
UNIVERSAL WASTE AND TRANSIT INC.

CONSTRUCTION PERMIT APPLICATION

LOCATED AT

**7208 - 9th Avenue
Tampa, Florida**



VOLUME 4

Training Program

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Hazardous Waste

TRAINING PROGRAM
for
UNIVERSAL WASTE & TRANSIT, INC.
9TH AVENUE & ORIENT RD.
TAMPA, FLORIDA
OCTOBER 1987

D. T. T.

NOV 12 1987

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Introduction

STORAGE/TREATMENT PERSONNEL TRAINING PROGRAM

All personnel involved in any handling, transportation, storage or treatment of hazardous wastes are required to start the enclosed training program within one-week after the initiation of employment at Universal Waste & Transit. This training program includes the following:

- Safety Equipment
- Personnel Protective Equipment
- First Aid & CPR
- Waste Handling Procedures
- Release Prevention & Response
- Decontamination Procedures
- Facility Operations
- Facility Maintenance
- Transportation Requirements
- Recordkeeping

We highly recommend that all personnel involved in the handling, transportation, storage or treatment of hazardous wastes actively pursue additional technical courses at either the University of South Florida, Tampa College or the St. Petersburg Junior College.

Recommended courses would include general chemistry; analytical chemistry; environmental chemistry; toxicology; and additional safety and health related topics. Universal Waste & Transit will pay all registration, tuition and book fees for any courses which are job related. The only requirement is the successful completion of that course.

All training and related items will be handled by the UW&T training officer, Mr. Richard Powell.

D. E. R.

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Pre-Employment Screening

All potential employees at UW&T are carefully screened prior to hiring. This includes:

- in depth interviews
- academic and experience requirements
- medical evaluation

All potential employees are informed that they will working with hazardous or potentially hazardous materials. All potential employees will visit the facility to determine "first-hand" what the working environment entails. All potential employees are informed that any safety violation or improper handling of waste materials/containers will result in immediate dismissal.

A list of job related prerequisites is indicated in Table 1.

TYPES OF TRAINING

Four types of training are employed at UW&T. These are

1. A formal training course for all new employees which encompasses the areas previously mentioned. This course is culminated by an examination at the end of the course. A review of all formalized courses is performed annually.
2. An informal weekly safety meeting during which time new safety apparatus are discussed or training films/slide presentations are viewed. Alternative to this are discussions on waste handling procedures; site cleanup work; emergency response etc.
- 3 Attendance at commercially available safety or preparedness classes. Examples include: J.T. Baker's "Management and Disposal of Hazardous Chemical Wastes" or Safety Systems Inc. "Disaster Control School". These are both available within the State of Florida. All supervisory personnel must attend these schools, or similar classes.
4. An ongoing on-the-job training program which assists new employees in familiarizing themselves with the existing working conditions and company policy. Also available to all employees is a well equipped technical library.

If an employee is not kept well informed of the company's activities he quickly loses interest and pride in his/her work. In the area of hazardous waste management this situation cannot be tolerated. Therefore, it is also company policy at UW&T to have a weekly meeting to discuss what work is in progress; what new jobs are anticipated and to determine what questions or recommendations employees may have to operate more efficiently or safely.

TRAINING PROGRAMS

Contained within are training documents which are used in conjunction with the formal training program. All new employees are given copies of the following:

- General Safety Manual
- Protective Clothing Guide
- Respiratory Training Program
- Basic Emergency Training Guide
- Facility Contingency Plan
- Pocket Guide to Hazardous Materials
- NIOSH Worker Safety Bulletin for Hazardous Waste Sites

Each document is reviewed with the employee by the UW&T safety officer.

All pertinent safety equipment usage is discussed. This includes:

respirators; SCBA; acid suits; encapsulation suits; fire extinguishers & hose; evacuation horns and material handling equipment.

Each employee is assigned their own respirator and fit tested as required. Cleaning and maintenance of the respirator is explained.

The locations and usage of all safety and emergency response equipment is detailed.

All new employees are immediately informed as to the procedures involved in any spill or release at the facility. This includes:

- employee warning signals
- agencies to contact
- evacuation routes
- response actions

Finally each new employee is shown how drums are inspected; opened; sampled; sealed; labeled; moved; and the recordkeeping requirements. Upon completion of the training program both an oral and written examination are required. An annual review of all training programs is performed.

Appended to this are each of the training documents previously described.

TABLE I

UNIVERSAL WASTE & TRANSIT

Job Description Prerequisites

Title

Facility Manager

Masters degree in physical science and two years experience in waste mangement or four years experience in waste management with bachelors degree in lieu of masters degree.

Traffic Manager

Bachelors degree in physical science; engineering.

Facility Chemist

Bachelors degree in chemistry with two years experience in the waste management area.

Hazardous Waste Technician

Bachelors degree or associate degree in environmental technology and one year experience in waste management field or three years experience in lieu of degree.

Emergency Response Crew

Same as above a minimum.

Site Cleanup Supervisor

Bachelors degree preferred, associate degree accepted with construction background.

Analytical Technician

Associates degree in environmental technology or related discipline.

Waste Handling Technician

Associates degree preferred, high school diploma required with in-house training mandatory.

CHAPTER TWO

Training Manual No. 1
GENERAL SAFETY MANUAL

prepared by

Universal Waste & Transit

9th Avenue & Orient Rd.

Tampa, Florida

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THE RISKS YOU FACE

The potential risks you may encounter include those listed below:

- Toxic (poison) substances
- Explosive materials
- Corrosive materials
- Heat or cold stress
- Air in the work area that is deficient in oxygen such as in a tank or ditch.
- Cancer-causing agents
- Flammable materials
- Excessive noise
- Biologically active materials such as bacteria and viruses
- Radioactive materials
- Accidents resulting in physical harm.

The amount of risk varies with the type and degree of exposure to these hazards. Exposure can result in any of the following:

- Asphyxiation
- Cancer
- Liver, kidney, nerve, etc. damage
- Skin diseases
- Eye injuries
- Poisoning
- Infertility
- Harmful effects to the unborn child
- Loss of limbs
- Hearing loss

WAYS YOU CAN BE EXPOSED TO WASTE HAZARDS

The routes of exposure include:

Inhalation — Breathing of contaminated air or cigarettes.

Skin — Contact on the skin of harmful liquids, gases, solids, or contaminated clothing, equipment, medications, cosmetics, etc.

Ingestion — Eating or drinking of contaminated food, water, or medications. (*Food and cigarettes can be contaminated by your gloves, equipment or unwashed hands.*)

Exposure can result from any of the following:

- Improper selection of or insufficient training in the maintenance and use of personal protective equipment (such as respirators, special clothing, or eye protection) before entering a work site.
- Failure to follow instructions or wear prescribed protective equipment.
- Failure or lack of engineering controls such as shields or drum handling equipment.
- A lack of technically qualified personnel or equipment to evaluate hazards and define levels of required protection.
- Encountering unexpected hazards at the work site.
- Inadequate time to put on appropriate or available protective equipment in an emergency situation.
- Inadequate emergency procedures.
- Walking through puddles or into vapor mists, etc., when not necessary.
- Failure to decontaminate immediately after splashes or spills occur.

WORK SAFELY

Follow your employer's standard operating procedures, your supervisor's instructions, and use your own senses of sight, hearing, smell, and touch. Many things you encounter may be entirely new or different to you and may require procedures that you have not used on other jobs. Special equipment, special training and special precautions are required in hazardous waste work.

Remember that common sense is based upon experience and training. Different problems may be encountered everyday. If you don't understand and haven't been trained, ask for instructions . . . if no instructions are available . . . don't do it.

Some things to remain aware of at the work site include:

- Any weather changes, such as, when it gets hot or the air is calm the chemical concentrations in the air can increase.
- Wind direction, in order to avoid windblown dust and vapors by working upwind if possible.
- Odors that may indicate chemical exposures.
- The location of your partner who can help if an emergency situation arises.
- Your employer's SOPs, which you should follow for any necessary decontamination procedures, including cleaning contaminated equipment and clothing. You can expose your family or friends to toxic substances by carrying contaminants on your clothing, shoes, tools, etc.
- Washing hands before eating, drinking, smoking, or using the restroom.
- Showering and changing into clean clothes before leaving the work site.
- Keeping food, drinks, smoking materials, and personal care items in clean areas only.
- Heavy equipment operating near you.
- The proper handling of drums and other equipment so as to prevent personal injury.
- The need for proper personal protective equipment.
- Emergency procedures and the evacuation signal.
- Where and how to exit from every area.

PERSONAL PROTECTIVE EQUIPMENT

Different types of protective equipment will be required depending on the substances to be handled, the existing conditions and the particular situation. Personal protective equipment includes a variety of special suits, hard hats, goggles, face shields, aprons, boots, gloves, and respirators. Each is designed to protect you from certain hazards. It is important for you to know the advantages and limitations of all the equipment you may use or need. Use this equipment as instructed and follow all written procedures.

PROTECTIVE CLOTHING

Protective clothing is used to shield you from fire, toxic chemical and/or corrosive materials. Such clothing includes splash suits, fully encapsulating suits, chemical resistant and fire resistant clothing. Some clothing is designed to allow you to work in hazardous environments by completely enclosing the body while other clothing is designed only to protect specific portions of the body.

Fire resistant clothing is not generally designed to provide a high level of protection against chemical exposure. Therefore, additional precautions should be taken where exposure to both chemicals and fire may occur.

Proper clothing to insulate against cold should be worn under protective clothing in winter situations. Proper rest and cool down periods with replacement of body fluids should be provided when wearing protective clothing during summer or hot conditions.

SPLASH SUITS AND ASSOCIATED CLOTHING

Splash suits and associated splash protection clothing are worn to keep hazardous materials from touching the body. Such clothing may include: gloves, boots, aprons, goggles, jackets, leggings, hoods, and coveralls made of chemically resistant materials. The composition can vary from treated paper to specially formulated rubber. Different combinations of this type of protective clothing can provide the level of protection necessary for each situation. Follow instructions of your supervisor regarding splash protection. Know where the emergency eye wash and showers are located and how to use them. Immediately get decontaminated if hazardous materials spill or splash on you. Learn the procedures to properly decontaminate your re usable protective clothing.

FULLY ENCAPSULATING SUITS

These suits are usually worn to protect the body against exposure to airborne concentrations of highly toxic, or corrosive chemicals. (Atmosphere-supplying respirators must be worn with these suits.) "Fully encapsulating" does not necessarily mean "fully protective." Different suits will be required for different situations because no suit is resistant to all chemicals.

Due to the specialized nature of this equipment, its use requires special training and experience, including plans for rescue and escape from the suits themselves, should this become necessary.

RESPIRATORS

Respirators protect you from breathing hazardous airborne contaminants. They must be properly selected, fitted and maintained. Most important, you must know their proper uses and limitations. If the contaminants in your work environment require you to wear a respirator, wear it. The alternatives are not worth the risk. Exposure to high concentrations of a toxic substance, even for a short time, can cause serious injury or death. Exposure to low concentrations of certain toxic substances can cause permanent damage to the lungs, liver, or kidneys. Work environments can be fatal if the oxygen content of the air is too low.

Different respiratory protection is required for different situations. Consequently, a number of different types of respirators are available. The selection of the proper respirator must be based on an evaluation of the hazard present including a determination of the concentration and form of the contaminant and/or lack of sufficient oxygen to sustain life.

There are two basic categories of respirators: Air-purifying respirators and atmosphere-supplying respirators.

AIR-PURIFYING RESPIRATORS

Air-purifying respirators are designed to remove specific contaminants from the air before you inhale them. WARNING: Some contaminants cannot be removed by air-purifying respirators. Air-purifying respirators are not to be used in situations which are immediately dangerous to life or health (IDLH). Proper selection of an air-purifying respirator depends on:

- The contaminant to be removed from the air.
- The concentration of that contaminant.
- The efficiency of the respirator against that contaminant.
- The warning property(ies) of that contaminant.

There are two types of air-purifying respirators:

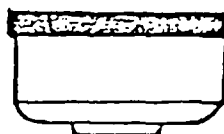
- Filtering purifiers to remove dusts, mists and fumes.
- Sorbent purifiers to remove gases and vapors.

For each type of respirator, there are a variety of air-purifying filters, cartridges or canisters. Each is designed to protect against specific contaminants. Cartridges are small and are usually attached directly to the facepiece. They are designed to protect against low concentrations of contaminants. Canisters are larger, and are usually connected to the facepiece with a breathing tube. Canisters are designed to protect against higher concentrations of contaminants. The contaminants and their expected concentration must be known before a decision can be made as to the type of facepiece to use and which cartridge or canister is required. You must never use the wrong cartridge or canister or use one type of cartridge on one side of your facepiece and a different type on the other side. Be sure batteries are charged on powered air purifiers.

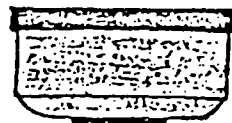
The cartridge or canister should be replaced at least once per day to prevent saturation of the filter or sorbent materials. More frequent changes may be necessary. Air-purifying respirators should only be used against contaminants with "warning properties" (odor, irritation, etc.). If you become aware of these, your cartridge may no longer be removing the contaminants and you should immediately go to a clean area to check your respirator and replace the cartridge or canister if necessary. Your supervisor should give you specific instructions.

Cartridges and canisters are color-coded for their specific use. Typical cartridge color codes are indicated below:

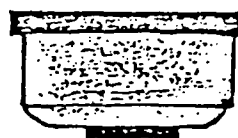
<u>Atmospheric Contaminants</u>	<u>Assigned Color</u>
Acid gas.....	White



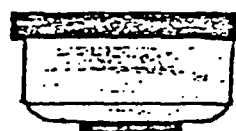
Organic vapors.....	Black
---------------------	-------



Ammonia gas.....	Green
------------------	-------



Acid gas and..... organic vapors	Yellow
-------------------------------------	--------



Radioactive materials and..... highly toxic particulates except tritium and the inert gases	Purple
--	--------



Pesticides.....	Chartreuse
-----------------	------------



Particulates (dusts, fumes, mists or smokes) in combination with any of the above gases.

Canister color for the contaminant is designated above with a 1/2" grey stripe completely around the canister near the top.

Read the wording on the label

ATMOSPHERE-SUPPLYING RESPIRATORS

Atmosphere-supplying respirators supply air to the facepiece from an uncontaminated (clean) air source. These respirators come in two basic types:

- Air-line respirator, which provides clean air to your face mask through a connecting hose from a large tank of compressed air or an air compressor located in a clean area.
- Self-contained breathing apparatus (SCBA), which provides clean air to your facepiece from an air cylinder carried on your back. These respirators are used in the positive pressure mode during situations which are immediately dangerous to life or health (IDLH) and additional special training is required for their proper use and maintenance. Since this air supply is portable, it has only limited capacity depending upon particular breathing requirements. A warning signal is given when there is approximately 5 minutes of air remaining. When the warning signal sounds you should stop work and leave the contaminated area immediately. Proceed to a clean area to obtain a full cylinder. Keep your supervisor and buddy informed.

RESPIRATOR USAGE

A qualified person should be available at the work site to identify safety and health hazards, establish the proper level of respiratory protection for you, and assist in the selection and fitting of your respirator.

Because beards and certain facial hair, etc. may affect the acceptable seating and sealing of the respirator, allowing contaminated air to seep in, they are not permitted. Be sure to have your respirator properly fitted.

The temple pieces of regular eyeglasses can interfere with the proper fit of full facepiece respirators. Special glasses can be fitted inside this type of facepiece for workers requiring corrective lenses. Safety glasses or regular glasses with goggles can be used with other facepieces. Contact lenses are not permitted for use with any type of respirator. Respirators may have impaired functions or failures due to exposures to extreme heat/cold or after repeated use. Therefore, frequent maintenance checks should be performed. Daily care and maintenance of the respirator including proper storage in a clean area should be a regular established part of the operation. Your supervisor will advise you of your responsibilities.

In general, wearing a respirator places an additional stress on your body. Your pre-employment physical examination should determine whether you are physically capable of handling this additional stress. Your ongoing medical monitoring program should determine if continued respirator use has affected your physical/mental status.

MATERIAL HANDLING SAFETY

When handling containers or removing contaminated soils, etc., a variety of types and sizes of mechanical equipment may be used. It is important to be continually aware of this equipment around you. Operators may be unable to see personnel working near their equipment. Be aware of objects and obstacles overhead at all times. Some areas of caution when working around heavy equipment include the following:

- Never walk under suspended loads.
- Never walk in front or back of moving heavy equipment.
- Always be aware of heavy equipment location.
- Always wear a hard hat.
- Do not operate any heavy equipment unless you are fully qualified.

Heavy equipment is not the only potential hazard during material handling. A wide variety of smaller items such as pumps, compressors, generators, portable lights, drums, trucks, and hand tools are very common at hazardous waste sites. These items can pose as serious a hazard as larger equipment if not properly operated. Some items to remember include:

- Never pump flammable material with gasoline or electric pumps, use only hand or air-powered diaphragm pumps.
- Always keep loose clothing away from moving parts.
- Use only nonsparking tools when working in a flammable environment.
- Be aware of the types of fittings on pumps and hoses. For example, acid and caustic will rapidly corrode aluminum.
- Check fluid levels (oil, fuel) periodically. Never add fuel to piece of equipment while it is running.

HEAT STRESS

The stress of working in a hot environment can cause a variety of strains on the body including heat exhaustion or heat stroke, which can be fatal. Personal protective equipment can significantly increase heat stress. You should learn to recognize the symptoms of heat stress in yourself and co-workers and take necessary actions when they occur. Your employer should provide instructions on ways to reduce or prevent heat stress including frequent rest cycles to cool down and replace the body fluids lost through perspiration. Some of the symptoms which indicate heat exhaustion are:

- | | |
|-------------------|--------------------|
| —clammy skin | —weakness, fatigue |
| —light-headedness | —confusion |
| —slurred speech | —fainting |
| —rapid pulse | —nausea (vomiting) |

If these conditions are noted, the following actions should be taken in the order given:

- Take the victim to a cooler and uncontaminated area.
- Remove protective clothing.
- Give water to drink.
- Allow to rest.

Symptoms that indicate heat stroke include:

- | | |
|--|--------------------|
| —Staggering gait. | —Mental confusion. |
| —Hot skin, temperature rise
(yet may feel chilled). | —Convulsions. |
| —Incoherent, delirious. | —Unconsciousness. |

If heat stroke conditions are noted:

- Take victim to a cooler and uncontaminated area.
- Remove protective clothing.
- Give water to drink if conscious.
- Cool the victim with water, cold compresses and/or rapid fanning.
- Transport to medical facility for further cooling and monitoring of body functions.

Additional information on heat related problems can be found in most first aid books and in the DHHS (NIOSH) Publication #80-132, "Hot Environments".

CONTAMINATION/DECONTAMINATION

Whenever you enter or work in a contaminated area, the material you may encounter is normally hazardous in one form or another. Even while walking through a contaminated area, your boots and protective clothing may be exposed to dusts, vapors, aerosols, and fumes. Since these materials are hazardous and we do not want to contaminate other areas, decontamination areas with special decontamination procedures should be employed at all work sites to help control the movement of hazardous materials. Find out the decontamination procedures at your site and follow them carefully. After removal of contaminated clothing, thoroughly shower and change into clean clothing in an uncontaminated area. Contaminated clothing or equipment should not be taken home because these could expose your family to hazardous materials. Your clothing, tools and equipment should be decontaminated according to your employer's standard operating procedures.

If spills or splashes occur while you are in a contaminated area, proceed immediately to the decontamination area and correct the problem. You may have to obtain clean protective clothing before returning to the contaminated area to continue your work.

EMERGENCY INFORMATION

It is important that a telephone or two-way radio be available along with the necessary phone numbers for medical and other emergency services (for example, local rescue squad, fire and police departments). If medical personnel are not available at the work site, you or someone else should know how to provide emergency first aid. Emergency first aid equipment should always be readily available at the work site. Instructions for the fastest route to the nearest hospital or medical facility should be available along with necessary transportation equipment.

EMERGENCY PROCEDURES

Standard Operating Procedures (SOPs) should include plans for unexpected events such as accidents, fires, explosions, etc.

If you know you have been contaminated with a hazardous substance TELL YOUR SUPERVISOR. You should know the general symptoms of overexposure to toxic substances. These include:

- Irritation of skin, eyes, nose, throat, or respiratory tract.
- Changes in complexion or skin discoloration.
- Headaches.
- Difficulty in breathing.
- Nausea.
- Dizziness or light-headedness.
- Excessive salivation (drooling).
- Lack of coordination.
- Blurred vision.
- Cramps and/or diarrhea.
- Changes in behavior patterns.

Before you enter and periodically while you are working in confined spaces such as tanks or ditches, the air in the space should be tested by a qualified individual to see if enough oxygen is present and to determine if the air is contaminated with any hazardous substances (for example, toxic or explosive levels of gases.)

When you are wearing a respirator in an atmosphere which is immediately dangerous to life or health (IDLH), at least one additional person must be present with a respirator to help you in case of an emergency. Visual or verbal contact from a safe area must be maintained with those individuals at all times. Your employer should also have a plan to insure that everyone at the site will be protected from any likely incident and have the necessary rescue equipment available in case of an emergency.

Understand the site emergency rescue procedures and know the locations of rescue equipment before the need arises. If you must rescue someone, use caution and DO NOT BECOME A CASUALTY YOURSELF.

Move the affected person from the hazardous exposure if possible. Get help if you need it and put the established emergency rescue procedures into effect.

MEDICAL SURVEILLANCE PROGRAM

Medical surveillance is an important part of an occupational health and safety program. It is a way of keeping track of your health through the use of preplacement and periodic medical examinations and laboratory tests. This medical surveillance program will help your doctor to:

- Determine a base-line picture of your health against which future changes can be measured.
- Identify any underlying illnesses or conditions which might be aggravated by certain exposures or job activities.
- Recognize any abnormalities, toxic reactions, or other changes in your health at the earliest opportunity so that corrective measures can be taken.

The medical records developed as part of the medical surveillance program are important aids to your doctor should you develop health problems which may be associated with exposure to hazardous substances. When abnormal conditions are discovered early enough, appropriate action to correct these and/or prevent more serious conditions can usually be taken.

CHAPTER THREE

Training Manual No. 2

PROTECTIVE CLOTHING GUIDE

prepared by

Universal Waste & Transit

9th Avenue & Orient Rd.

Tampa, Florida

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Dress For The Occasion

In order to determine what protective equipment is required for a certain situation you must ask yourself or your supervisor a number of questions. These are:

1. What are the specific job hazards?
2. Is the contaminant a dust, mist, fume, vapor, gas, liquid or solid?
3. Is the situation classified as immediately dangerous to life and health (IDLH)?
4. Is the need for flame-retardant equipment necessary?
5. Is the atmosphere oxygen deficient?
6. Is the material readily absorbed through the skin or does it irritate the eyes, nose or throat?
7. Will the exposure be casual or direct?
8. Will the exposure be short-term or prolonged?
9. Is temperature or climatic conditions a consideration?
10. Will sufficient back-up personnel be available to assist me in an emergency situation?

Answers to all of these items are necessary before an educated

decision as to the amount and type of personnel protective equipment

required can be made. Remember, there are only three routes by which you can be exposed to potential hazards:

Inhalation

Ingestion

Skin Contact

Be sure you take the necessary steps to reduce your potential exposure. The protective clothing required, as with respirators, varies dependent upon the immediate situation. (See Attachment 1, Pages 19 through 22) Protective clothing consists of suits; gloves; boots, eye/face protection; gauntlets; and so on. There are presently many types, designs and styles of these items and the choice must be based upon the materials which you anticipate encountering. (See Attachment 2)

Protective Suits

Protective suits fall into four general categories:

Splash suits-disposable

Splash suits-reusable

Proximity suits-fire

Proximity suits-chemical

Splash Suits

Splash suits are employed in situations not immediately dangerous to life and health. These suits generally consist of coated cotton or paper (disposable) or chemically resistant polyvinyl chloride (PVC) which is reusable. The disposable suits are effective when working in areas of low level contamination or in areas which may require only minimum protective equipment. PVC suits provide adequate protection for many acids; alkalis; oils; and alcohols but afford only minimal protection in areas immediately dangerous to life and health. Both the disposable and reusable suits can cause substantial heat stress in warm environments.

Proximity Suits

Proximity suits are full-body suits which provide high levels of worker protection. The fire fighting proximity suit is generally manufactured of aluminized nomex or aluminized rayon and provide up to 90% reflectivity of radiant heat. The chemical proximity suits are generally manufactured of PVC; coated PVC, or synthetic or rubber compounds. Once again, certain solvents can attack these materials and shorten their useful life expectancy.

Proximity suits are generally used in conjunction with either air line respirators or self contained breathing apparatus. Many are equipped with air conditioning type systems which reduce the heat stress associated with splash suits. All proximity suits are designed to cover the worker from head to toe in a fully encapsulated environment. Your ease of mobility is substantially restricted when using a proximity suit, especially one which is employing an air-line respirator. You should be fully familiar with the use and operation of a proximity suit before use. Workers have experienced claustrophobia when confined in a proximity suit and you should be aware of your limitations in this area. You should regularly practice various tasks in these suits to determine your limitations.

Hand Protection

In order to protect your hands, wrists and forearms, gloves are required which meet the demand of your work situation. If splash suits are employed, suitable gloves must be chosen depending upon the material which is to be handled. Chemically resistant gloves are manufactured generally of the following materials:

- Polyvinyl chloride (PVC)
- Neoprene
- Natural rubber
- Polyvinyl alcohol
- Nitrile

The choice of glove material is highly dependent upon the items which will be encountered. Table 1 lists various glove material and their resistance to a number of chemical compounds.

Some proximity suits are already equipped with gloves attached. Determine what these gloves are manufactured from and if they are suitable for your particular situation. If they are not, place a second pair of gloves of suitable material, over them. This, once again, reduces your work efficiency, but also insures that you are adequately protected.

With proximity suits, the glove/sleeve interface is bonded together either physically or chemically so as to insure a sealed system. With splash suits, however, this is not the case. The potential exists at both the glove and sleeve interface, as well as the boot and pant leg interface for the entrance of contaminants. An easy method to reduce this potential exposure, is to place the sleeves over the gloves and the pants leg over the boot, and then taping both areas with duct tape. This provides much better exposure protection, but significantly reduces the ability of your body to cool itself: Be aware that heat stress may result.

Eye/Face Protection

Anytime you are working in a hazardous environment, eye protection is a necessity. The eyes are the easiest organ to injure and the hardest to repair. Eye protection can come in the form of safety glasses with side panels; goggles, or face shields. These eye protection systems are generally manufactured of either polycarbonate or polyethylene, many of which are now manufactured with a non-fogging coating. Safety glasses and goggles should only be worn in areas of very low potential hazard, since a majority of the face is still unprotected. Face shields, or full-face respirators, provide significantly more facial protection. However, never enter the hazardous waste area without some form of eye protection. Contact lenses are not acceptable in the work environment. Specialized goggles which can accept corrective lenses are available.

Questions To Ask Yourself

In summarizing the choice of protective clothing, the following questions must be answered:

1. Is the situation immediately dangerous to life and health? - If so, proximity suits are required.
2. Is there a high potential for fire? - if so, fire resistant or flame retardant clothing is required.
3. What chemicals am I likely to encounter? - assess the situation and decide upon suitable materials for gloves, boots, and protective clothing.
4. What are the climatic conditions? - heat requires cooling; liquids and shortened work cycles; while cold conditions require additional clothing.
5. Is high visibility required? - brightly colored or fluorescent clothing should be used.
6. Remember, always wear eye protection and cover as much of your body as possible.

Attachment 1

PERSONNEL PROTECTIVE EQUIPMENT REQUIRED
FOR HAZARDOUS SITUATIONS

Level A Protection

HAZARD INVOLVED

- Situations immediately dangerous to life and health.
- Oxygen deficient atmospheres.
- Unknown hazardous materials.
- Chemicals which can be absorbed through the skin.
- Materials which cannot be removed with an air purifying respirator.

REQUIRED PERSONNEL PROTECTION EQUIPMENT

- Self-contained breathing apparatus (SCBA) or air line respirator with SCBA escape air system.
- Full Body Encapsulation Suit

ALL listed personal protective equipment is required for any hazard situation indicated.

PERSONNEL PROTECTIVE EQUIPMENT REQUIRED
FOR HAZARDOUS SITUATIONS

Level B Protection

HAZARD INVOLVED

- Oxygen deficient atmosphere where chemical composition of the material is known and falls into the classification of an irritant.

REQUIRED PERSONNEL PROTECTION EQUIPMENT

- Self contained breathing apparatus or air line respirator with SCBA for emergency use.
- PVC splash suit with hood.
- Neoprene/nitrile/butyl rubber arm length gloves.
- Steel toed rubber boots.

All listed personal protective equipment is required for any hazard situation indicated.

PERSONNEL PROTECTIVE EQUIPMENT REQUIRED
FOR HAZARDOUS SITUATIONS

Level C Protection

HAZARD INVOLVED

- Situations not immediately dangerous to life and health.
- Sufficient oxygen present to support life.
- Irritant or corrosive chemicals.
- Contaminated soils.
- Liquid/solvents not immediately dangerous to life and health.

REQUIRED PERSONNEL PROTECTION EQUIPMENT

- Full face mask with air purifying (cartridge) respirator. Or, half face (cartridge) respirator with goggles and face shield.
- PVC splash suit.
- Protective gloves (type dependent on chemical being handled).
- Steel toed rubber boots.

All listed personnel protective equipment is required for any hazard situation indicated.

PERSONNEL PROTECTIVE EQUIPMENT REQUIRED
FOR HAZARDOUS SITUATIONS

Level D Protection

HAZARD INVOLVED

- Situations which contain no immediate hazard, but where there is the potential for accidental release of a hazardous substance.

REQUIRED PERSONNEL PROTECTION EQUIPMENT

- Half face air purifying (cartridge) respirator.
- Safety goggles.
- Disposable coveralls.
- Surgical rubber gloves or suitable hand protection.
- Rubber boots.

All listed personnel protective equipment is required for any hazard situation indicated.

E-Excellent
G-Good
F-Fair
P-Poor

PROTECTIVE CLOTHING COMPATABILITY
WITH SELECTED CHEMICAL HAZARDS

<u>Chemical Hazard</u>	<u>Natural Rubber</u>	<u>Neoprene</u>	<u>Polyvinyl Alcohol</u>	<u>Polyvinyl Chloride</u>	<u>Nitrile</u>
Acetaldehyde	G	G	P	F	F
Acetic Acid	E	E	F	G	E
Acetic Anhydride	G	G	P	F	G
Acetonitrile	G	G	G	G	G
Acetone	E	G	F	P	P
Acrylonitrile	F	G	F	F	F
Alcohols	G	F	P	F	E
Ammonia(100%)	G	G	P	E	-
Amyl Acetate	F	G	G	P	G
Aniline	F	G	F	G	P
Battery Acid	G	E	P	E	E
Benzaldehyde	F	P	E	P	P
Benzene	P	P	E	P	P
Benzene Sulfinic	P	G	P	E	-
Bromine	G	G	E	G	G
Butyric Acid	F	G	F	G	-
Cadmium Cyanide	G	E	G	E	G
Carbolic Acid	F	E	F	E	E
Carbon Tetrachloride	P	P	E	G	P
Chlorine	F	F	E	G	G
Chloroform	P	P	E	P	P
Chlorosulfonic Acid	P	P	F	G	F
Chromic Acid	P	F	P	G	P
Cresol	G	G	F	F	P
Cyanide Solution	G	G	P	F	G
Cyclohexane	P	G	E	P	P
Diethyl Phthalate	F	G	E	P	P

E-Excellent
G-Good
F-Fair
P-Poor

PROTECTIVE CLOTHING COMPATABILITY
WITH SELECTED CHEMICAL HAZARDS

<u>Chemical Hazard</u>	<u>Natural Rubber</u>	<u>Neoprene</u>	<u>Polyvinyl Alcohol</u>	<u>Polyvinyl Chloride</u>	<u>Nitrile</u>
Dimethyl Formamide	E	G	P	P	P
Dioxane	F	F	P	P	P
Ethanolamine	F	G	P	E	P
Ethers	G	E	E	P	P
Ethyl Acetate	F	G	F	P	P
Ethyl Alcohol	E	E	P	G	E
Ethylene Dichloride	P	P	E	P	P
Ethylene Glycol	E	E	G	E	E
Formaldehyde	E	E	P	E	E
Formic Acid	G	E	P	E	F
Frem	P	F	E	P	F
el Oil	P	G	E	G	P
Furfural	G	G	F	F	P
Gasoline (unleaded)	P	P	F	P	E
Hexane	P	G	E	P	E
Hydrobromic Acid (40%)	G	E	P	E	E
Hydrochloric Acid (Conc.)	G	E	P	E	E
Hydrofluoric Acid (30%)	G	E	P	G	E
Hydrogen Peroxide (30%)	G	E	P	E	E
Isopropyl Alcohol	E	E	P	E	E
Kerosene	P	E	E	G	E
Mercury	G	G	P	E	E
Methyl Alcohol	E	E	P	G	E
Methylene Chloride	P	P	G	P	P
Methyl Isobutyl Ketone	F	P	F	P	P
Methyl Methacrylate	P	P	G	P	P
Naphtha	P	P	E	F	E

E-Excellent
G-Good
F-Fair
P-Poor

PROTECTIVE CLOTHING COMPATABILITY
WITH SELECTED CHEMICAL HAZARDS

<u>Chemical Hazard</u>	<u>Natural Rubber</u>	<u>Neoprene</u>	<u>Polyvinyl Alcohol</u>	<u>Polyvinyl Chloride</u>	<u>Nitrile</u>
Nitric Acid (10%)	P	P	P	G	E
Nitric Acid (70%)	P	G	P	P	P
Nitric Acid (Fuming)	P	P	P	P	P
Nitrobenzene	P	P	E	P	P
Nitromethane	F	G	E	P	P
Oleum	P	P	P	F	P
Parathion	P	P	G	F	P
Pentane	P	E	E	P	E
Perchloroethylene	P	F	E	F	P
Perchloric Acid	F	E	P	E	E
Phenol	G	G	P	G	P
Phosphoric Acid	G	E	P	E	E
Pickling Baths	G	G	P	G	E
Potassium Hydroxide	E	E	P	E	E
Propylene Oxide	F	P	G	P	P
Pyridine	F	G	G	E	F
Sodium Hydroxide	E	E	P	E	E
Sodium Peroxide	F	G	F	E	G
Stoddard Solvent	P	G	E	P	P
Styrene	P	P	G	P	P
Sulfuric Acid	P	P	P	G	P
Tannic Acid	E	E	F	E	E
Tetrachloroethylene	P	P	E	P	P
Tetrahydrofuran	P	P	F	P	P
Toluene	P	P	G	P	P
Toluene di-isocyanate	F	P	G	P	P
Trichloroethylene	P	P	E	P	P
Xylene	P	P	E	P	G

E-Excellent
G-Good
F-Fair
P-Poor

PROTECTIVE CLOTHING COMPATABILITY
WITH SELECTED CHEMICAL HAZARDS

<u>Physical Performance</u>	<u>Natural Rubber</u>	<u>Neoprene</u>	<u>Polyvinyl Alcohol</u>	<u>Polyvinyl Chloride</u>	<u>Nitrile</u>
Tear Resistance	G	G	F	F	G
Abrasion Resistance	G	G	G	G	E
Heat Resistance	F	E	P	P	E
Flame Resistance	P	G	P	P	P
Elongation	E	E	F	F	G

CHAPTER FOUR

Training Manual No. 3
RESPIRATORY TRAINING PROGRAM

prepared by.
Universal Waste & Transit
9th Avenue & Orient Rd.
Tampa, Florida

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Respiratory Protection

The choice of a respirator to be employed on an emergency response incident is not an item to be taken lightly. All too often respirators are chosen because they are comfortable; light weight; and readily available. These are not the criteria which are to be employed to insure your safety and health.

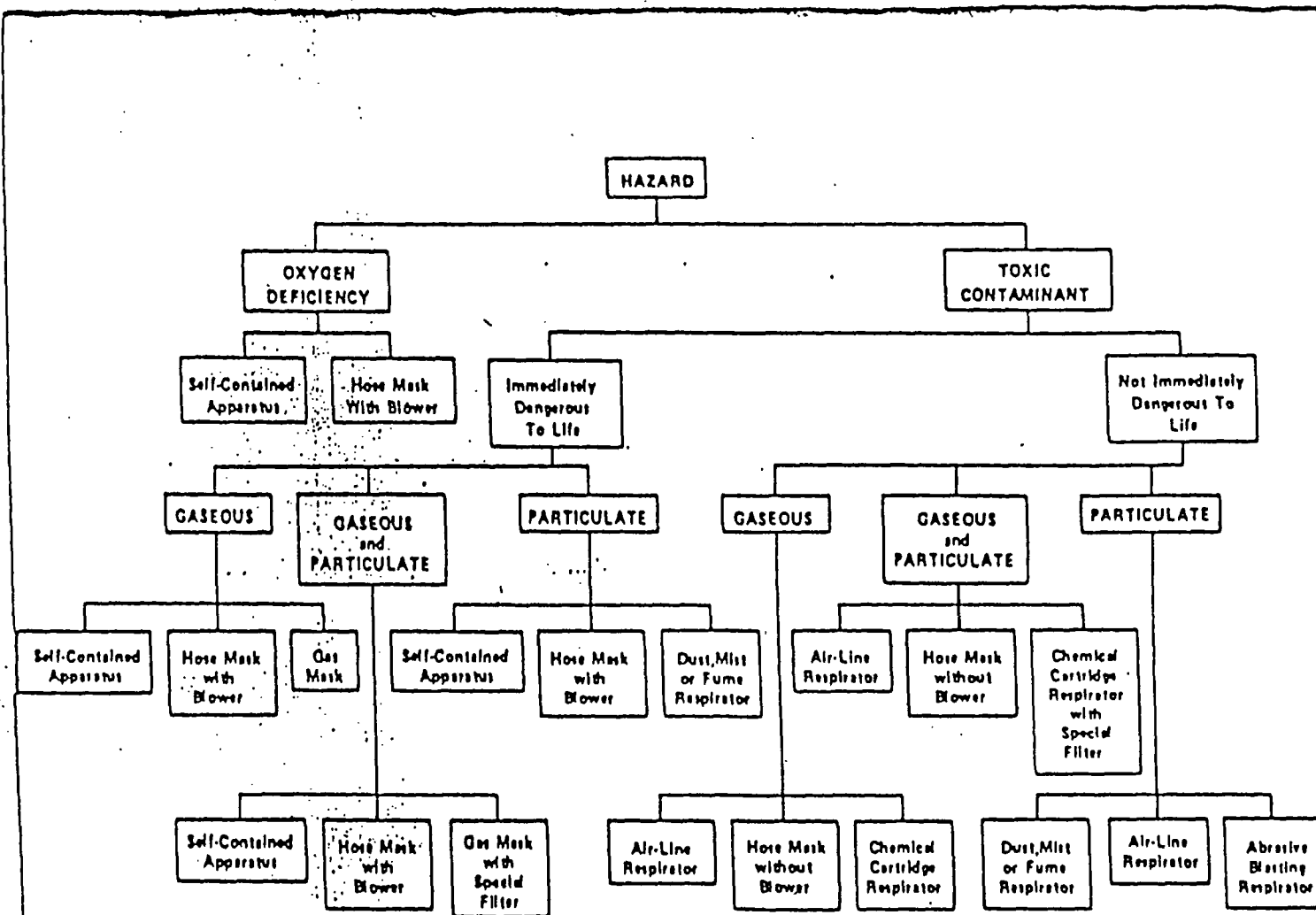
You have been assigned your own personal respirator and have been fit-tested to insure proper operation. Read both this document and Respirator Training Program II (Appendix 1) carefully. This respirator is not meant for oxygen deficient atmospheres or areas immediately dangerous to life and health. Check with your supervisor before entering any unknown area.

Certain types of respirators provide certain types of protection. Figure 1 shows a block diagram which outlines various forms of respiratory protection relative to the hazard involved.

Respiratory protection falls into two major categories:

- Air purifying

- Atmosphere supplying



Respirator selection according to hazard.

Figure 1

Air Purifying Respirators

Air purifying respirators do not supply air. They simply remove a particular contaminant from the surrounding environment to reduce the potential for occupational exposure. Air purifying respirators fall into a variety of categories indicated below:

- Single use, dust
- Quarter mask, dust
- Half mask, dust
- Half or quarter mask, high efficiency
- Half or quarter mask, fume
- Full facepiece, high efficiency
- Power, high efficiency
- Gas and vapor removing, half mask
- Gas and vapor removing, full facepiece

Mechanical filter type respirators employ a felt pad which physically removes particulate contamination from the air. They generally do not remove chemical compounds and are not air supplying respirators. These filters have a limited lifetime dependent upon the concentration of the contaminant in the environment in which you are working. When breathing resistance becomes excessive it is necessary to replace the filter media. Chemical cartridge type respirators generally contain specially treated activated carbon which removes particular gases or fumes by means of either absorption or reaction. Once again, these types of respirators do not supply oxygen and must not be used in either an oxygen deficient environment or one which is immediately dangerous to life or health. Most cartridge type respirators are specific for certain groups of compounds, such as acids; ammonia; organic vapors; and so on. You must be certain of the contaminant present before a decision can be made as to the type of chemical cartridge which is required for that particular situation. All cartridges are color coded and labeled for their specific use. These color codes are shown in Table 1.

Table 1

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATOR

COLOR CODING OF CHEMICAL CARTRIDGES

Atmospheric Contaminants to be Protected Against	Colors Assigned*
Acid gases	White.
Hydrocyanic acid gas	White with 1/2-inch green stripe completely around the canister near the bottom.
Chlorine gas	White with 1/2-inch yellow stripe completely around the canister near the bottom.
Organic vapors	Black.
Ammonia gas	Green.
Acid gases and ammonia gas	Green with 1/2-inch white stripe completely around the canister near the bottom.
Carbon monoxide	Blue.
Acid gases and organic vapors	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with 1/2-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia gases	Brown.
Radioactive materials, excepting tritium and noble gases	Purple (Magenta).
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors	Canister color for contaminant as designated above, with 1/2-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants	Red with 1/2-inch gray stripe completely around the canister near the top.

*Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

NOTE: Orange shall be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

Neither mechanical filter nor chemical cartridge elements should be used when entering an atmosphere or area where any of the following contaminants are present:

Oxygen Deficient Atmosphere

Areas immediately dangerous to life and health

Areas which contain any of the following chemical contaminants:

Acrolein	Hydrogen Sulfide
Aniline	Methyl Isocyanate
Arsine	Methyl Bromide
Boron Hydrides	Methyl Chloride
Bromine	Methyl Iodide
Carbon Dioxide	Nitrobenzene
Carbon Disulfide	Nitrogen Oxide
Carbon Monoxide	Nitroglycerine
Carbonyls	Nitromethane
Cyanogen	Ozone
Dimethyl Aniline	Perchloroethane
Dimethyl Sulfate	Phosgene
Ethyl Cyanide	Phosphene
Fluorine	Phosphorus Trichloride
Formaldehyde	Stibene
Hydrogen Cyanide	Sulfur Chloride
Hydrogen Fluoride	Toluene Diisocyanate
Hydrogen Selenide	Vinyl Chloride

Once again, it is important to remember that an assessment of the health hazards involved in a particular situation are necessary to determine what type of respiratory protection is best suited for your particular needs.

Atmosphere Supplying Respiratory Protection

In some cases it may be necessary to use air supplied respiratory protection when entering an area. This form of respiratory protection falls into three categories identified below:

Air line respirator

Hose mask with blower

Self-contained breathing apparatus

Both the air line respirator and the hose mask with blower type systems employ outside sources for supplying breathing air. This outside source can either be a compressor or bottled air.

When using a compressor for supplying breathing air, it is necessary that certain precautions be observed:

1. The compressor must be located in area where contaminated air will not be drawn into the system.
2. Sufficient safeguards must be applied to insure that the compressor itself does not generate carbon monoxide, oil mists, or hydrocarbon vapor during operation.
3. Installation of necessary filtering devices to remove any particulate contamination or oil mist.
4. A separate "escape air" or SCBA system, whereby the user of the air line respirator can proceed to an uncontaminated area in an emergency situation.
5. Do not use a compressor for an air supply unless indicated by your supervisor.

Air line respirators and hose masks with blowers provide the benefit of much longer working times, since a limited air supply is not a problem. But they also pose problems in that the hoses and/or air lines are cumbersome and tend to get in the way during work operation, as well as having the potential for being cut or crushed. These systems, however, are acceptable in oxygen deficient atmospheres so long as the requirements on the following page are met:

1. An additional escape air system, which allows sufficient time for exiting the contaminated area.
2. No more than 150 feet of hose is employed.
3. Sufficient safeguard on the air supplying equipment to insure that contamination of the source does not occur.

Self Contained Breathing Apparatus (SCBA)

The respiratory protection of choice in an oxygen deficient environment or that which is immediately dangerous to life and health (IDLH) is the self-contained breathing apparatus. These systems consist of a full or half-face respirator equipped with portable cylinder air. The major disadvantage of the SCBA system is its limited supply of air. Most systems range from 30 minutes to one hour maximum with this value being highly dependent upon the level of activity as indicated below:

<u>Activity</u>	<u>Oxygen Uptake Liters/Minute</u>
Seated	0.3
Light work	0.66
Walking	1.0
Shoveling	1.5 - 2.0

(rate and lift dependent)

All employees should be familiar with the location and operation of SCBA's. They could save your life!

If an SCBA is used, immediately recharge the cylinder when you are finished.

Special Problems with Respirators

Temperature

Cold temperatures can cause a variety of problems when wearing respirators. These include frozen valves; face plate fogging; and brittleness of the respirator itself. Care must be exercised in handling respirators in cold weather so as not to compromise their usefulness. Vision fogging is a serious problem when using full-face respirators. Nose cups can be obtained with full-face respirators which significantly reduce facepiece fogging. Antifogging respirator sprays appear to have limited usefulness.

Hair

Both hair styles and facial hair can prove incompatible with effective respirator usage. Clean, smooth skin is required for acceptable seating and sealing of a respirator. Even one day's growth of beard can impair a respirator's effectiveness.

Corrective Lenses

When the user of a respirator requires eye glasses, special precautions must be taken to insure that these do not impair the respirators effectiveness. Special facepieces are available which can accomodate eye glasses. Contact lenses should never be worn when working with hazardous materials. The potential for incompatible chemicals coming in contact with the contact lens and the eye is substantial. When air supplied respirators are worn, the incoming air has a tendency to dislodge the contact lens from the wearer's eye.

Communications

When wearing a respirator, communication is at best, difficult. You should learn hand signals for communication with co-workers. When SCBA's are required, you will be supplied with a radio communication system.

Respirator Maintenance

In order for a respirator to function efficiently, it must be regularly cleaned, maintained and safely stored. After each use, your respirator should be cleaned with soap and water, and disinfected: the inhalation and exhalation valves should both be checked to insure their satisfactory working condition; cartridges and/or filters should be changed; air lines cleaned; cylinders recharged; and stored in a clean, dry, and preferably warm environment. Your respirator provides you with protection from potentially life threatening situations and should be maintained with that in mind.

Appendix 1

EMPLOYEE RESPIRATOR TRAINING PROGRAM II

Universal Waste & Transit

9th Avenue & Orient Rd.

Tampa, Florida

Introduction

The purpose of this respirator training program is to familiarize the employee about the needs, purpose, operation, and maintenance of the respirator. Proper use and selection of a respirator will prevent the worker from injury.

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General

- A. All employees must be examined by a physician to determine that they are physically able to perform the work and use respiratory protection equipment. The respirator user's medical status will be reviewed annually.
- B. Any employee using a mask-type respirator shall be clean shaven to increase sealing between face and mask.
- C. Employees should familiarize themselves with the respirators by using them in an uncontaminated area for an extended period of time.
- D. Employees shall test for leaks in respirators before each use.
- E. Only NIOSH (National Institute of Occupational Safety and Health) approved respirators shall be used. The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed.
- F. There shall be regular inspection and evaluation to determine the continued effectiveness of the program.

Dual Filter Cartridge Mask

Limitations - Not to be used in atmospheres immediately dangerous to life and/or deficient in oxygen.

To fit respirator to face:

1. Position respirator on face, fitting wide portion under chin, and narrow portion over nose, wearing as low as possible.
2. Place one-piece lower headband around head below ears, and slip fit upper headband above ears, adjusting for tight yet comfortable fit.
3. Test for proper seal of facepiece as follows:
 1. Remove exhalation valve guard.
 2. Close exhalation valve with thumb and exhale gently.
 3. If air leakage is detected, readjust headbands until tight seal of facepiece to face is obtained.
 4. Finally, replace exhalation valve guard.

Leave Area Immediately if:

1. breathing becomes difficult
2. dizziness or other distress occurs
3. you taste or smell contaminant

Airline Mask and Helmet

Use - For protection against heavy exposures of dusts, fumes, vapors, gases, mists and smoke.

Limitations - Not to be used in atmospheres immediately dangerous to life or those deficient on oxygen.

Operating Principle

This is a supplied-air type respirator and must be connected to a suitable source of respirable air before use. Air pressure at mask should be 10 - 25 psi.

Fitting Mask - After connecting respirator to air supply line, fit as follows:

1. Hold facepiece and pull all five head straps out to the end tabs. Clasp temple and neck straps with each hand, and stretch straps over head, fitting facepiece against chin first.
2. Starting with bottom straps pull to insure a snug fit, tightening top strap last. This facepiece does not require excessive strap pressure to obtain leakproof fit.
3. The belt hook and breathing tube from the mask to the air supply line are assembled to be worn on the left side. After mounting belt hook, turn the head toward the right side to make sure there is no undue pull of the breathing tube on the facepiece. If this leaves too large a loop of the tube on the left side when the head is turned back, adjust the position of the belt hook.

Fitting Helmet-After connecting respirator to air supply line, fit as follows:

Place helmet onto head and adjust headband. White shroud is to be placed underneath clothing and draw string is to be pulled until shroud fits snugly. Then pull yellow shroud over clothing or protective suit. Pull face mask down.

Air Flow Regulation

After the facepiece and breathing tube are properly adjusted, the air flow can be regulated to suit the wearer. To decrease air flow, unscrew adjustment nut on regulating valve until desired setting is reached. This adjusting valve is so constructed that the air supply cannot be shut off completely when connected.

Leave Area Immediately if:

1. Breathing becomes difficult
2. Dizziness or other distress occurs
3. You taste or smell contaminant

Maintenance

- A. Cartridges for respirators must be replaced immediately as soon as employee can taste or smell contaminant. Do not substitute different types of cartridges.
- B. Respirators shall be cleaned and disinfected daily. Respirators can be cleaned with a mild detergent and water. Disinfection can be accomplished by immersing masks in a chlorine solution (2 tablespoons of bleach per gallon of water) for two (2) minutes. Respirators are then to be generously rinsed and allowed to air dry.
- C. Respirators shall be inspected during cleaning. Worn or deteriorated parts shall be replaced.
- D. When not in use respirators shall be protected from dust, sunlight, heat, extreme cold, excessive moisture, and damaging chemicals.
- E. Respirators should be placed in reuseable plastic bags until reissue. They shall be stored in a single layer with the facepiece and exhalation valve in a more or less normal position to prevent the rubber or plastic from taking a permanent distorted "set".
- F. Respirators shall be stored in a rigid storage cabinet or chest.

Emergency

In case of emergency, personnel in the air supplied respirators are responsible to assist and/or remove any injured or unconscious employee(s) from the contaminated area to an uncontaminated area; administer necessary first aid; (in particular, mouth-to-mouth resuscitation), and summon medical assistance as per emergency phone numbers listed at the site. Personnel should commit these emergency numbers to memory.

In addition, employees should leave the area immediately if:

1. Breathing becomes difficult
2. Dizziness or other distress occurs
3. Employee tastes or smells contaminant

CHAPTER FIVE

Training Manual No. 4

BASIC EMERGENCY TRAINING GUIDE

prepared by
Universal Waste & Transit, Inc.
9th Avenue & Orient Rd.
Tampa, Florida

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Introduction

Universal Waste & Transit specializes in the packaging; handling; transportation; storage and treatment of hazardous wastes. The company also responds to emergency incidents such as chemical or petroleum spills and abandoned waste disposal site cleanup. You therefore could come into contact with a variety of potentially hazardous materials.

These include:

- Poisons
- Flammable Liquids
- Flammable Solids
- Water or Air Reactives
- Explosives
- Oxidizers
- Corrosives
- Aerosol Containers
- Gas Cylinders

All of these materials are classified as hazardous and precautions are required to insure your safety when responding to any emergency situation.

Training

You are required to attend certain training sessions and to successfully pass these courses prior to working on any UW&T job site.

These courses include:

1. Personnel Protective Equipment
2. Respirator Training Program
3. Fire Safety and Response
4. Facility Operations
5. Basic First Aid
6. Cardiopulmonary Resuscitation (CPR)

You are also required to familiarize yourself (with your supervisors assistance) with the following documents.

1. UW&T Emergency Response Contingency Plan
2. UW&T Waste Analysis Plan
3. UW&T Inspection Plan
4. DOT Guide to Hazardous Materials
5. CHRIS Manual
6. NIOSH Worker Safety Bulletin
7. NSWMA 8 Part Brochure Series on Hazardous Waste
8. USEPA Hazardous Waste Criteria

These plans should be reviewed and completely understood prior to your participation in any actions. Along with this, you should also familiarize yourself with the equipment available to you during any emergency response. There will be in-depth discussions about personnel protection equipment, but you should also become familiar with the operation of the necessary support equipment which is required such as pumps; compressors; generators; emergency lighting; containment and sorbent materials; heavy equipment; and even hand tools. The time to learn the operation of these items is not when you are already on-site. This equipment is important to you, both to insure a rapid response to an emergency situation, as well as for your own personal safety. Learn its proper operation and maintenance before you are required to use it.

Medical Monitoring

Your personal safety is of the utmost importance at all times. In order for you to be aware of your physical condition, it is important that a medical monitoring program be established for you. This monitoring program is simply a screening which evaluates your general physical condition, as well as certain parameters in both blood and urine samples. It allows our physician to determine if you have been exposed to specific hazardous substances and also aids in determining what personnel can be assigned to high stress work environments.

The frequency, type and number of examinations is dependent upon the following items:

1. The degree of, or the potential for, exposure to various compounds.
2. The physical, chemical, or biological materials which may be encountered.
3. The potential for acute (short-term) or chronic (long-term) health effects.

At a minimum you will have a complete medical review at least annually. All costs are covered by UW&T. It should be remembered that medical monitoring, or health surveillance is simply an additional means to help protect your health. Most exposures to hazardous materials should be prevented by the effective use of personnel protective equipment, engineered safeguards and safe working practices. A listing of recommended medical monitoring parameters is included as Table 1.

Table 1

MEDICAL MONITORING PARAMETERS

Blood Pressure

Pulse

Respiration

Pulmonary Function

Forced Vital Capacity

Expiratory Volume

Reserve Volume

Blood Analyses - Chemical Screen

Calcium

Phosphorus

BUN

Creatinine

Uric Acid

Glucose

Albumin

Globulin

Bilirubin

Transaminase

Alakaline Phosphatase

Cholesterol

Electrolytes

Triglycerides

Hemogram

Heavy Metals

Urinalysis

pH

Specific Gravity

Acetone

Albumin

Glucose

Chemical Compatibility

Since the end of World War II there have been over 50,000 new chemicals created and over 1,000 new ones are produced each year. Some of these are not compatible with others. When non-compatible materials are mixed a number of reactions can result. These include:

- release of heat
- polymerization (hardening)
- generation of gases
- fire
- explosion

All of these reactions are dangerous. It is your responsibility to insure that non-compatible materials remain segregated.

All containers are sampled before they enter the UW&T facility. These samples are analyzed at a certified laboratory to determine their chemical composition. After analysis these containers are labeled according to Department of Transportation (DOT) regulations. These labels or placards can help you keep non-compatible materials segregated. Your "DOT Guide to Hazardous Materials" booklet describes what containers must be segregated.

Table 2 lists chemical compatibilities for a variety of compounds.

Your supervisor must tell you which containers are to be placed into what storage location. If you have questions or concerns - Ask before Acting!!! Safety Always Comes First.

Spill Response

The contingency plan details certain actions to be taken for a spill or release. Read It Carefully! Emergency telephone numbers are posted above every telephone.

If a spill occurs do not try to hide it. Contact your supervisor immediately or sound the green air horns located throughout the building. Immediately thereafter put on the necessary protective equipment. (located in safety cabinets)

After notification and putting on protective equipment - contain the spill!!!

A wide variety of containment equipment is available including:

- containment booms
- sorbent booms
- sorbent pads
- oil-dri
- plug and dike sealant
- overpack drums
- plug rugs

Do not use water to contain a spill!! The "hazorb" maaterial is chemically inert. It will not react with the spilled material. This should be your first choice for containment.

Members of the UW&T spill response group are readily available and will be responsible for any further actions. However, your immediate response to a spill or release is necessary to protect the environment. Learn where all necessary spill control materials are kept and how to use them in an emergency.

Attached to this as Table 3 are various response actions for numerous chemicals. These are also included in the contingency plan as well as being kept in the safety cabinets.

TABLE 2

CHEMICAL COMPATIBILITY CHART

CHEMICAL GROUPS	REACTIVE GROUPS																						
	1. NON-OXIDIZING MINERAL ACIDS	2. SULFURIC ACID	3. NITRIC ACID	4. ORGANIC ACIDS	5. CAUSTICS	6. AMMONIA	7. ALIPHATIC AMINES	8. ALKANOLAMINES	9. AROMATIC AMINES	10. AMIDES	11. ORGANIC ANHYDRIDES	12. ISOCYANATES	13. VINYL ACETATE	14. ACRYLATES	15. SUBSTITUTED ALLYLS	16. ALKYLENE OXIDES	17. EPICHLOROHYDRIN	18. KETONES	19. ALDEHYDES	20. ALCOHOLS, GLYCOLS	21. PHENOLS, CRESOLS	22. CAPROLACTAM SOLUTION	
1. NON-OXIDIZING MINERAL ACIDS		X			X	X	X	X	X	X	X	X	X			X	X		A	E			1
2. SULFURIC ACID	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2
3. NITRIC ACID		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3
4. ORGANIC ACIDS		X			X	X	X	X	C			X				X	X			F			4
5. CAUSTICS	X	X	X	X							X	X				X	X		X	X	X	X	5
6. AMMONIA	X	X	X	X						X	X	X	X			X	X		X				6
7. ALIPHATIC AMINES	X	X	X	X							X	X	X	X	X	X	X	X	X	X	X	X	7
8. ALKANOLAMINES	X	X	X	X							X	X	X	X	X	X	X	B	X				8
9. AROMATIC AMINES	X	X	X	C							X	X							X				9
10. AMIDES	X	X	X			X						X									X		10
11. ORGANIC ANHYDRIDES	X	X	X		X	X	X	X	X														11
12. ISOCYANATES	X	X	X	X	X	X	X	X	X	X						D					X		12
13. VINYL ACETATE	X	X	X			X	X	X														X	13
14. ACRYLATES		X	X				X	X															14
15. SUBSTITUTED ALLYLS		X	X				X	X				D											15
16. ALKYLENE OXIDES	X	X	X	X	X	X	X	X															16
17. EPICHLOROHYDRIN	X	X	X	X	X	X	X	X															17
18. KETONES		X	X				X	B															18
19. ALDEHYDES	A	X	X		X	X	X	X	X														19
20. ALCOHOLS, GLYCOLS	E	X	X	F	X		X					X											20
21. PHENOLS, CRESOLS		X	X		X		X		X														21
22. CAPROLACTAM SOLUTION		X			X		X					X											22
23. OLEFINS		X	X																				23
24. PARAFFINS																							24
25. AROMATIC HYDROCARBONS			X																				25
26. MISCELLANEOUS HYDROCARBON MIXTURES			X																				26
27. ESTERS		X	X																				27
28. VINYL HALIDES			X																			X	28
29. HALOGENATED HYDROCARBONS		D			H		I																29
30. NITRILES		X																					30
31. CARBON DISULFIDE							X	X															31
32. SULFOLANE																							32
33. GLYCOL ETHERS		X										X											33
34. ETHERS		X	X																				34
35. NITROCOMPOUNDS					X	X	X	X	X														35
36. MISCELLANEOUS WATER SOLUTIONS		X										X											36
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	

(Letters refer to notes on following page)

(Letters refer to notes on following page)

NOTES TO COMPATIBILITY CHART:

REACTIVITY DIFFERENCES (DEVIATIONS) WITHIN CHEMICAL GROUPS

- A Acrolein (19), Crotonaldehyde (19), and 2-Ethyl-3-propyl acrolein (19) are not compatible with Group 1, Non-Oxidizing Mineral Acids.
- B Isophorone (18), and Mesityl Oxide (18) are not compatible with Group 8, Alkanolamines.
- C Acrylic Acid (4) is not compatible with Group 9, Aromatic Amines.
- D Allyl Alcohol (15) is not compatible with Group 12, Isocyanates.
- E Furfuryl Alcohol (20) is not compatible with Group 1, Non-oxidizing Mineral Acids.
- F Furfuryl Alcohol (20) is not compatible wwith Group 4, Organic Acids.
- G Dichloroethyl Ether (36) is not compatible with Group 2, Sulfuric Acid.
- H Trichloroethylene (36) is not compatible with Group 5, Caustics.
- I Ethylenediamine (7) is not compatible with Ethylene Dichloride (36).

HAZARDOUS WASTES COMPATIBILITY CHART

INTRODUCTION

The chart (Figure 6) is the single most important part of this report. It is a quick and ready reference for determining the compatibility reactions of most binary combinations of hazardous wastes. It is used in conjunction with the detailed compatibility analysis procedures in Section 4.

DESCRIPTION OF THE CHART

The 41 reactivity group classifications of hazardous wastes listed in Appendix 2 are presented in this chart.

The first column of the chart lists the reactivity groups by Reactivity Group Numbers (RGN). The first 34 RGN which are based on chemical classes or molecular functional groups are listed consecutively from 1 to 34. The last 7 RGN which are based on general chemical reactivities are listed consecutively from 101 to 107. The second column lists the corresponding reactivity group names. The first 34 group names are each followed by a number of reaction squares equal to their respective RGN. In other words, RGN 1 is followed by 1 square, RGN 2 by 2 squares, etc. The group names designated by RGN 101 to 107 are followed by 34, 36, 37, 38, 39, 40 and 41 squares, respectively. The squares form rows as well as columns of squares on the chart. A terminal square of a row represents a binary combination of one reactive group with itself and is labelled with its RGN. The terminal squares serve as headings for the columns of squares and as a whole appear as a diagonal row of squares on the chart. An additional bottom row of squares is correspondingly labelled as the diagonal row of squares. The RGN on the first column of the chart and those on the diagonal and bottom rows of squares provide the reference coordinates for locating the potential hazardous reaction consequences of any binary combinations of the wastes reactivity groups.

The rest of the squares on the chart are either blank or filled in with Reaction Codes (RC). When a square is blank, the wastes in the binary combination represented by that square are compatible. Conversely, any RC on the squares indicate potential incompatible reactions that can result from the combination of the wastes reactivity groups represented by the individual squares. The predicted reactions are based on the combinations of the most reactive chemicals in the respective reactivity groups. All the binary wastes combinations designated with RC are described in greater detail in Appendix 4. Where waste combinations are believed to be incompatible but no sufficient supporting data have been found in the literature, incompatible reactions are also noted and marked on the chart with RC or "U". The RC are identified in the

legend on the upper right hand corner of the chart and described in detail in Section 4.2. The multiple RC are explained in Section 5.4.

PROCEDURES FOR USING THE CHART

Step 1: For the binary combination of any reactivity groups, first find the Reactivity Group Number (RGN) of the first group on the first column of the chart.

Step 2: Find the RGN of the second group from the bottom squares of RGN.

Step 3: Find the intersecting reaction square for the two RGN.

Step 4: Note the Reaction Code(s) (RC) in the square.

Step 5: Refer to the legend on the chart or Section 5.4 for the explanation of the RC.

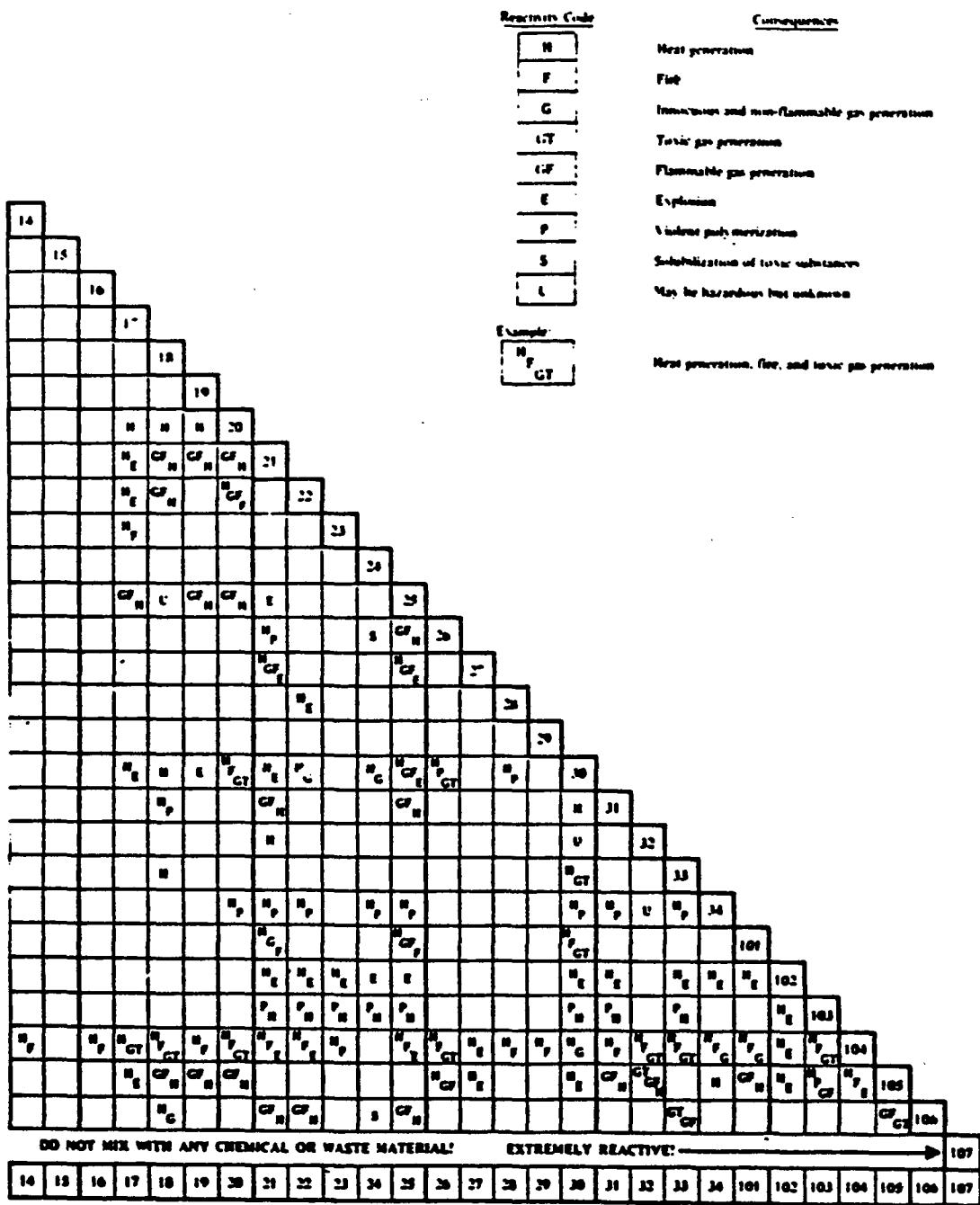
Step 6: When no RC is found on the reaction square, the two groups of wastes are compatible. When any RC are noted on the square, the wastes are incompatible when mixed or allowed to come in contact with one another.

EXPLANATION OF THE MULTIPLE REACTION CODES

For many binary combinations, multiple Reaction Codes (RC) are used to denote the reaction consequences. The order in which these letter codes appear in the squares corresponds to the order in which the consequences can occur. For example, in RC ($H_F E$), the first letter denotes the initial or primary hazardous consequence of a binary reaction which in this case is HEAT generation. The second and third letters denote the resulting secondary consequences of the production of FIRE and EXPLOSION from the heat generated by the primary reaction. In some cases the third letter code refers to a resulting tertiary consequence such as the evolution of a toxic gas from a fire caused by excessive HEAT generation (H_{FGT}). Where the codes GT_{GF} appear, the GASES evolved are TOXIC and FLAMMABLE such as hydrogen sulfide, hydrogen cyanide, or carbon disulfide. The relative positions of the letter codes to one another in this case bear no significance. The codes can also be written as GF_{GT} .

LIMITATIONS OF THE CHART

The potential reaction consequences predicted by the chart are based on pure chemical reactions only at ambient temperature and pressure. Concentration, synergistic, and antagonistic effects have been assumed not to influence the reactions. The reactions have not as yet been validated on actual wastes containing the chemicals.

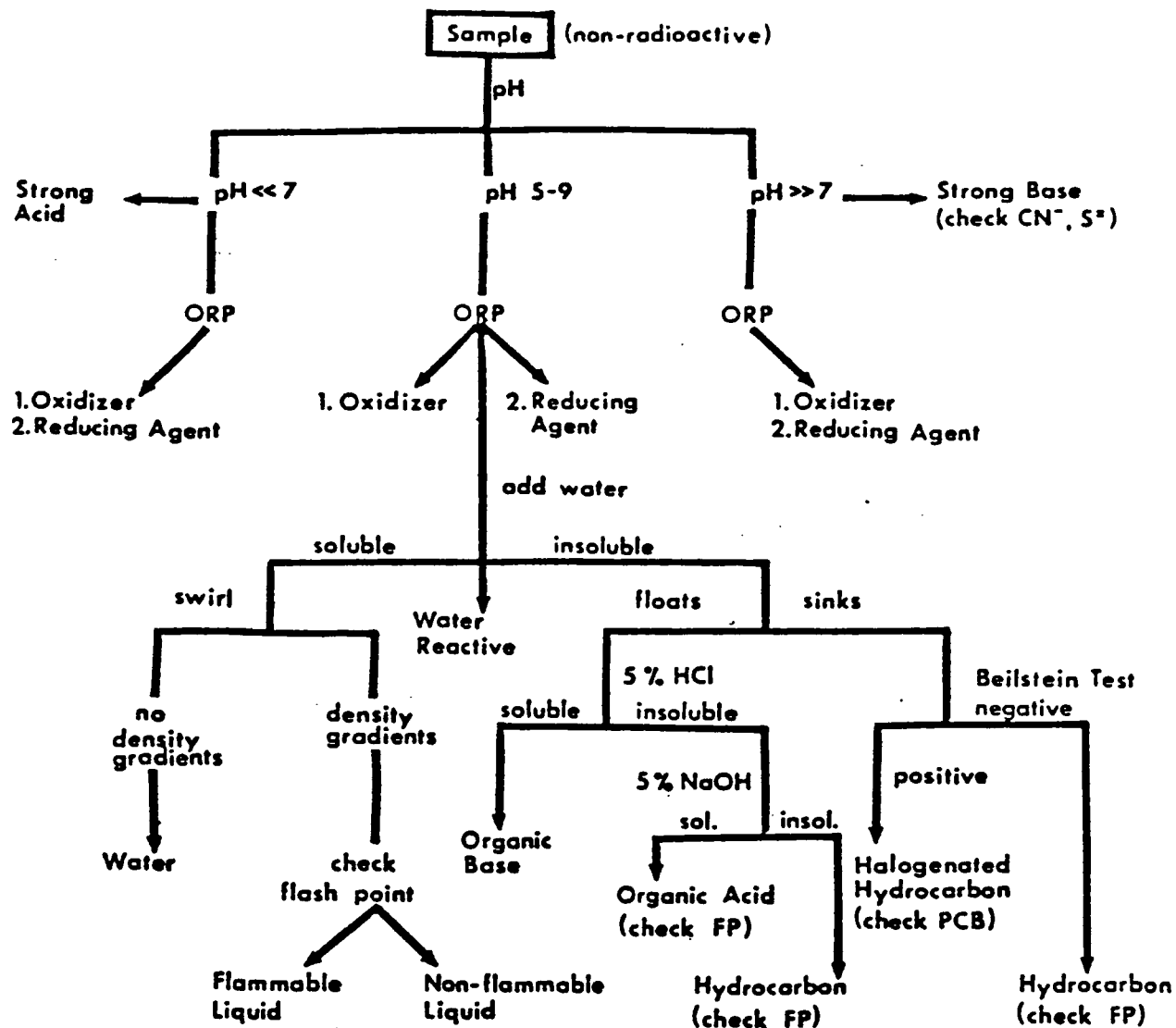


Hazardous waste compatibility chart (continued).

REACTIVITY GROUP NO	REACTIVITY GROUP NAME	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Acids, Mineral, Non-oxidizing													
2	Acids, Mineral, Oxidizing													
3	Acids, Organic													
4	Alcohols and Glycols													
5	Aldehydes													
6	Amines													
7	Amines, Aliphatic and Aromatic													
8	Azo Compounds, Diazo Compounds and Hydrazines													
9	Carbamates													
10	Carbates													
11	Cyanides													
12	Dithiocarbamates													
13	Esters													
14	Ethers													
15	Fluorides, Inorganic													
16	Hydrocarbons, Aromatic													
17	Halogenated Organics													
18	Isocyanates													
19	Ketones													
20	Nitrates and Other Organic Sulfides													
21	Metals, Alkali and Alkaline Earth, Elemental													
22	Metals, Other Elemental & Alloys as Powders, Vapors, or Sprays													
23	Metals, Other Elemental & Alloys as Sheets, Rods, Drums, Mouldings, etc.													
24	Metals and Metal Compounds, Toxic													
25	Nitrates													
26	Nitrates													
27	Nitro Compounds, Organic													
28	Hydrocarbons, Aliphatic, Unsaturated													
29	Hydrocarbons, Aliphatic, Saturated													
30	Peroxides and Hydroperoxides, Organic													
31	Phenols and Cresols													
32	Organophosphates, Phosphochlorides, Phosphodithionates													
33	Sulfides, Inorganic													
34	Epoxydes													
101	Combustible and Flammable Materials, Miscellaneous													
102	Explosives													
103	Polymerizable Compounds													
104	Oxidizing Agents, Strong													
105	Reducing Agents, Strong													
106	Water and Mixtures Containing Water													
107	Water Reactive Substances													

Hazardous waste compatibility chart.

COMPATIBILITY TREE



SCREENS FOR: 1. Strong Acids
2. Strong Bases
3. Oxidizers
4. Reducing Agents
5. Cyanides & Sulfides

6. Water Reactives
7. Flammable Liquids
8. Halogenated Hydrocarbons
9. PCB's

TABLE 3

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Acetaldehyde	X	X	X	X				1,2
Acetic Acid						X		1,2
Acetic Anhydride						X		1,2
Acetone	X	X						1,3,4
Acetonitrile	X	X		X		X		1,2
Acetophenone				X			X	2,9
Acetyl Bromide	X		X	X		X		1,2,5,8,11,1
Acetyl Chloride	X	X	X			X		1,2,3,5,8,11
Acetylene	X	X	X					1,4,6,20
Acrolein	X	X	X	X	X	X		1,2,5,6
Acrylamide	X			X	X	X		1,2
Acrylonitrile	X	X	X	X	X	X	X	1,2,5,12,19
Aldrin	X			X	X	X	X	1,2,9,12
Alkyl Benzene Sulfonic Acids	X							2,18
Allyl Alcohol	X	X		X				1,2,3,5,12
Allyl Chloride	X	X		X				1,2,5,12
Aluminum Chloride				X		X		1,2,5,8,11,1
Aluminum Fluoride								1,12
Aluminum Nitrate	X	X				X		1,2
Ammonia, anhydrous	X		X	X				1,2,5,11,20

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/ Information
Ammonium Bifluoride	X			X	X			1,2,18
Ammonium Chloride				X				1,2
Ammonium Dichromate	X	X		X	X	X		1,2,3,7,8,12,21
Ammonium Fluoride	X				X	X		1,2,18
Ammonium Hydroxide**	X		X	X				1,2
Ammonium Molybdate	X			X	X			7,12
Ammonium Nitrate	X	X		X		X		
Ammonium Oxalate	X			X	X			1,2
Ammonium Pentaborate	X				X			1,2
Ammonium Perchlorate	X	X		X		X		2,7
Ammonium Sulfide	X	X	X	X	X	X		1,2,5,6,8,12
Ammonium Thiocyanate	X			X	X			1,2
Amyl Acetate	X	X				X	X	1,2
Iso-Amyl Nitritelfonic Acids	X	X	X		X	X	?	1,2,3,5,6,8,12,19
n-Amyl Alcohol	X	X				X	X	1,3
n-Amyl Nitrate	X	X			X	X	?	1,2,12,21
n-Amyltrichlorosilane	X		X			X		1,2,8,11,12,18,21
Aniline	X				X	X	X	1,2,12,19
Antimony Pentachloride	X		X	X	X	X		1,2,8,18

**Dilute and disperse only when other corrective methods cannot be used.

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Antimony Trioxide	X							1,2
Arsenic Acid	X			X	X	X		1,2,18
Arsenic Trichloride	X		X	X	X	X		1,2,5,8,18
Arsenic Trioxide	X			X	X	X		1,2
Barium Chlorate	X	X	X	X	X			1,2,7
Barium Nitrate	X	X		X	X			1,2,7
Barium Perchlorate	X	X	X	X	X			1,2,7
Benzaldehyde	X			X			X	1,2
Benzene	X	X		X		X	X	1,2,4,15
Benzophenone							X	2
Benzoyl Chloride	X			X		X	X	1,2,5,11,12,18
Beryllium, metallic	X	X						1,2,21
Beryllium Nitrate	X	X		X	X	X		1,2,18,21
Beryllium Oxide	X	X		X	X	X		1,2,21
Boron Trichloride	X		X			X		1,2,5,8,11,18,21
Bromine	X		X	X	X	X		1,2,5,8
Butadiene, inhibited	X	X	X			X		1,2,4,6,20
Butane	X	X	X			X		1,2,4,6,20
1,4-Butanediol				X	X			2
n-Butyl Acetate	X	X					X	1,2,19

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/ Information
n-Butyl Alcohol	X	X						3
Butylamine	X	X	X	X	X	X		1,2,5,6
Butylene Oxide	X	X	X	X	X	X		1,2,3,4,5,6,14
tert-Butyl Hydroperoxide	X	X		X		X		1,2,7
N-Butyl Mercaptan	X	X	X			X	?	1,2,5,6,12
Butyraldehyde	X	X		X			X	1,2
Cadmium Nitrate	X	X		X	X	X		1,2,3,7
Calcium Carbide	X	X	X	X				2,10,11
Calcium Chlorate	X	X	X	X	X			1,2,7
Calcium Chromate	X			X	X			1,2
Calcium Cyanide	X		X	X	X	X		1,2,5,21
Calcium Hypochlorite	X			X		X		1,2
Calcium, metallic	X	X	X					2,8,10,21
Carbon Bisulfide	X	X	X	X	X	X		1,2,5,6,12
Carbon Monoxide	X	X	X					1,5,6,14,20,21
Carbon Tetrachloride	X			X			X	1,2,5
Caustic Soda Solution	X			X	X	X		2,8
Chlordane	X				X	X	X	1,2,9,12
Chlorine	X		X	X	X	X		1,2,5,8,11,20
Chlorine Trifluoride	X		X	X	X	X		1,2,5,7,8,11,20,21

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Chlorobenzene	X	X		X			X	1,2,12
Chloroform	X			X		X	X	1,2,12
Chloromethyl Methyl Ether	X	X	X	X	X	X	?	1,2,3,5,6,7,10,12,18
Chloropicrin, liquid	X		X	X	X	X		1,2,5,8,21
Chlorosulfonic Acid	X		X	X	X	X		1,2,5,8,11
Chromyl Chloride	X		X	X	X	X		1,2,5,6,7,11,18
Dinitrochlorobenzene	X	X	X			X	?	1,5,6,12
Copper Nitrate	X	X			X	X		1,2,3,7
Cresols	X			X	X	X	X	1,2,12
Crotonaldehyde	X	X		X				1,2
Cumene Hydroperoxide	X	X			X	X	X	1,2,3,8,12,21
Cyanogen	X	X	X	X	X	X		1,2,5,6,12,20
Cyanogen Bromide	X		X	X	X	X		1,2,5,12
Cyanogen Chloride	X		X	X	X	X		1,2,5,12,20
Cyclohexane	X	X		X		X	X	1,2,4
Cyclohexanone				X			X	1,2,19
Cyclohexylamine				X	X		X	1,2,19
Cyclopentane	X	X	X			X	?	1,2,4,6,14
Cyclopropane	X	X	X				X	1,2,4,6,14,20

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
DDD	X			X	X		X	1,2
DDT	X	X		X	X	X	X	2,9
Decaborane	X	X		X	X	X	X	1,2,4,15
Diazinon	X			X	X	X		1,2,3,9,12
Dibenzoyl Peroxide	X	X		X	X			1,2,7
Dichlorobenzene				X			X	2,12
Dichlorodifluoromethane (Freon 22)	X							1
1,2-Dichloroethylene	X	X	X			X		1,2,3,5,6,9,12
Dichloromethane	X			X		X	X	1,2,12
2,4-Dichlorophenoxy Acetic Acid	X			X	X		X	1,2
Dichloropropane	X	X		X			X	1,2,12
Diethylzinc	X	X	X					1,2,8,10,21
Dimethylamine	X	X	X	X				1,2,3,20
Dimethyldichlorosilane	X	X	X			X		1,2,3,5,6,8,11
Dimethylformamide	X	X	X	X	X	X		1,2
1,1-Dimethylhydrazine	X	X	X	X	X	X		1,2,5,12
Dimethyl Sulfate	X		X	X	X	X		1,2,8,12
Dimethyl Sulfide	X	X	X	X		X	?	1,2,5,6,12,19
Dimethylzinc	X	X	X				X	1,2,6,8,10,21

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
2,4-Dinitroaniline	X		X	X			X	1,2,12
Dinitrobenzene -	X	X		X	X		X	1,2,3,21
2,4-Dinitrophenol	X			X			X	1,2,12
2,4-Dinitrotoluene	X	X		X	X		X	1,2,3,21
1,4-Dioxane	X	X		X				1,2,3
Endrin	X			X	X		X	1,2,12
Ethyl Acetate or methane	X	X		X			X	1,2
Ethyl Acrylate	X	X		X			X	1,2,19
Ethyl Alcohol	X	X						3
Ethylaluminum Dichloride	X	X	X			X		1,2,3,5,6,8,10,11,18,21
Ethylamine	X	X	X	X	X	X		1,2,5,6,8,12,20
Ethylbenzene	X	X		X			X	1,2,19
Ethyl Chloroformate	X	X	X	X	X	X		1,2,3,8,12,18
Ethyldichlorosilane	X	X	X			X		1,2,3,5,6,8,11,12,18,21
Ethylene	X	X	X					1,2,4,6,20
Ethylene Glycol								None
Ethylene Glycol Monoethyl Ether				X				2
Ethylene Glycol Monomethyl Ether				X				2

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/ Information
Ethyl Formate	X	X	X	X	X	X		1,2,3,5,6
Ethyleneimine	X	X	X	X	X			1,2,5
Ethylene Oxide	X	X	X					1,2,6,20
Ethyl Ether	X	X	X			X		1,2,4,6,14
Ethyl Mercaptan	X	X	X	X		X	?	1,2,5,6,12,19
Ferric Nitrate	X	X				X		1,2,3,7
Fluorine	X		X	X	X	X		1,2,5,8,20
Fluosulfonic Acid	X		X			X		1,2,5,8,11,18
Formaldehyde Solution	X			X	X			1,2
Formic Acid	X							1,2,8
Fumaric Acid								1,2
Furfural	X			X	X			1,2
Furfuryl Alcohol	X			X	X			1,2
Heptachlor	X			X	X	X	X	1,2,21
Heptane	X	X	X			X	X	1,2,4,15
Heptanol		X					X	
Hexane	X	X	X			X	X	1,2,4,15
Hydrazine	X	X	X	X	X	X		1,2,5,6
Hydrochloric Acid	X		X	X	X	X		1,2,8
Hydrofluoric Acid	X		X	X	X	X		1,2,8,20

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Hydrogen Bromide	X		X			X		1,2,5,8,18,20
Hydrogen Chloride	X		X	X	X	X		1,2,5,8,11,20
Hydrogen Cyanide	X	X	X	X	X	X		1,2,5,11,20
Hydrogen Peroxide	X		X	X		X		1,2,7
Hydrogen Sulfide	X	X	X	X	X	X		1,5,20
Hydroquinonete	X			X	X			1,2
Isobutane	X	X	X			X		1,4,6,14,20
Isobutyl Acetated	X	X					X	1,2
Isobutyl Alcohol	X	X		X			X	1,2,3
Isobutylamine	X	X	X	X	X	X		1,2,5,6,8
Isobutyronitrile	X	X	X			X	?	1,2,5,6,12
Isopentane	X	X	X			X	X	1,2,4
Isopropyl Alcohol	X	X						1
Isopropylamine	X	X	X	X	X	X		1,2,5,6,12
Isopropyl Mercaptan	X	X	X	X	X	X		1,2,5,6,12
Isovaleraldehyde	X	X	X		X	X	?	1,2,4,5,6,14
Lauroyl Peroxide	X	X	X		X	X	X	2,7,17,21
Lauryl Mercaptan	X			X			X	1,2,12
Lead Nitrate	X	X		X	X	X		1,2,7
Lead Tetracetate	X	X		X	X	X		1,2,3,7,8

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Lead Thiocyanate	X			X	X		1,2	
Liquified Natural Gas	X	X	X					1,2,4,6,14,20
Liquified Petroleum Gas	X	X	X					1,2,4,6,14,20
Lithium Aluminum Hydride	X	X	X	X	X	X		2,8,10,11
Lithium Hydride	X	X	X					1,2,3,5,6,7,8,11,16,21
Lithium, metallic	X	X	X					1,2,3,5,6,7,8,11,16,21
Magnesium		X						21
Magnesium Perchlorate	X	X	X		X	X		1,2,7,21
Malathion	X			X	X	X	X	1,2,9,12
Mercuric Nitrate	X	X		X	X	X		1,2,3,7,21
Mercury	X						X	2,13
Mesityl Oxide	X	X		X	X	X	?	1,2,3,4,8,14,19
Methaneylamine	X	X	X					1,2,4,6,14,20
Methoxychlor	X			X		X	X	1,2
Methyl Acetate	X	X	X	X	X	X		1,2,3,5,6
Methyl Acrylate	X	X	X	X	X			1,2
Methyl Alcohol	X	X						1,2,3
Methylamine	X	X	X	X	X	X		1,2,3,5,6,8,12,
Methyl Bromide	X		X	X				1,2,5,12,20

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Methyl Chloride	X	X	X	X				1,2,5,12,20
Methyl Chloroformate	X	X	X	X	X	X		1,2,3,8,12,18
Methylcyclopentane	X	X	X			X	?	1,2,4,6,14
Methyldichlorosilane	X	X	X			X		1,2,3,5,6,8,11,12,18,21
Methyl Ethyl Ketone	X	X		X				1,2
Methyl Formate	X	X	X	X		X		1,2,3,5,6,12
Methylhydrazine	X	X	X	X	X	X		1,2,3,5,6,8,21
Methyl Isobutyl Ketone				X			X	1,2,19
Methyl Mercaptan	X	X	X	X		X		1,2,3,4,5,6,20
Methyl Methacrylate	X	X	X	X	X	X		1,2
Methyl Vinyl Ketone	X	X	X	X	X	X		1,2,3,5,6,8,21
Nickel Carbonyl	X	X	X	X	X	X		1,2,3,5,6,8,9,12,19
Nickel Nitrate	X	X			X	X		1,2,7
Nicotine	X			X	X	X		1,2,12
Nitric Acid	X		X	X	X	X		1,2,5,7,8
Nitrobenzene	X			X	X	X		2,12
Nitrogen, liquified	X							2,20
Nitrogen Tetroxide	X		X	X	X	X		1,2,5,8,20
Nitromethane	X	X		X				1,3

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

[illegible]

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Phosphorus, red	X	X		X				2,12
Phosphorus Tribromide	X		X			X		1,2,5,8,11,18
Phosphorus Trichloride	X		X	X	X	X		1,2,5,11,18
Phosphorus, white	X	X	X	X				1,2,5,12
Polychlorinated Biphenyl	X			X	X		X	2
Polyphosphoric Acid	X							2,8
Potassium Arsenate	X			X	X			1,21
Potassium Chlorate	X	X		X	X	X		1,2,7,21
Potassium Chromate	X	X		X	X	X		1,2,7,8,21
Potassium Hydroxide	X							1,2,8
Potassium, metallic	X	X						2,7,16
Potassium Peroxide	X	X	X					1,2,7,8,11,21
Propane	X	X	X					1,2,4,6,14,20
Propionaldehyde	X	X		X				1,2
Propylene Oxide	X	X	X					1,2,3
Propyleneimine, inhibited	X	X	X	X	X	X		1,2,5,6,8,12
Propyl Alcohol	X	X						1,3
Pyridine	X	X	X	X				1,2,3,5
Resorcinol	X			X	X			1,2
Silicon Tetrachloride	X		X			X		1,2,5,11,18

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Sodium	X	X	X					2,6,10,12,16
Sodium Amide	X	X						1,2,5,8,11
Sodium Azide	X			X	X	X		1,2,21
Sodium Borohydride	X	X						1,2,6,10
Sodium Chromate	X	X		X	X	X		1,2,7,8,21
Sodium Cyanide	X			X	X			1,2,5
Sodium Hydride	X	X	X					2,6,10,11
Sodium Hydroxide	X			X	X	X		2,8
Sodium Methylate	X	X						1,2,3,4,8,11,14
Sodium Nitrite	X	X		X	X	X		1,2
Styrene	X	X		X		X	X	1,2
Sulfuric Acid	X							2,8
Sulfur Dioxide	X		X	X	X	X		1,2,5,8,11,20
Sulfuryl Chloride	X		X	X		X		1,2,5,8,11,18
Tetrachloroethane	X				X	X		1,2
Tetraethyl Lead	X		X	X	X	X		1,2,5,12
Tetrahydrofuran	X	X						1,2
Thiophosgene	X		X	X	X	X		1,2,5,8,10,12,1
Thorium Nitrate	X	X	X	X	X	X		1,2,3,7,18,21
Titanium Tetrachloride	X		X					1,2,8,11,18

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/ Information
Toluene	X	X		X			X	1,2,4,15
Toluene 2,4-Diisocyanate	X			X	X			1,2,12
o-Toluidine	X	X		X	X	X		1,2,12,19
Trichloroethaneide	X						X	1,2,12
Trichloroethylene	X			X	X		X	1,2,12
Trichlorosilane	X	X	X					1,2,3,5,6,8,11,12 18,21
Triethylamine	X	X		X				1,2
Trifluorochloroethylene	X	X	X					1,2,5,6,12,20,21
Trimethylamine	X	X	X					1,2,5,20
Triethylaluminum	X	X	X					1,2,5,6,8,10,15,21
Uranyl Nitrate	X	X	X	X	X	X		1,2,3,7,18,21
Urea								
Valeraldehyde	X	X						1,2
Vanadium Oxytrichloride	X			X	X	X		1,2,5,8,11,18
Vanadium Pentoxide	X				X			1,2
Vinyl Acetate	X	X	X	X				1,2
Vinyl Chloride	X	X	X	X				1,2,12,20
Vinyl Fluoride, inhibited	X	X	X					1,2,6,12,20
Vinyl Methyl Ether, inhibited	X	X	X			X		1,2,4,5,6,12,20

ANTICIPATED RESPONSE ACTIONS FOR CERTAIN COMPOUNDS

	Restrict Access	Restrict Ignition	Evacuate	Restrict Human Use	Restrict Farm Use	Restrict Industrial Use	Contain	Reference Key to Special Precautions/Information
Vinyltrichlorosilane	X	X	X	X		X	X	1,2,3,5,8,11,12,18,20
Xylene	X	X		X	X		X	1,2,4,15
Zinc Arsenate	X			X	X	X		1,2,21
Zinc Borate	X							1,2

REFERENCY KEY TO RESPONSE INDEX

1. Avoid inhalation. Vapors or dust are irritating or toxic.
2. Avoid direct contact. Contact with skin or eyes can cause irritation or burns.
3. No ignition hazard once material is dissolved, reacted, or covered with water.
4. Burning may be prohibited by anti-air pollution laws and regulations.
5. Poisonous gas or vapor danger. Substance is highly volatile.
6. Flammable or explosive gas or vapor danger. Substance is highly volatile.
7. Powerful oxidant - explosion and/or fire hazard in the presence of organic matter.
8. Highly corrosive, particularly to eyes and skin.
9. Sorbs strongly on bottom sediments. Substance is not at all soluble or reactive.
10. Reacts with water to form explosive or flammable gas or vapor.
11. Water reactive compound which reacts vigorously or violently.
Disperse or neutralize contaminated waters after reaction subsides.

12. Burning not recommended; fire difficult to control and/or poisonous gas is formed.
13. Cover with organic sulfur-containing compounds or free sulfur.
14. Clean burning.
15. Sooty burning.
16. DO NOT ADD water to chemical; AFTER the chemical has reacted with water, the resulting alkaline solution can be diluted.
17. Floating solids.
18. Strong acid formed in water.
19. First try to contain and skim; THEN dilute and disperse what has dissolved in water.
20. Chemical shipped as gas or liquified compressed gas; depending on atmospheric conditions, a large portion of the hazard will be dissipated with no action necessary.
21. Has unusual fire or toxicity hazards. See the hazardous chemical data sheets for chemical.
22. May float or sink as insoluble substance or dissolve like miscible substance. See the hazardous chemical data sheets for chemical.

RESPONSE DEFINITIONS

A. CAUTIONARY RESPONSES

1. Restrict Access - This response is invoked when appreciable danger arises from a flammable or toxic spill, and the general public (spectators) should be kept from the spill area. Access is restricted if ignition is considered possible (restrict ignition), or if evacuation is recommended.
2. Restrict Ignition - This response is invoked when chemicals are involved which develop flammable vapors.
3. Evacuate - This response is invoked when there is a very real danger that a highly flammable or toxic spill may spread, or develop a detrimental reaction with water. This category includes flammable chemicals and extremely toxic chemicals, e.g., poisonous gases.
4. Restrict Human Use - This response is invoked when mostly soluble substances or those which are exceptionally toxic are involved in a spill. The primary danger is that of ingesting the chemicals in drinking water.
5. Restrict Farm Use - This response is invoked when a toxic chemical contaminant is spilled in water used for irrigation or animals.
6. Restrict Industrial Use - This response is invoked when the spill contains chemicals which could corrode machinery, or if the possibility of ignition from highly flammable organics is developed. Those chemicals which upon heating could release poisonous gases could also cause this response to be invoked; as could those which might form an insulating film on internal boiler surfaces.

REACTIVITY GROUPS

1. Non-Oxidizing Mineral Acids

Hydrochloric Acid
Hydrofluoric Acid
Phosphoric Acid

2. Sulfuric Acids

Spent Sulfuric Acid
Sulfuric Acid (98% or less)

3. Nitric Acid

Nitric Acid (70% or less)

4. Organic Acids

Acetic Acid
Butyric Acid
Formic Acid
Propionic Acid
Acrylic Acid (inhibited)

5. Caustics

Caustic Potash Solution
Caustic Soda Solution
Cresylate Spent Caustic Solution
Sodium Hydrosulfide Solution
(45% or less)

6. Ammonia

Ammonia, Anhydrous
Ammonium Hydroxide (28% or less)
Ammonium Nitrate, Urea, Water
Solutions (containing Ammonia)

7. Aliphatic Amines

Butylamine
Cyclohexylamine
Dibutylamine
Diethylamine
Diethylenetriamine
Diisopropylamine
Dimethylamine
Di-n-propylamine
Ethylamine
Ethylenediamine
Hexamethyleneimine
Methylamine
Morpholine
Propylamine
Tetraethylenepentamine
Triethylamine

8. Alkanolamines

Aminoethylethanolamine
Diethanolamine
Diethylethanolamine
Diisopropanolamine
Dimethylethanolamine
Ethanolamine
Propanolamine
Triethanolamine

9. Aromatic Amines

Aniline
Pyridine
2-Methyl-5-Ethylpyridine

10. Amides

Dimethylformamide

11. Organic Anhydrides

Acetic Anhydride
Phthalic Anhydride
Propionic Anhydride

12. Isocyanates

Diphenylmethane Diisocyanate
Polyphenyl Polymethylene-
isocyanate
Toluene Diisocyanate

13. Vynyl Acetate

Vinyl Acetate (inhibited)

14. Acrylates

Butyl Acrylate (inhibited)
Butyl Methacrylate (inhibited)
Decyl Acrylate (inhibited)
Ethyl Acrylate (inhibited)
2-Ethylhexyl Acrylate (inhibited)
Ethyl Methacrylate (inhibited)
Methyl Acrylate (inhibited)
Methyl Methacrylate (inhibited)

15. Substituted Allyls

Acrylonitrile (inhibited)
Allyl Alcohol
Allyl Chloride
1,3-Dichloropropene

16. Alkylene Oxides

Propylene Oxide
Butylene Oxide

17. Epichlorohydrin

Epichlorohydrin

18. Ketones

Acetone
Camphor Oil
Cyclohexanone
Diisobutyl Ketone
Isophorone
Mesityl Oxide
Methyl Ethyl Ketone
Methyl Isobutyl Ketone

19. Aldehydes

Acetaldehyde
Acrolein (inhibited)
Butyraldehyde
Decaldehyde
Ethylhexaldehyde
Formaldehyde
Glutaraldehyde Solution
Glyoxal Solution
Methylbutyraldehyde
Octyl Aldehyde
Pentyl Aldehyde
Propionaldehyde
Valeraldehyde

20. Alcohols, Glycols

Amyl Alcohol
Butyl Alcohol
1,3-Butylene Glycol
Cyclohexanol
Decyl Alcohol
Diacetone Alcohol
Diisobutyl Carbinol
Dodeconol
Ethanol
Ethoxylated Alcohols

Ethyl Alcohol
Ethylbutanol
Ethylene Chlorohydrin
Ethylene Cyanohydrin
Ethylene Glycol
2-Ethyl Hexanol
Furfuryl Alcohol
Glycerin
Hexanol
Hexylene Glycol
Methanol
Methyl Alcohol
Methylamyl Alcohol
Methylisobutyl Carbinol
Octyl Alcohol
Nonyl Alcohol
Pentadecanol
Propyl Alcohol
Propylene Glycol
Sorbitol
Tallow Fatty Alcohol
Tetradecanol
Tridecanol
Undecanol

21. Phenols and Cresols

Carbolic Oil
Creosote, Coal Tar
Cresols
Nonyl Phenol
Phenol

22. Caprolactam Solution

Caprolactam Solution

23-29 Unassigned

30. Olefins

Butadiene (inhibited)
Butene

Butylene
Decene
Dicyclopentadiene
Diisobutylene
Dodecene
Ethylene
Hexene
Isoprene (inhibited)
Methyl Acetylene, Propadiene
Mixture (stabilized)
(alpha-) Methyl Styrene
(inhibited)
Nonene
Octene
Pentene
Polybutene
Polypropylene
Propylene
Propylene Butylene Polymer
Propylene Tetramer
Styrene (inhibited)
Vinyl Toluene (inhibited)
Tetradecene
Tridecene
Turpentine
Undecene

31. Paraffins

Butane
Cycloaliphatic Resins
Cyclohexane
Decane
Dodecane
Ethane
Heptane
Hexane
Methane
Nonane
Octane
Pentane
Propane

32. Aromatic Hydrocarbons

Benzene
Benzene, Toluene, Xylene (crude)
Cumene
Cymene
Decylbenzene
Diethylbenzene
Dodecylbenzene
Ethylbenzene
Naphthalene
Tetradecylbenzene
Tetrahydronaphthalene
Toluene
Tridecylbenzene
Triethylbenzene
Undecylbenzene
Xylene

33. Misc. Hydrocarbon Mixtures

Asphalt
Asphalt Blending Stocks
Diphenyl - Diphenyl Oxide
Distillates
Gas Oil, Cracked
Gasoline Blending Stocks
Gasolines
Jet Fuels
Kerosene
Mineral Spirits
Naphtha
Oils, Crude
Oils, Diesel
Oils, Coal
Oils, Fuel (No. 1 thru No. 6)
Oils, Residual
Oils, Road
Oils, Transformer
Petrolatum
Petroleum Naphtha

Amyl Tallate
Butyl Acetate
Butyl Benzyl Phthalate
Castor Oil
Coconut Oil
Cottonseed Oil
Dibutyl Phthalate
Diethylene Glycol Monobutyl
Ether Acetate
Diheptyl Phthalate
Diisodecyl Phthalate
Dinonyl Phthalate
Dioctyl Phthalate
Diundecyl Phthalate
Ethyl Acetate
Ethylene Glycol Monobutyl
Ether Acetate
Ethylene Glycol Monoethyl
Ether Acetate
Ethylhexyl Tallate
Fish Oil
Glycol Diacetate
Lard
Methyl Acetate
Methyl Amyl Acetate
Octyl Epoxy Tallate
Olive Oil
Palm Oil
Peanut Oil
Propyl Acetate
Safflower Oil
Soybean Oil
Tallow
Tucum Oil
Vegetable Oil

35. Vinyl Halides

Vinyl Chloride (inhibited)
Vinylidene Chloride (inhibited)

34. Esters

Amyl Acetate
Chloroform
Dichlorobenzene
1,1-Dichloroethane
Dichloroethyl Ether
Dichloromethane
1,1-Dichloropropane
1,2-Dichloropropane
Ethyl Chloride
Ethylene Dibromide
Ethylene Dichloride
Methyl Chloride
Pentachloroethane
Perchloroethylene
1,1,2,2-Tetrachloroethane
1,2,4-Trichlorobenzene
Trichloroethylene

37. Nitriles

Acetonitrile
Adiponitrile

38. Carbon Disulfide

39. Sulfolane

40. Glycol Ethers

Diethylene Glycol
Diethylene Glycol Monobutyl Ether
Diethylene Glycol Monoethyl Ether
Diethylene Glycol Monomethyl Ether
Dipropylene Glycol
Ethoxy Triglycol
Ethylene Glycol Monobutyl Ether
Ethylene Glycol Monethyl Ether

36. Halogenated Hydrocarbons

Carbon Tetrachloride
Chlorobenzene
Ethylene Glycol Monomethyl Ether
Nonylphenol, Ethoxylated
Polyethylene Glycols
Polypropylene Glycols
Polypropylene Glycol Methyl Ether
Soybean Oil, Epoxidized
Tetraethylene Glycol
Triethylene Glycol

41. Ethers

Butyl Ether
1,4-Dioxane
Ethyl Ether
Methyl Formal (Dimethyl Formal)
Propyl Ether
Tetrahydrofuran

42. Nitrocopounds

(mono-) Nitrobenzene
1- or 2-Nitropropane
Nitrotoluene

43. Miscellaneous Water Solutions

Ammonium Nitrate, Urea, Water Solutions (not containing Ammonia)
Corn Syrup
Dextrose Solution
Latex Solutions
Tetrasodium Salt of EDTA Solution

Fire Fighting

Flammable materials are stored at UW&T. The room where these materials are located has been designed to reduce, as much as possible, any fire hazard. You are the key to making this system work!

If you follow certain, simple rules the hazard involved is minimal.

These are:

1. NO forklifts or tow motors are allowed in the flammable area.
2. Use a grounding strap on every drum you move into or out of the flammable area.
3. Use only non-sparking tools (gold colored and made out of beryllium).
4. Never use any electrical tools or equipment in the flammable area. Explosion-proof pumps and tools are available. Ask your supervisor before using any of these.
5. Do not use flashlights in this area. They can spark when turned on.
6. An explosivity meter is available - learn its use - check the room before entering. The reading must be less than 15% of the lower explosive limit (LEL). If not contact your supervisor immediately.
7. Only drums with "flammable" or "combustible" labels are to be stored in this area.

You must think safety at all time. If there is any question about what you are asked to do - don't act until you are sure!

Fire Fighting Equipment

There are four classes of fires. Those are:

Class A Fires in ordinary combustible materials such as wood, cloth or paper.

Class B Fires in flammable liquids or petroleum products such as solvent or paint.

Class C Fires involving electrical equipment.

Class D Fires in combustible metals such as sodium or magnesium.

Throughout the building are 10 pound fire extinguishers for class A, B or C fires. These are clearly identified with red markings.

There are two specialized "halon" fire extinguishers in the flammable room. These are excellent for class B and C fires. They are identified by red markings.

Also located in the building is fire hose which can be activated by turning the red valve.

A complete description of reaction to a fire is given in the Contingency Plan. Read and familiarize yourself with these responses. You are required to attend the following fire prevention presentations:

Hazardous Waste & Fire Service

Using Fire Extinguishers - The Right Way

Your supervisor will schedule these presentations.

Any violation of the safety aspects of this section are grounds for dismissal.

Contamination/Decontamination

Whenever you respond to an emergency incident, you are generally entering a "contaminated" area. The material which you are encountering is normally hazardous in one form or another. The intent of your job is to remove that hazard as quickly and as efficiently as possible. You do not want to contaminate other areas.

You should always make the assumption that everything you are wearing is contaminated. If you are wearing disposable clothing, these should be discarded in their appropriate containers. The following regimen for removal of contaminated clothing is suggested.

1. Remove gloves and discard for either disposal or cleaning.
2. Put on new disposable gloves.
3. Remove protective clothing and either discard or place aside for cleaning.
4. Remove boots and either discard or set aside for cleaning.
5. Remove respirator and eye protection - set aside for cleaning and decontamination.
6. Remove gloves and discard.

A shower will be available between the contaminated area and clean area for both worker safety and to insure that no additional contamination results. Clean clothing should be available in the uncontaminated area.

The decontamination process should occur each time a worker leaves the contaminated area. Obviously no smoking, eating or drinking is acceptable in the contaminated area.

All contaminated protective clothing should be either disposed or cleaned in the appropriate solutions. Soap and water is always a good start for decontaminating protective clothing and equipment.

Subsequent cleaning with additional materials may be required dependent upon the specific contaminant. You must allow sufficient time for the protective clothing to dry before it is to be reused, or a sufficient quantity of protective clothing must be available so that this does not become a problem.

During normal working conditions at the UW&T facility you are required to always enter through the employee entrance and proceed to the locker area. You are supplied with at least 5 sets of work uniforms, more are available as necessary. Your street clothes are to be left in your locker and you clean uniform is to be worn during the working day. If you are working with containers of hazardous waste you must wear the following:

- Disposable tyvek suit

- Disposable gloves

- Safety glasses

- Boots

When leaving the storage/treatment area you are to discard all disposable items.

When leaving at the end of a work day all employees are required to change from their work uniform; and enter their street clothes. No uniforms are to be taken home!!!

Any violation of this section is grounds for dismissal.

First Aid

Within thirty days after employment or as soon as possible you are required to attend and complete the following courses:

Emergency First Aid

CPR Training

These will be scheduled during normal working hours and you will be paid for the time spent in class.

You and your co-workers depend heavily upon each other. You should never work in the storage or treatment area alone. There must be at least one other person in the immediate area.

In the event that an emergency situation should arise, you should be aware of certain steps which must be taken immediately. Most importantly, you should never enter a situation immediately dangerous to life and health alone. At a minimum, two people should be available, both of which are equipped with lifelines and are physically capable of removing the other person should the need arise. You should have undergone basic first aid and cardiopulmonary resuscitation (CPR) training. You should be able to identify certain symptoms, either from yourself or your co-worker and be able to give emergency first aid should the need arise.

Only severe emergency situations will be discussed at this time, but they could be of tremendous assistance to you or your co-workers.

Chemical Burns Remove contaminated clothing; flush with large volumes of water immediately; do not apply neutralizing or buffering agents; do not consider chemical antidotes; do not remove goggles until the head and face area have been thoroughly flushed. Contact a physician if necessary.

Chemical Burns

of the eye - Remove glasses and flush immediately with tap water, eye wash, or a gentle stream of water from a hose. Time is extremely important. The eyelid should be forceably held apart so that all areas of the eye are flushed. Minimum flushing time is thirty minutes. Cover the eye and immediately transport to emergency facilities.

Asphyxiation

(poisoning by

inhalation) - Remove from the exposed area as soon as possible, keep patient warm and lying down, and if breathing has stopped begin cardiopulmonary resuscitation (CPR).

In the event of any accident, attempt to obtain as much information as possible concerning the route of exposure and the contaminant. Relay this information to the appropriate medical authorities.

Warm weather can be devastating to a worker. During these periods of time you are normally working under high levels of stress and involved in heavy manual labor. You are outfitted in garments and protective equipment which allow little, if any, body cooling. You are generally burdened by uncomfortable, cumbersome, and possibly heavy protective clothing, all of which makes life, in general, quite miserable. Your production of body heat, when combined with the outside air temperature, will generally restrict you to shortened work cycles. The table below indicates how much body heat is produced during various activities in a 160-lb man:

<u>Activity</u>	<u>Body Heat Produced (kilocalories/hour)</u>
Rest (seated)	90
Light machine work	200
Walking	300
Shoveling (rate and lift dependent)	450-600

When the ambient air temperature exceeds 79 degrees and you are producing more than 300 kilocalories per hour, your work efficiency is greatly reduced. Man is capable of adjusting to hot environments, however, this adjustment takes normally about a week, during which time the body will undergo a series of changes that make further heat exposures more endurable.

You should, wherever possible, distribute your daily work load into shortened work-rest cycles. The rest period gives your body an opportunity to get rid of excess heat; slows down the production of internal body heat; and provides greater blood flow to the skin. During this rest cycle you should proceed to the decontamination area, remove all contaminated clothing to expose as much of your body as possible to the outside air; and rest. Fluids should be taken as often as possible.

WORKER RIGHTS UNDER THE OCCUPATIONAL
SAFETY AND HEALTH ACT (OSHA)

Among your rights as an employee are the right to:

- a safe and healthful workplace as required under the OSHAct;
- review copies of standards and other rules, regulations and requirements under the OSHAct that your employer should have readily available;
- speak to your employer about safety and health hazards in your workplace, about precautions that may be taken, and procedures you should follow if you are involved in an accident or exposed to toxic substances;
- ask for an evaluation of your workplace by the National Institute of Occupational Safety and Health (NIOSH) or to file a complaint with OSHA requesting an inspection by OSHA if you believe hazardous conditions or violation of standards exist in your workplace, and the right to ask OSHA not to reveal your name;
- obtain access to any of your medical records or records of exposure to toxic substances which your employer may have;
- have your authorized employee representative accompany the OSHA compliance officer during an inspection of your workplace;
- respond to questions from the OSHA compliance officer during an inspection of your workplace;
- protection from being fired or punished in any way for exercising your rights under the OSHAct (if you've been fired or punished, you must tell the nearest OSHA officer within 30 days).

CHAPTER VI

Training Manual No. 5

FACILITY OPERATIONS MANUAL

prepared by

Universal Waste & Transit

9th Avenue & Orient Rd.

Tampa, Florida

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Introduction

This manual is designed to familiarize you with basic practices at the UW&T storage and treatment facility. Much of your training in this area will be on-the-job.

Do not be afraid to ask questions!! This is your training period. We want you to be as safe and comfortable with your duties as possible. We will assist you as much as we can.

Remember - if you have a question or concern about performing a task always ask before acting!!

Incoming Material

All incoming material is to be placed into the "incoming staging area" immediately. Do not take these containers anywhere else until notified to do so by your supervisor.

A sampling team will inspect these containers to insure their contents are correct and obtain QC samples.

All off-loading should be performed manually if possible. A "drum truck" should be used. If however a drum is too heavy a towmotor equipped with a drum handling attachment will be employed. Never move a drum or container using the forks on a towmotor. There is always a potential for puncturing the drum.

Manifests

For all waste movement, either bulk or drum lots, a manifest for the movement of such waste must be prepared either by the generator or by UW&T. The following procedure is to be used:

1. Manifest is to be prepared before shipment to the extent possible.
2. Manifest is to include:
 - a. DOT shipping name
 - b. Hazard Class Description
 - c. All required ID Numbers
3. Manifest must be signed by generator and transporter.
4. A copy of the signed manifest must be given to the generator at the time of shipment.
5. The manifest is to be signed by a representative of that designated treatment/storage/disposal facility (TSDF).
6. The transporter is to retain one (1) copy of the manifest and leave all other copies at the treatment/storage/disposal facility.
7. The treatment/storage/disposal facility will return the manifest to the generator.
8. For pickup of drum lots for transfer to the UW&T storage facility, the manifest must include all required certification statements.
9. Other requirements as dictated by specific disposal sites such as work order number and code number must be addressed as necessary.

A typical manifest and certification statements are attached.

Labeling

Before shipment of any drum lot wastes, all EPA and DOT required labels must be applied. This includes DOT shipping name, hazard label and a completed hazardous waste label.

All required EPA and DOT labels must be applied to the top one-third (1/3) of the container. The DOT shipping name and number should appear legibly on the top of the container.

Placarding

The truck used to transport hazardous materials must be placarded. In general, the placard used on the truck will coincide with the hazard label on the drums being transported.

<u>Material</u>	<u>Placard</u>
Flammable Liquid	Flammable
Flammable Solid	Flammable
Corrosive Liquid	Corrosive
Poison B	Poison
Mixed Loads	Dangerous
ORM-E	None Required

If you are unsure as to the placard required, contact the office first.

Storage

RCRA requires that reactive materials be stored in such a manner as to minimize the possibility of dangerous reactions occurring in case of a leak or other accident. The storage area has taken this requirement into account during the design phases.

All flammable and combustible wastes are stored in a separate, specifically designed area. No other area is acceptable for the storage of these wastes.

All other wastes are stored for transport to their ultimate disposal location. The routing supervisor or facility manager will inform you as to these specific locations.

Empty Drum Handling

All labels on empty drums are either to be removed or painted over such that the name of the generator of the waste; the DOT hazard label and markings; as well as the hazardous waste label are no longer discernable. Any labels which indicate that the drum once contained a hazardous waste must also be removed except if the waste is one listed in paragraph "e" Part 261.33 ("P" Wastes).

All empty drums will be crushed for reclamation or burial dependent upon the previous contents.

Basic Safety Policies

1. Absolutely no smoking in the warehouse except in break area and offices.
2. All employees/visitors are required to wear eye protection.
3. All flammable/combustible drums must be stored in the flammable area.
4. Acid resistant clothing must be worn when handling corrosive materials.
5. Safety shoes are required for any employees moving drums.
6. Gloves must be worn at all times when handling waste containers (open or closed).
7. Spark proof tools must be used on flammable waste containers.
8. All drums must remain properly sealed unless being sampled, consolidated or treated.
9. Forks on towmotor must be completely lowered when not in use.
Only use drum handler to move drums.
10. No food or drinks permitted in warehouse proper.
11. All employees must change from the work uniform before leaving for the day.
12. All designated aisles and exits must be kept clear at all times.
13. Wear hardhats and/or safety glasses in customer's plants as required. Nearly all plants require eye protection.

Driver Information

For Spills Onto Roadways

Contain spill with sorbent materials.

Notify UW&T Emergency Response Coordinator (ERC).

Robert Bedore (813) 864-4076

Richard Powell (813) 831-1871

All spills involving transportation must be reported to the National Response Center. UW&T ERC will notify the National Response Center. If ERC can not be contacted call NRC at

1-800-424-8802

Notify local authorities.

For information on cleanup procedures, call ChemTrec

1-800-424-9300

If spill results in any of the following, the Department of Transportation must be notified at :1-202-426-1830

1. A person is killed
2. A person is hospitalized
3. Property damage exceeds \$50,000.00
4. Continuing danger exists for a facility or personnel

All spills of hazardous waste must be reported using the attached DOT incident report form.

Your drivers guide lists the reportable quantities (RQ) that must be reported to the National Response Center from the total number of containers involved.

Transportation Routes

Follow only city/county truck routes during all transport whenever possible. Only leave these roads for material pickup. Use the most direct route to the generator when leaving a truck route.

When leaving the facility follow only these truck routes if possible:

9th Avenue to Orient Rd.

Left on Orient Rd. I-4

or

9th Avenue to Orient Rd.

Right on Orient to S.R. 60

Right on S.R. 60 to 50th Street

Left on 50th Street to Crosstown Expressway

Every attempt should be made to limit truck access and egress to the facility to normal working hours (8:00 a.m. to 5:00 p.m.).

CERTIFICATION STATEMENT

I hereby certify that I attended the DOT/RCRA Training Course
presented by Universal Waste & Transit.

Certified by:

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

A. State Manifest Document Number

4. Generator's Phone ()

B. State Generator's ID

5. Transporter 1 Company Name

6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers
No. Type

13. Total
Quantity

14. Unit
Wt/Vol

I. Waste No.

HM		No.	Type	Quantity	Unit Wt/Vol	Waste No.
a.						
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Signature

Date

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

Signature

Date

Month Day Year

ORIGINAL - RETURN TO GENERATOR

7-BLS-C6

Instructions for completing Certification for Land Disposal
Restriction

Notification 1

Generator's statement for non-solvent wastes.

This is to be completed by the generator when their waste stream does not contain any of the restricted materials with EPA ID#'s F001-F005.

A copy of this must be signed by the generator and accompany his waste to the landfill as a notification (required by Pinewood for all shipments).

If your waste has any of the F001-F005 waste or is the residue from the treatment of restricted wastes you can not use this notification. Please go to Notification 2.

Notification 2

The following is a list of exceptions when waste that do contain F001-F005 waste may be acceptable to go to landfill.

If your waste contains a mixture/blend of F001-F005 (total) solvents at concentrations less than 10% before use.

If the solvent(s) introduced into the process as an ingredient or reactant in the formulation of a product (not as a carrier that is used over and over again).

If your F001-F005 waste is an inorganic sludge, solid or soil containing less than 1% total solvents (F001-F005).

If the waste is a contaminated soil generated from a CERCLA or RCRA corrective action, the material can be landfilled. These cleanups must be federally ordered.

If a generator's still bottoms from the reclamation of solvents are no greater than one percent total F001-F005 solvent in the sludge.

Notification 2 is to be completed by the generator when their F001-F005 waste meets one of the above listed exceptions. Notification 2 will serve as a notification for those waste that meet one of the two year national variances.

If your waste falls under one of the two following exceptions contact your GSX Customer Service Representative. These waste streams will require that Notification 2 be completed and accompany shipments to landfill.

If the waste is a D001, "P" or "U" listed waste, then this material can go to landfill.

If the original generator is a small quantity generator of 100-1000 kg of hazardous waste per month, the material can be landfilled. Some states may be more restrictive.

If your waste is residue from the treatment of restricted waste you can not use this notification. Please go to the Certification 1.

Certification 1

Certification by Treatment Facilities is to be completed by generators that treat F001-F005 waste and meet the CCWE standards. A copy of Certification 1 must accompany the manifest of all treatment residues to Pinewood.

NOTIFICATION 1

Generator Statement For Non-Solvent Wastes For Land Disposal Restrictions

Instructions to the Generator

Due to regulatory requirements published November 7, 1986, GSX must have a statement certifying compliance with spent solvent disposal restrictions for each waste stream you produce, which is sent to land disposal. If the statement below is applicable to your waste stream, please sign this form and return it to GSX. If this statement does not apply to your waste, please contact GSX for additional instructions.

GENERATOR _____ of _____
WASTE NAME _____
GSX PROFILE OR ARF NUMBER _____

STATEMENT

I explicitly represent that the above referenced material does not contain any of the following restricted materials or still bottoms or sludges from the recovery of these restricted materials with EPA ID#'s F001-F005:

benzene	2-nitropropane
2-ethoxyethanol	1,1,2-trichloroethane
xylene	methyl ethyl ketone
acetone	carbon disulfide
ethyl acetate	isobutanol
ethyl benzene	tetrachloroethylene
ethyl ether	trichloroethylene
methyl isobutyl ketone	methylene chloride
n-butyl alcohol	1,1,1 trichloroethane
cyclohexanone	carbon tetrachloride
methanol	chlorobenzene
cresol/cresylic acid	1,1,2-trichloro-1,2,2 trifluoroethane
pyridine	ortho-dichlorobenzene
nitrobenzene	trichlorofluoromethane
toluene	chlorinated fluorocarbons

I authorize this statement to be added to the above referenced profile or ARF. I certify that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with 40 CFR Part 268. I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for improper land disposal of restricted wastes, and that the disposal facility is relying on my representation of this waste to determine appropriate treatment or disposal methods.

Signature _____
Name (print or type) _____
Title _____
Date _____

NOTIFICATION 2

NOTIFICATION BY WASTE GENERATOR

I understand that certain wastes described in 40 CRF Section 261.31 may not be land disposed after November 8, 1986. I certify that my company will not send the following restricted wastes to GSX Services of South Carolina, Inc. located in Pinewood, South Carolina, unless treated by a standard described in 40 CRF 268.30(a)(3), or allowed by a variance from the treatment standard or effective date of restriction.

- F001 The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005 and still bottoms from the recovery of these spent solvent and spent solvent mixtures.
- F002 The following spent halogenated solvents: tetrachloroethylene, methylene chloride, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F003 The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F004 The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

CERTIFICATION 1

CERTIFICATION BY TREATMENT FACILITIES

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

a.) EPA Hazardous Waste Number(s): (_ _ _) (_ _ _)

b.) The Corresponding Treatment Standard: _____

c.) The Manifest Number Associated With The Shipment of Waste: (_ _ _)

d.) Waste Analysis Available? Yes _____ No _____
If yes, please attach a copy.

e.) Waste Profile or ARF Number (_ _ _)

The treatment facility must submit a certification for each shipment of waste or treatment residue of a restricted waste to the land disposal facility stating that the waste or treatment residue has been treated to the performance standards specified in Subpart D.

According to 40 CFR Section 265.315 and S.C. Department of Health and Environmental Control regulation R.61-79.265.315, each container must be at least 90 percent (90%) full when placed in the landfill unless the container is very small, e.g., ampule sized. Any container less than 90 per cent (90%) full will be considered to hold a nonconforming waste.

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to achieve the performance levels specified in 40 CFR Part 268 Subpart D without dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

Signature: _____

Print Name: _____

Title: _____

Date Submitted: _____

Company Name/Location: _____

Please sign the certification and attach to your manifest for shipment. This certification must come with each load shipped to Pinewood, attached to the manifest for our records. ONLY CERTIFICATIONS WITH ORIGINAL SIGNATURES WILL BE ACCEPTED!

INSTRUCTIONS FOR CUSTOMER NOTIFICATION AND CERTIFICATION

The Hazardous and Solid Waste Amendments of 1984 require restrictions on land disposal of untreated hazardous wastes to be implemented in several phases. The first phase, covering certain solvent and dioxin wastes, was effective November 8, 1986. The second phase (covering "California List" wastes) was effective July 8, 1987. There are very limited variances from these restrictions, and additional wastes will be covered in future phases. For your convenience, a list of restricted wastes and applicable variances is attached. Complete regulations concerning land ban restrictions are published by the Environmental Protection Agency in 40 CFR, Part 268.

In order to comply with federal and state requirements you must sign a statement (either a notification or a certification) for each waste stream you ship. A copy of this statement of the waste, except for the unrestricted waste notification.

Determine which statement below applies to your waste and mark the appropriate corresponding notification or certification on the reverse side of this form.

Unrestricted Waste Notification

If you generate a hazardous waste which is not a solvent, dioxin, or "California List" waste which is restricted from land disposal without prior treatment (by appropriate treatment standard described in 40 CFR 268 Subpart D, or to the levels specified in 40 CFR 268.32), mark this space and list appropriate treatment standard.

Restricted Waste Variance Certification

If you generate a solvent (F001-F005), dioxin, or "California List" waste which does not require treatment prior to land disposal because of a variance (including case-by-case extension under 40 CFR 268.5, nationwide variance under 40 CFR 268 Subpart C, a no-migration petition under 40 CFR 268.6, or soil or debris from a CERCLA response action or RCRA corrective action), mark this space and list the appropriate variance.

Treated Waste Certification

If you treat a solvent (F001-F005), dioxin, or "California List" waste to the degree it is no longer subject to land disposal restrictions (either the performance standards described in 40 CFR 268 Subpart D or the applicable levels described in 40 CFR 268.32), mark this space. Mark this space whether you are the original generator treating the waste or a treatment facility operator. You must also attach analytical documentation that demonstrates required treatment has been achieved, and a copy of the original generator(s) notification which was sent to you with the waste.

ONLY STATEMENTS WITH ORIGINAL SIGNATURES WILL BE ACCEPTED!

CUSTOMER NOTIFICATION AND CERTIFICATION

Generator Name/Location: _____
EPA ID Number: _____
Waste Profile or ARF Number: _____
Manifest Number: _____
EPA Hazardous Waste Number(s): (_____) (_____) (_____)
Waste Analysis Available? Yes _____ No _____ If yes, please attach copy.

Unrestricted Waste Notification

I notify that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is not restricted as specified in 40 CFR 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d).

Restricted Waste Variance Certification

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.
Applicable Variance: _____

Treated Waste Certification

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR Part 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d) without dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

SIGNATURE: _____ DATE: _____
PRINT NAME: _____ TITLE: _____

ONLY STATEMENTS WITH ORIGINAL SIGNATURES WILL BE ACCEPTED!

SOLVENT WASTES

- F001 The following spent halogenated solvents used in degreasing tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) or one or more of the above halogenated solvents or those solvents listed in F002, F004, F005 and still bottoms from the recovery of these spent solvent and spent solvent mixtures.
- F002 The following spent halogenated solvents: tetrachloroethylene, methylene chloride, 1,1,1-trichloroethane; chlorobenzene, 1,1,2-trichloro-1, 2, 2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F003 The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents, and a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F004 The following spent non-halogenated solvents: cresols, and creosylic acid, and nitrobenzene; all spent solvent mixtures blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
- F005 The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

SOLVENT WASTES APPLICABLE VARIANCES

- (A) The material is an inorganic solid containing 1% or less F001-F005 solvent.
- (B) The material contains a blend of F001-F005 (TOTAL) solvents at concentrations of less than 10% prior to use.
- (C) The material is pure, un-used P or U-listed solvents.
- (D) The material is waste water with less than 1% total F001-F005 listed solvents.
- (E) Other

DIOXIN WASTES

- F020 Wastes (except waste water and spent carbon from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of hexachlorophenol from highly purified 2,4,5-tri-chlorophenol.)
- F021 Wastes (except waste water and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.
- F022 Wastes (except waste water and spent carbon from hydrogen chloride purification) from the manufacturing used intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.
- F023 Wastes (except waste water and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.)
- F026 Wastes (except waste water and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.
- F027 Discarded unused formulations containing tri-, tetra- or pentachlorophenol or discarded unused formulation containing compounds derived from these chlorophenols. (This listing does not include formulations containing hexachlorophene synthesized from pre-purified 2,4,5-trichlorophenol as the sole component.)

"CALIFORNIA LIST" WASTES

Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/l.

Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing the following metals (or elements) or compounds of these metals (or elements) at concentrations greater than or equal to those specified below:

arsenic and/or compounds (as As) 500 mg/l
cadmium and/or compounds (as Cd) 100 mg/l
chromium (VI and/or compounds [as Cr VI]) 500 mg/l
lead and/or compounds (as Pb) 500 mg/l
mercury and/or compounds (as Hg) 20 mg/l
nickel and/or compounds (as Ni) 134 mg/l
selenium and/or compounds (as Se) 100 mg/l
thallium and/or compounds (as Tl) 130 mg/l

Note: These materials must be RCRA Regulated Wastes for the restrictions to apply. Materials which contain selenium or thallium, out which are not RCRA wastes are not affected by the disposal restrictions.

Liquid hazardous waste having a pH less than or equal to two (2.0).

Liquid hazardous waste containing polychlorinated biphenyls at concentrations greater than or equal to 50 ppm.

Hazardous wastes containing halogenated organic compounds in total concentration greater than or equal to 1,000 mg/kg.

"CALIFORNIA LIST" APPLICABLE VARIANCES

- (A) Liquid hazardous wastes that contain HOCs in total concentration greater than or equal to 1,000 mg/l but are not waste waters.
- (B) Non-liquid hazardous wastes containing HOCs in total concentrations greater than or equal to 1,000 mg/l.
- (C) Soil or debris generated from a CERCLA response action or a corrective action taken under Sections 3004 or 3008 or RCRA.
- (D) Case-by-case extension.
- (E) No-migration petition.

Number of Attached Manifest: _____
EPA Hazardous Waste Numbers: _____

(A)	(B)	(C)
F001-F005 Spent Solvents	Generator/Service Co. Check if contained in waste	40CFR Part 268 Support D Treatment Standard mg/liter CCWE
acetone	_____	0.59
N-butyl alcohol	_____	5.00
carbon disulfide	_____	4.81
carbon tetrachloride	_____	0.96
chlorobenzene	_____	0.05
cresols (and cresylic acid)	_____	0.75
cyclohexanone	_____	0.75
1,2-dichlorobenzene	_____	0.125
ethyl acetate	_____	0.75
ethyl benzene	_____	0.053
ethyl ether	_____	0.75
isobutanol	_____	5.00
methanol	_____	0.75
methylene chloride	_____	0.96
methyl ethyl ketone	_____	0.75
methyl isobutyl ketone	_____	0.33
nitrobenzene	_____	0.125
pyridine	_____	0.33
tetrachloroethylene	_____	0.05
toluene	_____	0.33
1,1,1-trichloroethane	_____	0.41
1,1,2-trichloro	_____	
-1,2,2-trifluoroethane	_____	0.96
trichloroethylene	_____	0.091
trichlorofluoromethane	_____	0.96
xylene	_____	0.15

This notification must be attached to the manifest for shipment.
Please attach waste analysis data, if available.

FOR HAZARDOUS WASTES
RELEASE OR SPILLS

DEPARTMENT OF TRANSPORTATION

Form Approved OMB No. 04-5613

HAZARDOUS MATERIALS INCIDENT REPORT

INSTRUCTIONS: Submit this report in duplicate to the Secretary, Hazardous Materials Regulations Board, Department of Transportation, Washington, D.C. 20590, (ATTN: Op. Div.). If space provided for any item is inadequate, complete that item under Section H, "Remarks", keying to the entry number being completed. Copies of this form, in limited quantities, may be obtained from the Secretary, Hazardous Materials Regulations Board. Additional copies in this prescribed format may be reproduced and used, if on the same size and kind of paper.

A INCIDENT			
1. TYPE OF OPERATION 1 ☐ AIR 2 ☐ HIGHWAY 3 ☐ RAIL 4 ☐ WATER 5 ☐ FREIGHT FORWARDER 6 ☐ WASTE			
2. DATE AND TIME OF INCIDENT (Month - Day - Year) _____ a.m. _____ p.m.		3. LOCATION OF INCIDENT	
B REPORTING CARRIER, COMPANY OR INDIVIDUAL			
4. FULL NAME		5. ADDRESS (Number, Street, City, State and Zip Code)	
EPA IDENTIFICATION CODE NO.			
6. TYPE OF VEHICLE OR FACILITY			
C SHIPMENT INFORMATION			
7. NAME AND ADDRESS OF SHIPPER (Origin address)		8. NAME AND ADDRESS OF CONSIGNEE (Destination address)	
9. SHIPPING PAPER IDENTIFICATION NO.		10. SHIPPING PAPERS ISSUED BY ☐ CARRIER ☐ SHIPPER ☐ OTHER (Identify) _____	
D DEATHS, INJURIES, LOSS AND DAMAGE			
DUE TO HAZARDOUS MATERIALS INVOLVED			13. ESTIMATED AMOUNT OF LOSS AND/OR PROPERTY DAMAGE INCLUDING COST OF DECONTAMINATION (Round off in dollars) \$
11. NUMBER PERSONS INJURED	12. NUMBER PERSONS KILLED		
14. ESTIMATED TOTAL QUANTITY OF HAZARDOUS MATERIALS RELEASED			
E HAZARDOUS MATERIALS INVOLVED			
15. CLASSIFICATION (Sec. 172.4)	16. SHIPPING NAME (Sec. 172.5)	17. TRADE NAME	
F NATURE OF PACKAGING FAILURE			
18. (Check all applicable boxes)			
(1) DROPPED IN HANDLING	(2) EXTERNAL PUNCTURE	(3) DAMAGE BY OTHER FREIGHT	
(4) WATER DAMAGE	(5) DAMAGE FROM OTHER LIQUID	(6) FREEZING	
(7) EXTERNAL HEAT	(8) INTERNAL PRESSURE	(9) CORROSION OR RUST	
(10) DEFECTIVE FITTINGS, VALVES, OR CLOSURES	(11) LOOSE FITTINGS, VALVES OR CLOSURES	(12) FAILURE OF INNER RECEPTACLES	
(13) BOTTOM FAILURE	(14) BODY OR SIDE FAILURE	(15) WELD FAILURE	
(16) CHIME FAILURE	(17) OTHER CONDITIONS (Identify)	19. SPACE FOR DOT USE ONLY	

D. E. R.

NOV 12 1987

SOUTH WEST DISTRICT
TAMPA