dangerous to use cables with splice's or repaired insulation within 10' of the electrode holder.

6. Ground the frame of portable and stationary welding machines.

7. Danger of shock in hot weather is particularly great due to perspiration. Be careful.

8. Never use welding cables at currents in excess of their noted capacity.

9. Use only fully insulated electrode holders.

10. Never touch two electrode holders from two separate welding machines at the same time.

11. There must be power disconnect switches at or near the welding machine.

12. Only move the polarity switch when the welding machine is idling and the welding circuit is open.

13. Never touch any exposed or non-insulated part of the cables, cable connectors, clamps, electrode holders, electrodes, etc.

14. Don't leave a "live" electrode on the table top or in contact with a grounded metallic surface.

D. Safety Devices

1. Back flow protection shall be provided by an approved device that will present oxygen from flowing into the fuel gas supply or fuel-gas from flowing into the oxygen supply system.

2. Flashback protection shall be provided by an approved device that will prevent the flame from passing into the fuel-gas supply system.

3. Overpressure protection shall be provided by an approved pressure-relief device set at a pressure not greater than the pressure rating of the backflow on the flash back protection device.

17. The correct Operating Procedures

(A) Acetylene

1. Purge the Hoses.

2. Open acetylene cylinder valve 3/4 of a turn.

3. Open acetylene torch valve ¼ turn.

4. Adjust acetylene pressure with the gas regulator screw to less than 15 psig.

5. Close acetylene torch valve.

(B) Oxygen

1. Slowly open oxygen cylinder valve all the way.

2. Open oxygen torch valve ½ turn.

3. Use gas regulator screw to adjust the oxygen to working pressure.

4. Turn off oxygen torch valve.

(C) Lighting the Torch.

1. Re-open acetylene torch valve ¼ turn and light.

2. Re-open oxygen torch valve ¼ turn and adjust flame.

(D) Extinguishing the Torch.

1. Close acetylene torch valve.

2. Close oxygen torch valve.

3. Close acetylene cylinder valve.

4. Close oxygen cylinder valve.

5. Open both torch valves to release the pressure.

6. Close regulator adjusting handle until you can no longer feel any spring tension.

7. Close torch valves.

Chemical Waste Management Inc.

BURNING & WELDING PERMIT

PERMIT NUMBER _____

A Burning and Welding Permit is required in any designated "Flammable" or "No Smoking" area and/or in any tank, vessel, sewer, or similar enclosed space; or on pipe lines anywhere in Division operations.

Good This Date Only _____ m.To _____ m.

Bldg. or Location _____ Floor _____

Equipment: _____

Purpose: _____

I certify that the locatin where the above work is to be done has been personally examined. The required precautions for safe burning or welding appearing on the reverse side of this card have been checked as indicated.

Production Supervisor _____

Maintenance Supervisor _____

I have been properly instructed for safe burning and welding and understand my duties.

Welder _____ Welder _____

Fire Watch _____ Fire Watch _____

BEFORE THIS PERMIT CAN BE SIGNED THE FOLLOWING RULES MUST BE SATISFACTORILY COMPLIED WITH AND APPROPRIATE BOX CHECKE

1. No burning or welding to be permitted where sprinklers are out of service.
   ☐ sprinklers checked.
2. No burning or welding to be permitted in presence of flammable dust, vapors and liquids or unpurged tanks, lines etc. and equipment previously contai such material.
   A. Tanks, lines, other equipment, cl and purged?
      ☐ Yes ☐ Not Necessary.
   B. Atmosphere tested for flammable vapors?
      ☐ Yes _____ atmosphere te
      ☐ Not Necessary _____ (signa
   C. Tank entry permit completed?
      ☐ Yes ☐ Not Necessary.
   D. Line breaking permit or check lis completed?
      ☐ Yes ☐ Not Necessary.
3. Before burning or welding operations started the following applicable precautions must be taken and appropriat box checked.
   A. Area swept clean and wet down, fl and surroundings?
      ☐ Yes ☐ Not Necessary.
   B. All combustibles moved 30-40 feet operation or protected with asbest curtains, metal guards, or flame-proofed tarpaulins (Not Ordinary Tarpaulins)?
      ☐ Yes ☐ Not Necessary.
   C. All floor or wall openings wi n feet of operation covered?
      ☐ Yes ☐ Not Necessary.
   D. Men assigned to watch for dangero sparks in area as well as floors a and below?

1 69 3

E. Proper Fire Protection Provided - HOses or Extinguishers?

☐ Yes ☐ Not Necessary.

4. Burning or welding equipment inspected and found in safe condition?

☐ Yes

5. The area including floors above and below should be checked at least ½ hour after work is completed.

☐ Area Checked.

Safety Department
Eastern Region

HOT WORK

PERMIT 1990

WORK TO BE DONE	TIME A.M. P.M.
SPECIAL HAZARDS	DATE
PERMIT ISSUED FOR*	W. O. NO.

To be completed by supervisor of area where work is to be performed.

ITEM	YES	NO	COMMENTS	ITEM	YES	NO	COMMENTS
Lines washed				Neighboring area notified			
Lines Drained				Extinguisher			
Lines Pressure Vented				Manways, sewers, and floor drains			
Lines Disconnected				Oxygen Test			
Valves off and tagged				Explosimeter Test			
Power off and tagged				Fire watch (Name)			

I certify all the items above have been completed and hereby authorize this permit.

Supervisors initials .....

To be completed by Maintenance Personnel.

ITEM	YES	NO	COMMENTS	ITEM	YES	NO	COMMENTS
Lines Blinded				Glasses & gloves			
Power Locked				Protective Cloth			
Valves Locked				Area Roped off			
Air Mask				Barricade & signs			
Air Bottles checked				Screens & Curtains			

Supervisors Signature ..... Maintenance Initials .....

I certify all the items above have been completed and hereby authorize this permit.

White Copy - SAFETY ENGINEER
Pink Copy - PLANT AREA AWARENESS BOARD
Tag Copy - DISPLAY AT WORK AREA

1295

Exhibit D to Agreement Between ENRAC and the Fulton Fund for Fulton Site Mitigation Activities

Payment Schedule

Milestone	
A	15% payable upon Completion of Mobilization
B	30% Due upon removing, emptying contents, cleaning and cutting up Tanks 5, 6, and 8.
C	40% Upon removing contents, packaging and disposing of contents, and cleaning Tank #1.
D	5% Upon completion of cutting up, dismantling and stocking Tank #1.
E	10% Payable upon demobilization
TOTAL	100%

Invoices will be issued at completion of each milestone and payment will be due within fifteen (15) days.

Invoices NOT settled within (15) days are subject to 1 1/2% per month service charge on the outstanding balance.