

SAFETY!!!

..... IS EVERYONE'S
RESPONSIBILITY



New Mexico Rural Water Association
3413 Carlisle Blvd NW
Albuquerque, New Mexico 87110
505-884-1031

THE BASICS

- n POLICIES AND PROCEDURES
- n ASK QUESTIONS
- n TRAINED AND AUTHORIZED TO OPERATE EQUIPMENT

GENERAL SAFETY RULES

- n RESTED, ALERT FOR DUTY
- n APPROPRIATE CLOTHING
- n PROPER FOOTWEAR
- n NO RINGS/JEWELRY NEAR MACHINES
- n REPORT INJURIES
- n OBTAIN PROPER MEDICAL TREATMENT WHEN REQUIRED

VISITORS

- n ADVISE VISITORS OF POTENTIAL HAZARDS
- n CONTRACTORS MUST ABIDE BY DISTRICT SAFETY RULES
- n CONTRACTOR TRAINING

BLOODBORNE PATHOGENS

- n A BLOODBORNE PATHOGEN IS A VIRUS FOUND IN BLOOD
- n BLOOD PATHOGENS MAY CONTAIN SERIOUS DISEASES
- n COMMON PATHOGENS ARE HEPATITIS B, HEPATITIS C AND HIV
- n WEAR APPROPRIATE PPE
- n REPORT ANY EXPOSURE

PERSONAL PROTECTIVE EQUIPMENT

- n WHEN ISSUED, WEAR IT
- n FOOTWEAR
- n SAFETY GLASSES
- n HEARING PROTECTION
- n HEAD PROTECTION
- n RESPIRATORS
- n PROPER MAINTENANCE

ELECTRICAL SAFETY

- n INSPECTIONS
- n DOUBLE INSULATED TOOLS
- n THIRD PRONG IS GROUND
- n NO ELECTRICAL NEAR WATER
- n UNPLUG TOOLS BEFORE MAINTENANCE
- n NO OCTOPUS PLUGS
- n DON'T PULL ON CORDS

HAZARDOUS ENERGY SOURCES

- n LOCKOUT/TAGOUT
- n HAZARDOUS ENERGY IS MORE THAN LOCKING OUT ELECTRICAL POWER
- n OPERATORS NEED TRAINING
- n DO NOT REMOVE TAGS OR LOCKS, UNLESS YOU PLACED THEM THERE
- n NEVER START A MACHINE THAT HAS A LOCK/TAG

EMERGENCY ACTIONS

- n IN CASE OF FIRE, EXIT BUILDING
- n DUCK, COVER, HOLD
- n EMERGENCY PLANS MAINTAINED
- n EMERGENCY TELEPHONE NUMBERS
- n KNOW YOUR EMERGENCY PLAN
BEFORE YOUR EMERGENCY OCCURS

HOUSEKEEPING

- n WORK AREA CLEAN
- n CORRECT HAZARDS
- n INSPECTIONS
- n KEEP EXITS UNBLOCKED
- n CORDS, CABLES, WIRING
- n SLIPS, TRIPS, FALLS
- n TOOLS IN PROPER PLACES

FIRE TRIANGLE

- OXYGEN
- IGNITION SOURCE
- COMBUSTIBLE MATERIAL



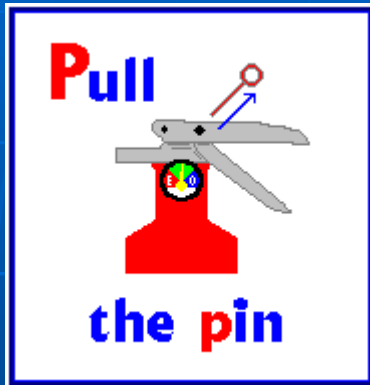
FIRE PREVENTION

- n GOOD HOUSEKEEPING AIDS IN PREVENTING FIRES
- n DIFFERENT CLASSES OF FIRE EXTINGUISHERS (A, B, C, D, K)
- n MOST EXTINGUISHERS ARE ABC TYPE
- n USE THE PROPER EXTINGUISHER ON THE FIRE
- n P.A.S.S. (pull pin, aim, squeeze trigger, sweep)

FIRE PREVENTION

- n EXTINGUISHER TRAINING
- n EXTINGUISHER INSPECTIONS
- n STAND 8-10 FEET AWAY FROM FIRE
BEFORE USING EXTINGUISHER
- n FLAMMABLE LIQUID CONTAINERS

FIRE PREVENTION



FIRE EXTINGUISHERS

- n CLASS A – ordinary combustibles
 - APW – air pressurized water
- n CLASS B – flammable/combustible liquids
 - ABC – monoammonium phosphate
 - BC – NaHCO_3 , KHCO_3
- n CLASS C – electrical
 - ABC, BC, CO_2
- n CLASS D – combustible metals
 - K, Mg, Na, Ti
 - ABC, BC
- n CLASS K – animal or vegetable oil, cooking fat
 - Potassium acetate, low pH

FIRE PREVENTION



- n Class "A" fires involve ordinary combustible material as fuel (most common), such as: wood, paper, plastic, rubber, and cloth.



- n Class "B" fires involve flammable liquids and gases, exclusively.

FIRE PREVENTION



- n Class "**C**" fires involve energized electrical equipment. When the electricity is cut off, these fires are then treated as a Class A or B type.



- n Class "**D**" fires involve combustible metals. These aren't seen very often, but sometimes these metals are used in automobile and machine manufacturing and construction.



- n Class "**K**" fires involve a liquid cooking medium (oil or grease).

FIRE PREVENTION

n Fire Extinguisher Types (extinguishing agents)

- There are essentially eight different extinguishing agents used in modern fire extinguishers. They consist of ABC Dry Chemical, BC Dry Chemical, Dry Powder, Water, Foam, Wet Chemical, Halogenated, and Carbon Dioxide.

Kitchen Fire Example



FLAMABLE ITEM CONTAINERS

- n MUST BE AN APPROVED TYPE OF CONTAINER FOR STORING FLAMABLES
- n SHOULD ALLOW FOR THE EXPANSION OF FLAMMABLE VAPORS
- n FLAMMABLE CONTAINERS SHOULD HAVE A FLAME ARRESTOR
- n OILY RAGS NEED TO BE KEPT IN A METAL CONTAINER

CHEMICALS

- n TREAT ALL CHEMICALS WITH RESPECT
- n MSDS REQUIRED
- n CHEMICALS MUST BE LABELED
- n SPILL RESPONSES
- n DON'T MIX CHEMICALS UNLESS TRAINED TO DO SO
- n CHLORINE BLEACH/AMMONIA

NFPA LABELS

HEALTH HAZARD

- 4 - Deadly
- 3 - Extreme danger
- 2 - Hazardous
- 1 - Slightly hazardous
- 0 - Normal material

FIRE HAZARD

Flash Point

- 4 - Below 73° F
- 3 - Below 100° F
- 2 - Below 200° F
- 1 - Above 200° F
- 0 - Will not burn

SPECIFIC HAZARD

- Oxidizer
- Acid
- Alkali
- Corrosive
- Use NO WATER
- Radiation Hazard

- OXY
- ACID
- ALK
- COR
- ~~W~~
- 

REACTIVITY

- 4 - May detonate
- 3 - Shock and heat may detonate
- 2 - Violent Chemical change
- 1 - Unstable if heated
- 0 - Stable



NFPA Label

Fire Hazard (red)

Flash Point Temp.

4 – below 73F - v.flam.

3 – 73 to 100F – flam.

2 – 101 to 200F- comb.

1 – over 200F –slightly
combustible

0 – will not burn

Chem. name

Health (blue)

4 – deadly

3 – extreme danger

2 – hazardous

1 – slightly
hazardous

0 – normal material

Specific Hazard

OXY - oxidizer

ACID – acid

ALK – Alkali

COR – corrosive

~~W~~ – use no water

RAD - radiation haz.

Reactivity (yellow)

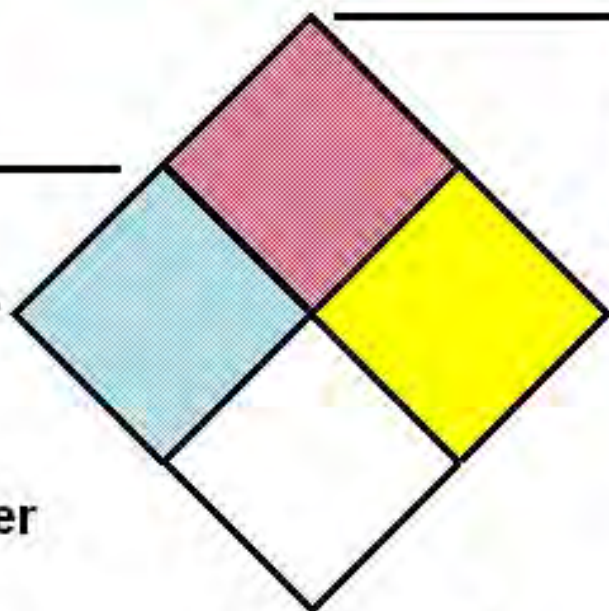
4 – may detonate

3 – shock or heat may
detonate

2 – violent chem. reaction

1 – unstable if heated

0 – stable



CAUSES OF ACCIDENTS

- n ACCIDENT INVESTIGATION
- n 85%-98% UNSAFE ACTS
- n SLIPS, TRIPS AND FALLS
- n LADDER SAFETY
- n AWARENESS IS BEST DEFENSE
- n COMMON SENSE

ACCIDENTS

- n REPORT ALL ACCIDENTS/INJURIES
- n ALL ACCIDENTS INVESTIGATED
- n FACTS WILL HELP PREVENT FUTURE ACCIDENTS
- n VISITOR ACCIDENTS-LIABILITY

BACK INJURY PREVENTION

- n PREVENTION
- n PROPER LIFTING TECHNIQUES
- n LIGAMENTS CAN BE STRETCHED
- n DISCS LIKE SOFT HOCKEY PUCKS
- n KEEP SPINE IN NATURAL CURVE
- n BEND LEGS, NOT BACK
- n TOO HEAVY, GET HELP

ERGONOMICS

- n ADJUST WORK TO INDIVIDUAL
- n COMPUTER WORK STATIONS
- n IF IT HURTS, SOMETHING IS WRONG
- n SOLUTIONS CAN BE SIMPLE
- n TELL SUPERVISOR OF PROBLEMS
- n MAKE RECOMMENDATIONS

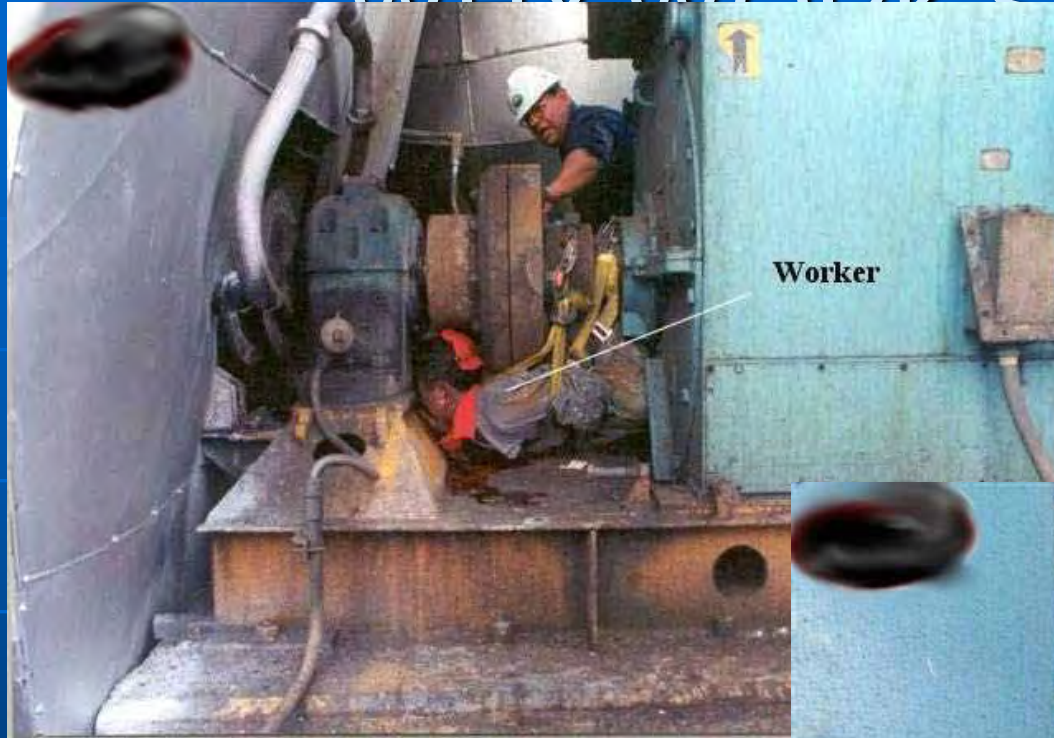
PERSONAL HYGIENE

- n BACTERIA
- n CLEANING, SANITIZING
- n KEEP YOUR BODY CLEAN
- n WASH HANDS FREQUENTLY
- n PERSONAL RESPONSIBILITY

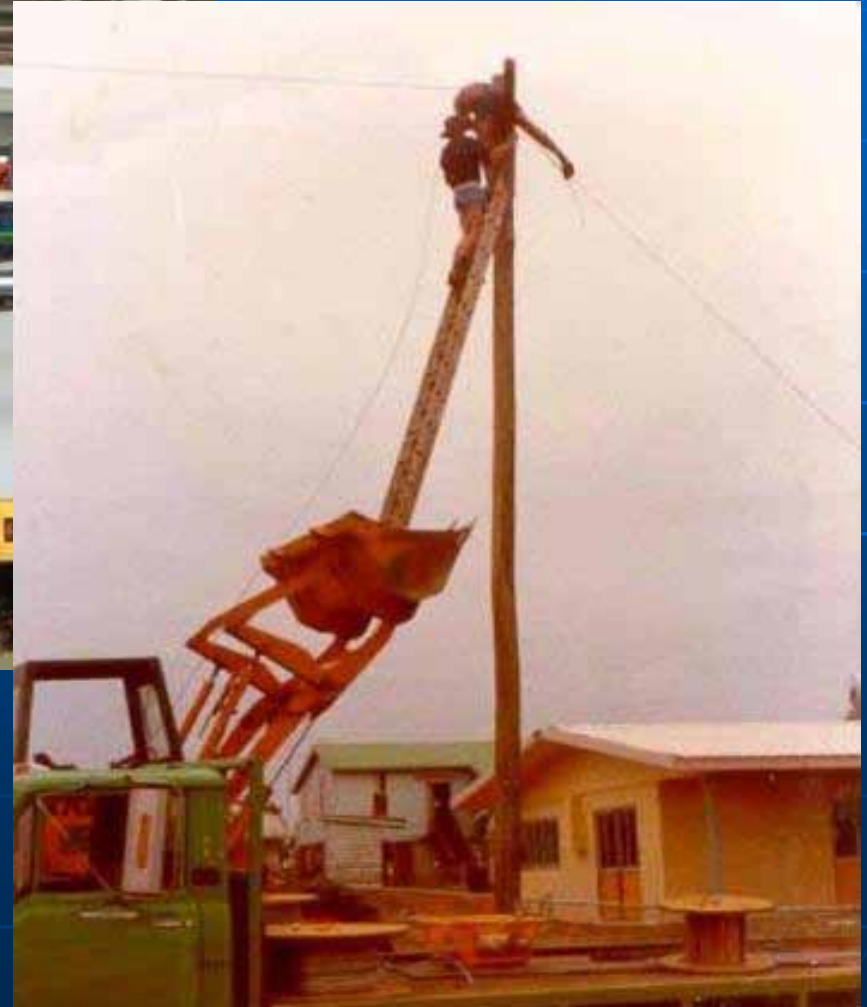
PERSONAL RESPONSIBILITY

- n SAFETY IS AN INDIVIDUAL RESPONSIBILITY
- n ACCIDENT PREVENTION
- n PROPER TRAINING
- n FOLLOW DISTRICT POLICIES
- n THINK SAFETY

WHY WORK SAFELY?!



WHY WORK SAFELY?!



WHY WORK SAFELY?!



WHY WORK SAFELY?



TRENCHING and SHORING

PLANNING

- n **PLANNING IS IMPORTANT PART**
- n **TRAFFIC, STRUCTURES, SOIL**
- n **GROUND WATER**
- n **OVERHEAD, UNDERGROUND**
- n **CONTACT THE UTILITY COMPANY IF NECESSARY**
- n **PROTECT THE PUBLIC**

THE BASICS

- n **TRENCH IS A NARROW EXCAVATION IN WHICH THE DEPTH IS GREATER THAN THE WIDTH**
- n **EXCAVATIONS OVER 5 FEET DEEP MUST BE SLOPED, SHORED, SHEETED, BRACED OR SUPPORTED**
- n **ANGLE OF REPOSE**
- n **WATER CONDITIONS**

SOILS

- n SOIL IDENTIFIED**
- n CHANGING WEATHER CONDITIONS**
- n EXCESSIVE WET CONDITIONS**
- n FROZEN CONDITIONS**
- n EXCESSIVE DRY CONDITIONS**

SHORING

- n PROTECTION FOR A VARIETY OF WEATHER CONDITIONS SHOULD BE MADE
- n ADDITIONAL PRECAUTIONS
- n SUPERIMPOSED LOADS IN VICINITY
- n HEAVY EQUIPMENT
- n SHORING TO SUPPORT HEAVY LOADS
- n SPOIL 2 FEET FROM EDGE OF EXCAVATION
- n START FROM TOP TO BOTTOM

INSTALLATIONS

- n **CROSSBEAMS HORIZONTAL**
- n **SPACE VERTICALLY AT INTERVALS**
- n **BRACES SECURED**
- n **UNSUPPORTED TRENCHES
COLLAPSE**
- n **INSPECTED DAILY**
- n **INSPECT AFTER RAIN OTHER
CONDITION CHANGES**

INSTALLATIONS

- CONTINUED -

- n **EMERGENCY EXITS 25 FEET**
- n **LADDERS EXTEND 3 FEET ABOVE TRENCH**
- n **BACKFILL WHEN COMPLETED**
- n **REMOVE SHORING FROM THE BOTTOM UP**
- n **RELEASE JACKS/BRACES SLOWLY**
- n **USE ROPES IN UNSTABLE SOIL**
- n **NO SHORT CUTS**

AIR MONITORING

- n **MUST BE PERFORMED IN THE EVENT OF OXYGEN DEFICIENCY**
- n **IF HAZARDOUS ATMOSPHERIC CONDITIONS EXIST**
- n **IF DEPTH IS GREATER THAN 4FT. ATMOSPHERE MUST BE TESTED BEFORE ENTERING**
- n **RESPIRATORY PROTECTION OR VENTILATION AS REQUIRED**

SAFETY

- n **ANGLE OF REPOSE**
- n **INSPECTIONS**
- n **AIR MONITORING**
- n **SOILS AND WEATHER CONDITIONS**
- n **PROPER PROCEDURES**

LOCKOUT TAGOUT

HAZARDOUS ENERGY

- n ANYONE WORKING NEAR MACHINERY MUST BE TRAINED IN LOCK OUT / TAG OUT
- n PREVENTS INADVERTENT STARTS
- n LOCKOUT, USE LOCKS
- n TAGOUT, USE TAGS
- n MANY SOURCES, NOT JUST ELECTRICAL

ENERGY SOURCES

- n **ELECTRICAL**
- n **MECHANICAL**
- n **HYDRAULIC**
- n **PNEUMATIC**
- n **CHEMICAL**
- n **THERMAL**
- n **OTHERS**

RESPONSIBILITIES

- n ALL EQUIPMENT SHOULD BE LOCKED AND TAGGED OUT TO PREVENT INJURY WHEN NECESSARY
- n NEVER ATTEMPT TO START ANY SWITCH, VALVE OR THEIR ENERGY ISOLATING DEVICE
- n AUTHORIZED EMPLOYEE ONLY
- n DO NOT REMOVE LOCKS/TAGS
- n ONLY AUTHORIZED EMPLOYEE TO APPLY/REMOVE LOCKS/TAGS
- n FOLLOW PROCEDURES

IMPLEMENTING

- n NOTIFY AFFECTED EMPLOYEES
- n IDENTIFY TYPE ENERGY SOURCES
- n SHUT MACHINE DOWN
- n DE-ACTIVATE ENERGY DEVICES
- n USE LOCKS/TAGS
- n CHECK FOR STORED ENERGY
- n DISCONNECT FROM ENERGY SOURCES

RESTORATION

- n REMOVE TOOLS
- n SECURE AREA
- n VERIFY CONTROLS IN NEUTRAL
- n REMOVE LOCKS/TAGS
- n NOTIFY AFFECTED EMPLOYEES
- n NOTIFY MACHINE READY FOR NORMAL OPERATIONS
- n RETURN LOCKOUT/TAGOUT DEVICES

TRAINING

- n **PURPOSE/FUNCTION**
- n **AUTHORIZED PERSONNEL**
RECOGNITION OF TYPES OF ENERGY
- n **AFFECTED PERSONNEL PURPOSE**
AND USE OF ENERGY CONTROL
- n **ALL OTHERS-BASIC KNOWLEDGE OF**
LOCKOUT/TAGOUT PROCEDURES

CONFINED SPACE

INTRODUCTION

WHAT IS A CONFINED SPACE?

WHAT ARE THE DANGERS?

WHAT ARE THE SAFETY CONCERNS?

DO YOU HAVE A WRITTEN SAFETY PLAN?

CONFINED SPACES ARE:

- ANY SPACES THAT HAVE LIMITED ACCESS OR EGRESS
- ANY SPACES THAT HAVE UNFAVORABLE NATURAL VENTILATION
- NOT DESIGNED FOR CONTINUOUS OCCUPANCY

TYPES OF CONFINED SPACES

CONFINED SPACE HAZARDS

- ATMOSPHERE
 - FLAMMABLE GASES AND VAPORS
 - TOXIC GASES OR VAPORS
 - POSSIBLE ENGULFMENT
 - ELECTRICAL, MECHANICAL HAZARDS
 - Lockout/tagout
- ENTRAPMENT
- PHYSICAL
 - Heat, noise, slip/trip/fall

LOCKOUT / TAGOUT

- LOCKOUT AND TAGOUT ALL ELECTRICAL EQUIPMENT
- CLOSE ALL VALVES AND LOCKOUT
- BLANK OFF ALL LINES
- USE ONLY EXPLOSION-PROOF AND GROUND FAULT LIGHTING AND ELECTRICAL CORDS
- USE ONLY GROUNDED ELECTRICAL TOOLS

ESSENTIAL PROCEDURES

- MAKE SURE ALL PERSONNEL ARE PROPERLY TRAINED
 - Entry procedures
 - Use of safety equipment
- MAKE SURE ALL EQUIPMENT IS IN GOOD WORKING ORDER
- IF A PERMIT IS REQUIRED, HAVE ONE ISSUED BY THE PROPER PERSON

WHAT IF WE DO HAVE OUR EMPLOYEES ENTER A PRCS?

The Standard: See the individual topics listed below.

You must do the following:

- provide **DANGER SIGNS AND BARRIERS;**
- develop a **PERMIT-REQUIRED CONFINED SPACE PROGRAM;**

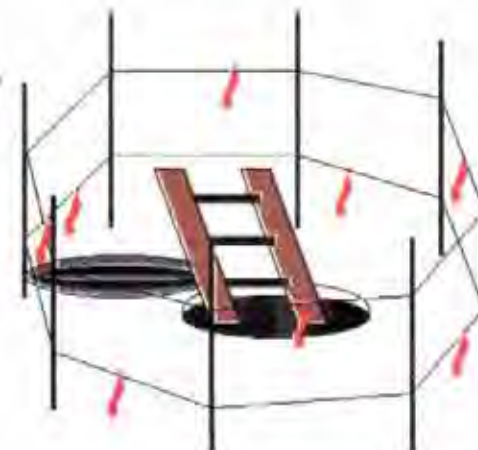
Discussion: See the individual topics listed above.

Danger Signs & Barriers

The Standard:(c)(2) If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

NOTE: A sign reading DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER or using other similar language would satisfy the requirement for a sign.

Discussion: Fairly self-explanatory in terms of the signage. Barriers need to be placed to protect entrants from vehicular and pedestrian traffic and/or materials from falling into the space. Additionally, if the space is like that of a manhole, the barriers will protect other employees from fall hazards presented by the opening (would also be required by 1910.23).



CONFINED SPACE WRITTEN PROCEDURE



ENTRY PROCEDURES

BEFORE ANYONE CAN ENTER A CONFINED SPACE:

- THE ATMOSPHERE MUST BE TESTED
- PROPER VENTILATION MUST BE PROVIDED
- THE ENTRY PERMIT (IF REQUIRED) MUST BE COMPLETED & POSTED AT SITE

ATMOSPHERIC HAZARDS

- TOO LITTLE OR TOO MUCH OXYGEN
- FLAMMABLE LIQUIDS, GAS, VAPORS
- TOXIC LIQUIDS, GAS, VAPORS
- AEROSOLS

WHERE?

- TEST AROUND OPENING OF CONFINED SPACE
- OPEN CONFINED SPACE AND TEST FROM THE TOP TO THE BOTTOM
- RECORD INFORMATION ON CONFINED SPACE PERMIT

WHY?

- TO FIND OUT WHAT HAZARDS EXIST
- TO MAKE SURE ANY HAZARDS FOUND HAVE BEEN REMOVED
- TO MAKE SURE NO NEW HAZARDS HAVE APPEARED DURING PRE-ENTRY PROCEDURES

GAS MONITOR



Orion™ Multigas Detector

[Reliable, easy to use and durable]

MSA

ORION

GAS MONITOR CALIBRATION

- MUST BE DONE ON A REGULAR BASIS
- ALL READINGS MUST BE RECORDED
- MUST BE DONE BY A TRAINED PERSON
- RECORDS MUST BE KEPT ON FILE

COMMON DANGEROUS GASES

- H_2S - HYDROGEN SULFIDE
- CO - CARBON MONOXIDE
- SO_2 - SULFUR DIOXIDE

"Immediately dangerous to life or health (IDLH)" means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

NOTE: Some materials -- hydrogen fluoride gas and cadmium vapor, for example -- may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

"Inerting" means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

NOTE: This procedure produces an IDLH oxygen-deficient atmosphere.

OXYGEN LEVEL

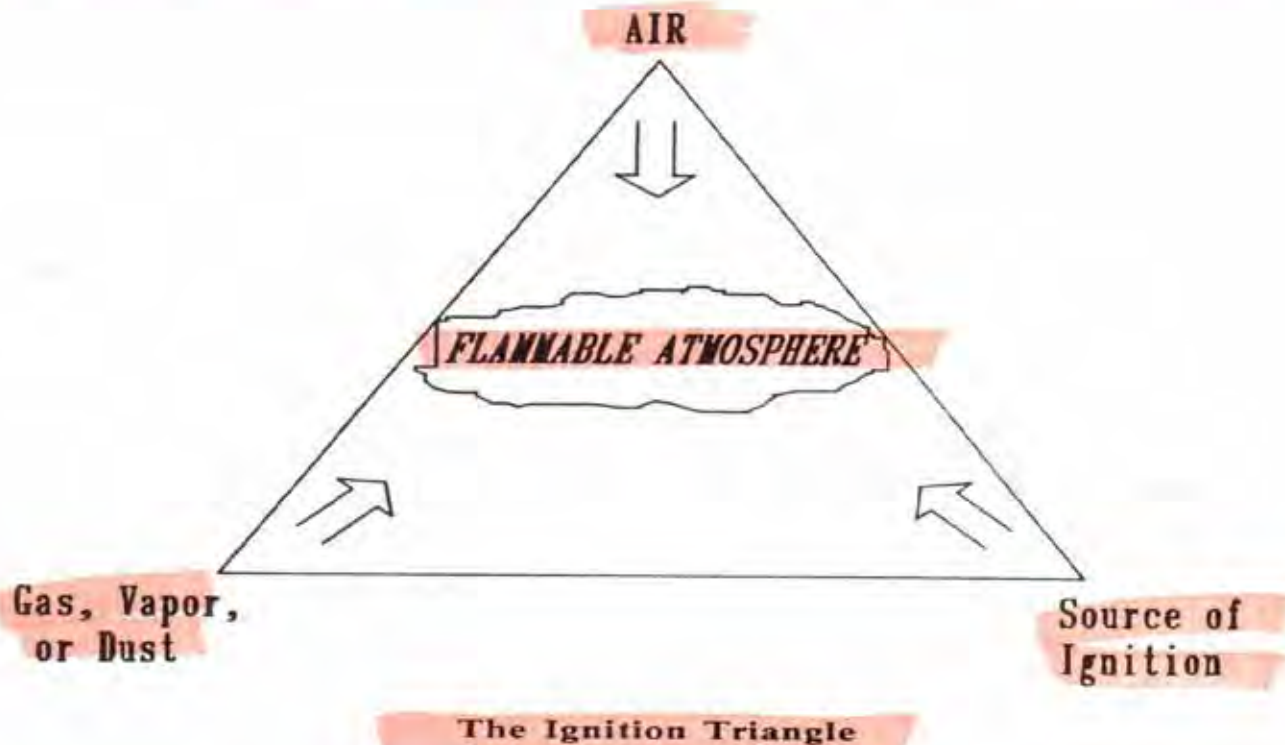
- NORMAL AIR - 20.8%
- LESS THAN 19.5% - HAZARDOUS
- ABOVE 23% - OXYGEN-ENRICHED

COMBUSTIBLES

2. FLAMMABLE ATMOSPHERES:

Two things make an atmosphere flammable: 1) the oxygen in air; and 2) a flammable gas, vapor, or dust in the proper mixture. Different gases have different flammable ranges. If a source of ignition (e.g., a sparking or electrical tool) is introduced into a space containing a flammable atmosphere, an explosion will result.

An oxygen-enriched atmosphere (above 21%) will cause flammable materials, such as clothing and hair, to burn violently when ignited. Therefore, never use pure oxygen to ventilate a confined space. Ventilate with normal air.



CONTROL THE ATMOSPHERE

- USING MECHANICAL AND/OR NATURAL VENTILATION
- USING AIR PURIFYING RESPIRATORS

MECHANICAL



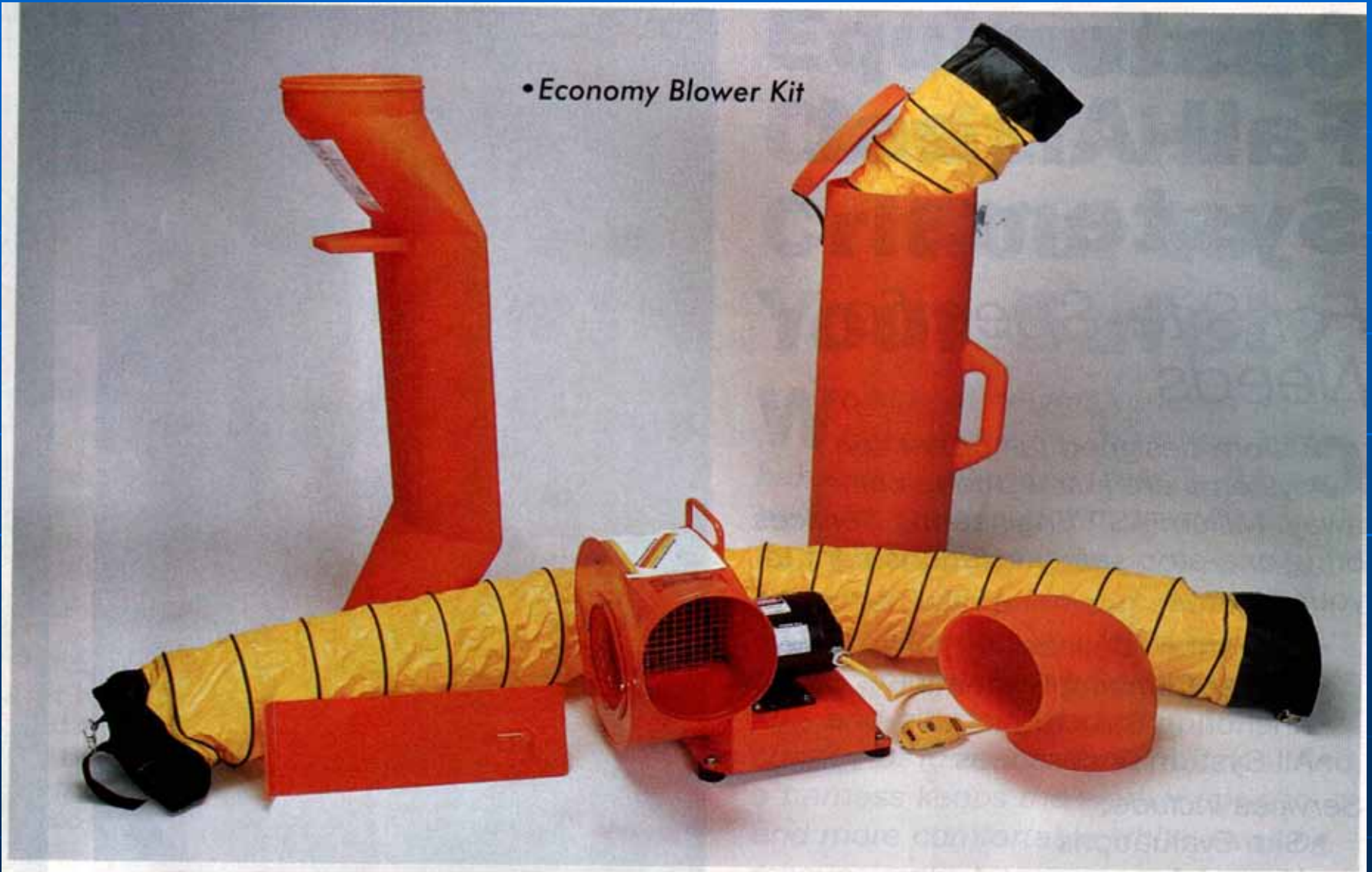
Whether fresh air needs to be supplied or toxic and noxious fumes need to be removed, the Mopeco Portable Ventilating Blower is equal to either task. The combination of power and portability makes it a rugged, reliable worker that's easy to transport, set up and use. Put it to work at any enclosed or confined work area and it stays on the job--to help you stay on the job.

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VENTILATOR

• Economy Blower Kit



AIR LINE AND SCBA

- MUST BE A POSITIVE PRESSURE RESPIRATOR
- AIR MUST BE OF BREATHING QUALITY
- UNIT MUST BE INSPECTED BEFORE EACH USE
- MASK MUST BE IN PLACE BEFORE YOU ENTER THE CONFINED SPACE
- NEVER REMOVE YOUR MASK WHILE YOU ARE IN THE CONFINED SPACE

AIR RESPIRATOR

SCBA



AIR PURIFYING RESPIRATORS

3M 5000 Series—Truly Maintenance

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for a wider view

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Half-mask



Full-Facepiece

SAMPLE ENTRY PERMIT

CONFINED SPACE ENTRY PERMIT			
Good on This Date Only: _____ From: _____ AM _____ PM _____ To: _____ AM _____ PM _____			
Location: _____			
Workers Authorized Entry:	Stand-By/Attendant:	Fire Watch: (Hot Work Only)	
_____	_____	_____	
_____	_____	_____	
Description of Job or Special Procedures: _____			

EMPLOYEE TRAINING AND PRE-ENTRY BRIEFING:			
1. Safe Entry and Rescue Training Conducted on:		_____ (Date)	
2. Mandatory Pre-Entry Briefing Conducted on:		_____ (Date)	
3. Does This Job Require Special Training?		Yes: _____ No: _____ Type: _____	
CONTRACTOR NOTIFICATION:			
Contractor Notified of: Permit Conditions: _____		Potential Hazards: _____ N/A _____	
VESSEL PREPARATION:		(Note: Insert Time in Block Checked)	
1. Work Area Isolated with Signs/Barriers?	Yes _____ No _____	N/A _____	
2. All Energy Sources Locked/Tagged Out?	Yes _____ No _____	N/A _____	
3. All Input Lines Capped/Blinded?	Yes _____ No _____	N/A _____	
4. Vessel Contents Drained/Flushed/Neutralized?	Yes _____ No _____	N/A _____	
5. Vessel Cleaned/Purged?	Yes _____ No _____	N/A _____	
6. Ventilation Provided 30 Minutes Before Entry?	Yes _____ No _____	N/A _____	
PRE-ENTRY ENVIRONMENTAL TESTING:	READING:	TIME:	INITIALS:
1. Test for Oxygen Content:	_____ %O ₂	_____	_____
2. Test for Flammable Concentration:	_____ %LEL	_____	_____
3. Test for Toxic Concentration:	_____ ppm of: _____	_____	_____
4. Test for Heat Stress Hazard:	_____ °F _____ °C	_____	_____
EMERGENCY/RESCUE PROCEDURES:			
1. Location of Written Emergency/Rescue Plan: _____			
2. Type of Emergency/Rescue Team Required: On-Site: _____ Off-Site: _____ Phone No. _____			
SAFETY EQUIPMENT:			
Personal Protective Equipment Required:		Area Safety Equipment Required:	
_____		_____	
_____		_____	
_____		_____	
1. Self-Contained Breathing Apparatus Required?		Yes _____ No _____ Type: _____	
2. Portable Atmospheric Monitor Required?		Yes _____ No _____ Type: _____	
PERMIT AUTHORIZATION:			
I certify that I have inspected the work area for safety and reviewed all safety preparations recorded on this permit.			
Permit Authorized by (Signature) _____			

REQUIRED ON PERMIT

Atmospheric

Checks:

Time: _____

Tester's Signature: _____

O₂ _____ %

Explosive _____ %

Toxic _____ %

SAFE ENTRY EQUIPMENT

- TRIPOD

- INSPECT before use, after fall arrest, monthly

- SELF-RETRACTING LIFELINE

- INSPECT annually

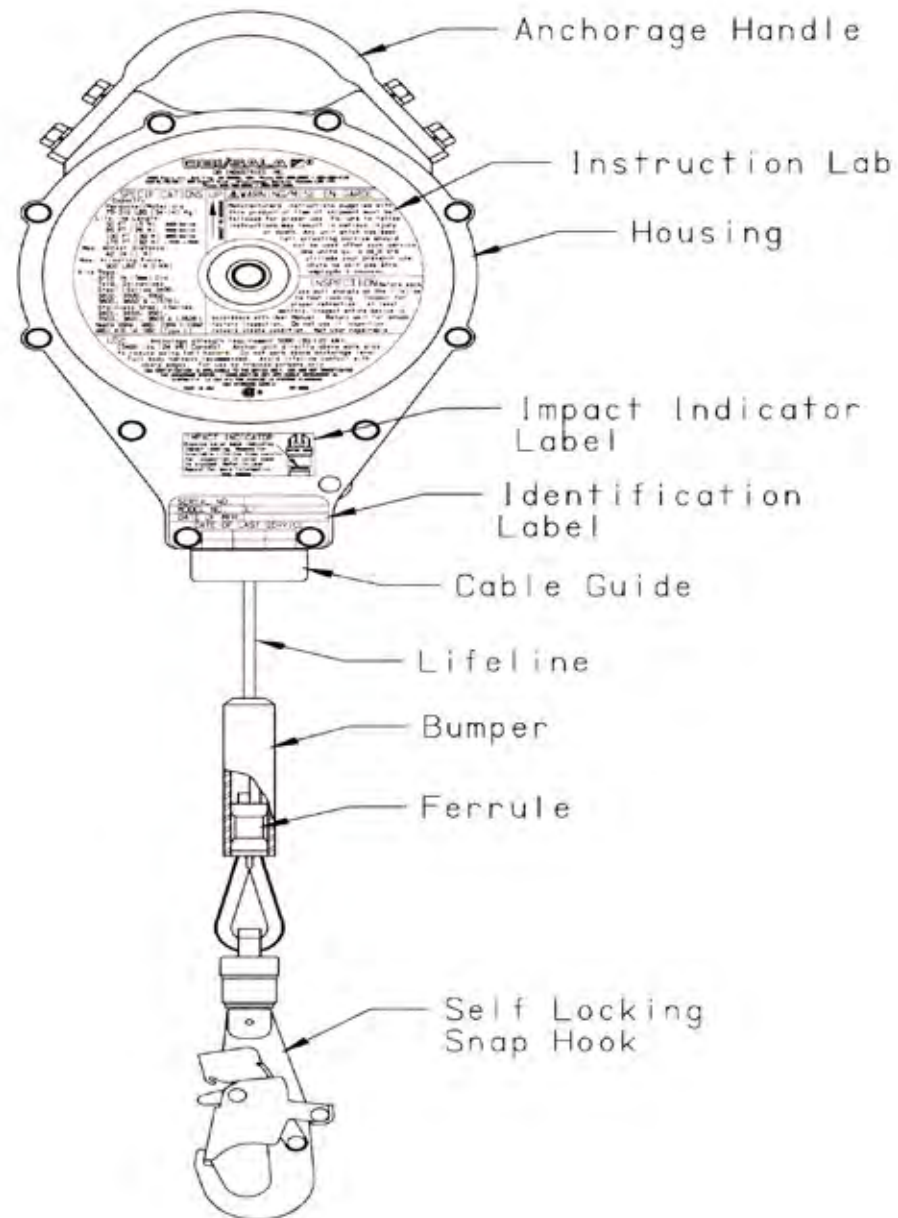
- RETRIEVAL DEVICE

- INSPECT impact indicator

- FULL-BODY HARNESS

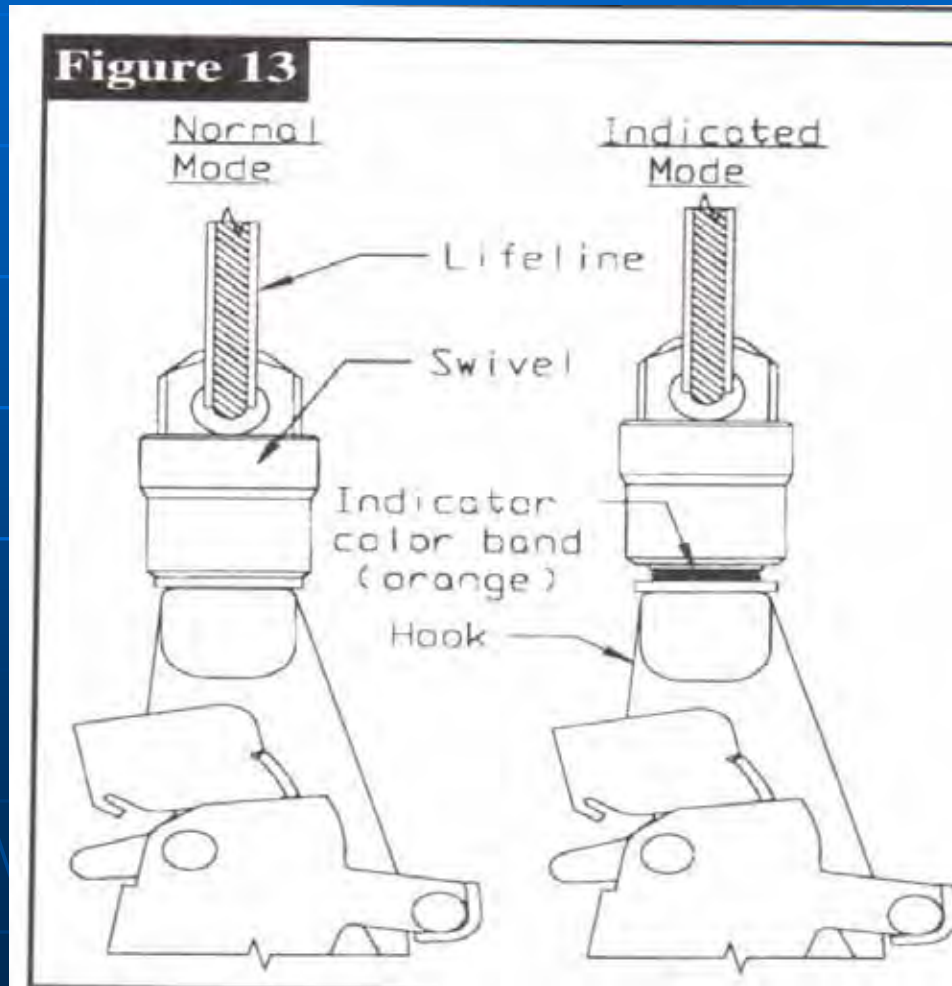
- DESTROY after fall arrest
 - INSPECT after exposure harsh or hazardous environments

SELF RETRACTING LIFELINE



INSPECTION REQUIREMENT

IMPACT INDICATOR



REQUIRED PPE

- FULL RAIN SUIT OR COVERALLS
- RUBBER BOOTS
- RUBBER GLOVES
- HARD HAT
- EYE PROTECTION
- EAR PROTECTION

PREPARING TO MAKE AN ENTRY

- GATHER ALL NECESSARY EQUIPMENT
- CHECK ALL EQUIPMENT TO ASSURE PROPER WORKING ORDER
- NECESSARY TRAFFIC CONTROL EQUIPMENT
- NECESSARY ENTRY PERMITS
- PROPER NUMBER OF PERSONNEL

UPON ARRIVAL AT SITE

- SET UP PROPER TRAFFIC CONTROL
- PERFORM INITIAL ATMOSPHERIC TEST OF CONFINED SPACE
- ENTER INFORMATION ON ENTRY PERMIT
- SET UP TRIPOD, LIFE LINE, RETRIEVAL DEVICE
- SET UP VENTILATOR AND BEGIN VENTILATION
- SUIT UP ENTRANT
- RE-CHECK SPACE AND CONTINUE MONITORING DURING THE ENTIRE ENTRY

ATTENDANT'S DUTIES

- KNOW WHO IS IN THE SPACE
- KEEP UNAUTHORIZED PEOPLE OUT OF THE AREA
- RECOGNIZE EARLY SYMPTOMS OF DANGER IN THE SPACE
- MAINTAIN CLEAR ACCESS TO AND FROM THE SPACE
- STAY IN VERBAL AND VISUAL CONTACT WITH THE ENTRANT AT ALL TIMES
- CONTINUE TO MONITOR THE SPACE WHILE SOMEONE IS IN THERE

ADDITIONAL DUTIES

- CALL FOR RESCUE HELP IF NEEDED
- MUST NOT ATTEMPT RESCUE UNLESS PROPERLY TRAINED
- MAY PERFORM A RESCUE FROM OUTSIDE THE SPACE
- ASSIST RESCUERS AND VICTIMS

ENTRY SUPERVISORS

ISSUE CONFINED SPACE PERMITS

MUST KNOW HAZARDS

**VERIFY THAT ALL TESTS HAVE
BEEN CONDUCTED**

**VERIFY PROCEDURES AND
EQUIPMENT ARE IN PLACE BEFORE
SIGNING PERMIT**

**TERMINATE ENTRY IF NECESSARY
CANCEL PERMITS**

**VERIFY AVAILABILITY OF RESCUE
SERVICES AND MEANS FOR
SUMMONING**

**REMOVE UNAUTHORIZED
INDIVIDUALS WHO ENTER**

COORDINATE SHIFT CHANGES

OSHA REQUIREMENTS

- THREE MAN RULE
 - ONE MAN DOWN – TWO MEN UP
- ATTENDANT'S RESPONSIBILITIES
 - KNOW THE HAZARDS
 - MAINTAIN VISUAL AND VERBAL CONTACT
 - DO NOT ENTER THE SPACE
- REFER TO 29 CFR 1910.146

An Example of Confined Space Teamwork

The Epitome of Confined Space Entry

The attached slides show a crew accomplishing their assigned tasks on a confined space job.

Notice in the first slide the donning of PPE, then the attention displayed by the attendant, then the use of lighting inside the space, identification of the hazard, retrieval method employed, etc, etc.

Do you think they filed a completed permit?



Donning of PPE

A photograph showing a person from a high angle, crawling on their hands and knees on dark, uneven ground. The person is wearing a brown jacket and a large yellow bag is slung over their back. They are moving towards a dark, circular opening in the ground. The scene is set outdoors with dry, brownish vegetation. A blue text box is overlaid on the bottom left of the image.

**Attention displayed
by the attendant**



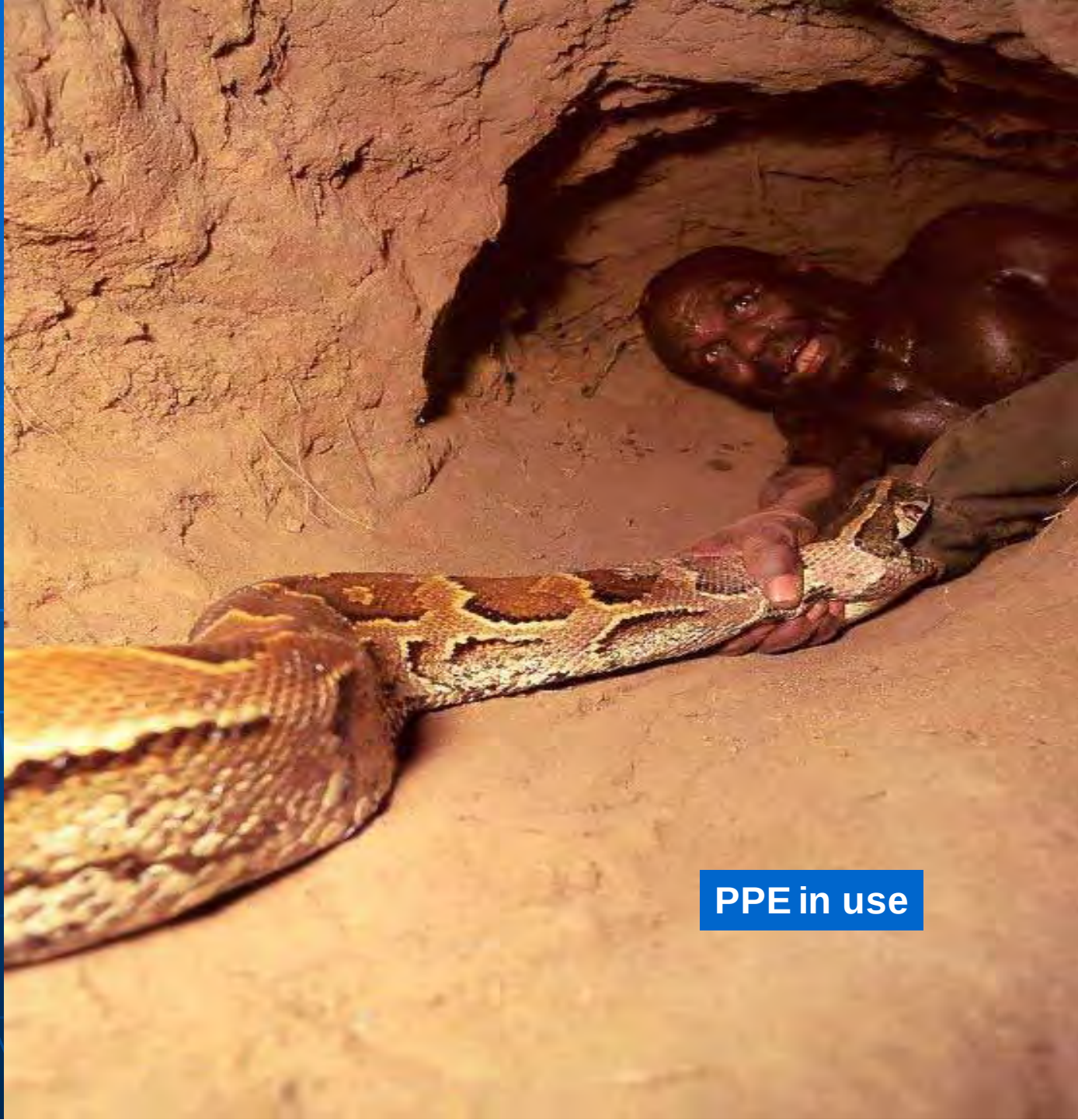
Use of lighting inside the space

Hazard Identification

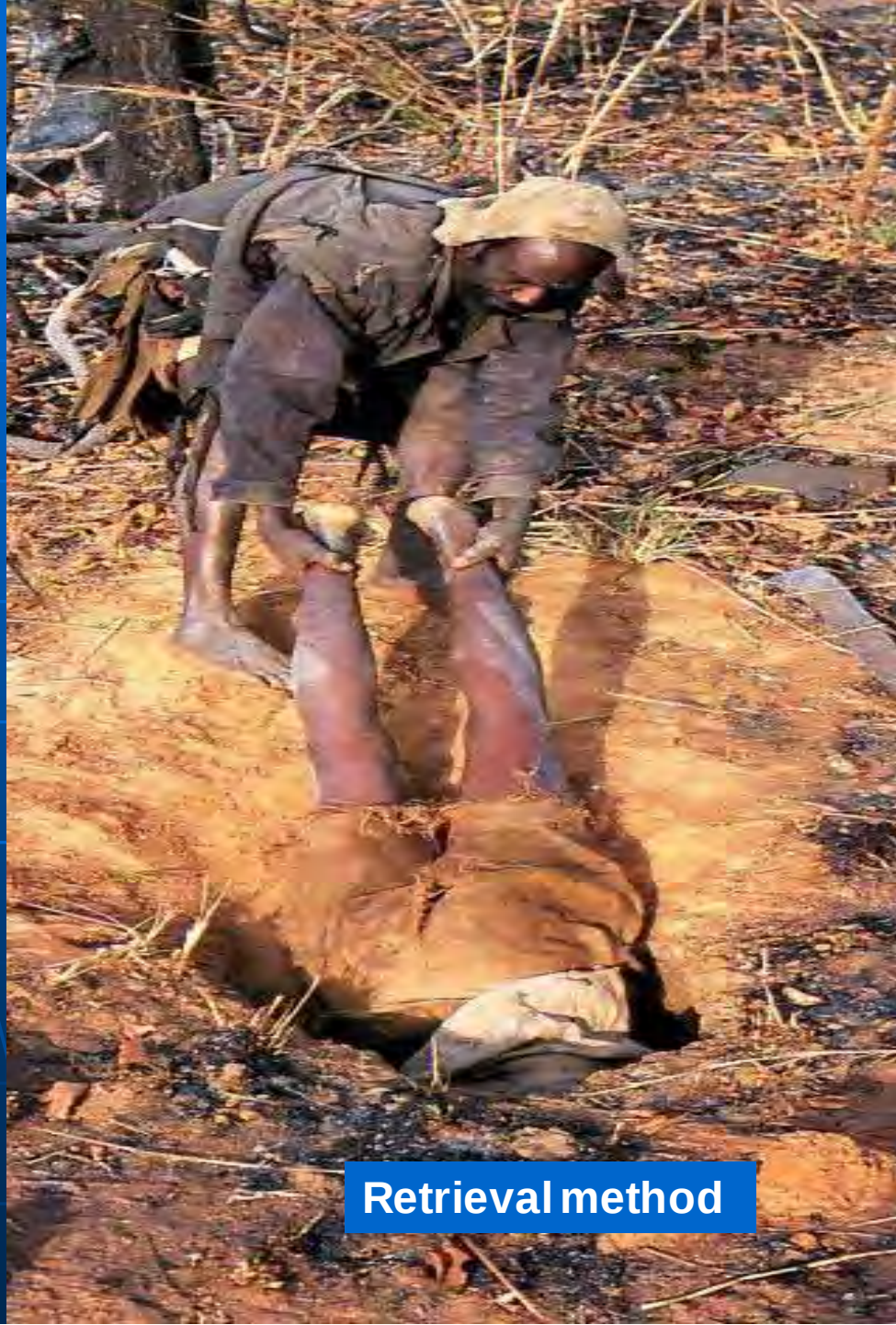


Hazard encountered

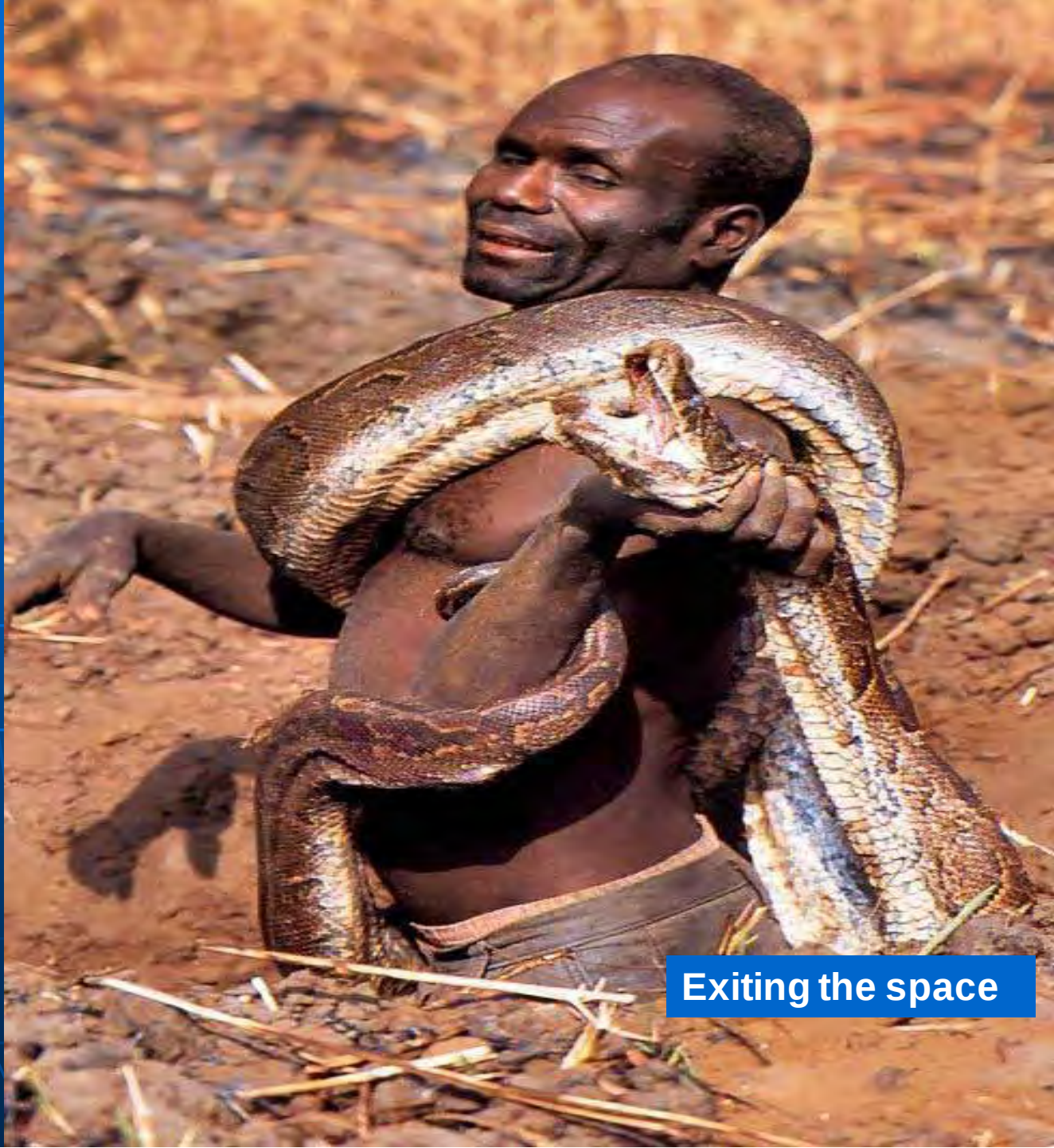




PPE in use



Retrieval method



Exiting the space



Crew exiting job site

REFERENCES

- WEST VIRGINIA RURAL WATER ASSOCIATION

- <http://www.wvrwa.org>

- WEF WEB SITE AND LIBRARY

- <http://www.wef.org/Home>

- OSHA AND NIOSH WEB SITES

- <http://www.osha.gov>

- <http://www.cdc.gov/niosh>

- FEDERAL HIGHWAY ADMINISTRATION

- <http://www.fhwa.dot.gov>

HAZARD COMMUNICATION

WRITTEN PROGRAM

- n **PURCHASING DEPARTMENT**
 - 1. **RULES RELATED TO THE PURCHASE OF CHEMICALS**
 - 2. **CONTROL OF INVENTORY TO PREVENT OVERSTOCK OR BAD SHELF LIFE**
 - 3. **STORAGE AND DISPOSAL REGULATIONS**

WRITTEN PROGRAM

- CONTINUED -

n DEPARTMENT SUPERVISORS

- 1. RESPONSIBLE FOR HOW CHEMICALS ARE HANDLED, LABELED, STORED, TRANSPORTED AND DISPOSED**
- 2. DEPARTMENT LEVEL TRAINING**
- 3. MAINTAIN CHEMICAL INVENTORY**
- 4. MSDS MUST BE MADE READILY AVAILABLE**
- 5. PPE USAGE**

WRITTEN PROGRAM

- CONTINUED -

n LABELING SYSTEM

- 1. ALL HAZARDOUS MATERIAL CONTAINERS MUST BE LABELED**
- 2. LABELING SYSTEM FOR IN HOUSE CONTAINERS MUST BE CAREFULLY DESCRIBED IN THE MSDS**
- 3. WRITTEN PROCEDURES FOR REVIEWING AND UPDATING LABEL INFORMATION AS NECESSARY**

WRITTEN PROGRAM

- CONTINUED -

n MATERIAL SAFETY DATA SHEET

- 1. ALL MSDS INFORMATION SHOULD BE INCLUDED IN THE WRITTEN PLAN**
- 2. ALL CHEMICALS MUST HAVE MSDS INFORMATION**
- 3. INFORMATION NEEDS TO BE MAINTAINED ON A REGULAR BASIS**

WRITTEN PROGRAM - CONTINUED -

n TRAINING

- 1. WRITTEN DESIGNATION OF PERSON RESPONSIBLE FOR TRAINING**
- 2. ALL ELEMENTS OF TRAINING LISTED IN WRITTEN PLAN**
- 3. EMPLOYEE'S MUST BE TRAINED OVER ALL NEW CHEMICALS THAT ENTER THE WORK ENVIRONMENT**
- 4. TRAINING IS DOCUMENTED**

WRITTEN PROGRAM

- CONTINUED -

1. **SUBCONTRACTORS AND SERVICE PEOPLE NEED TO BE AWARE OF ALL HAZARDOUS MATERIALS ON SITE**
2. **EMERGENCY AND ACCIDENT TRAINING**
3. **PROPER CHEMICAL HANDLING, USAGE, HANDLING, DISPOSAL AND TRANSPORTATION**
4. **PPE REQUIREMENTS**

DETERMINING CHEMICAL HAZARDS

- n **FLAMABILITY**
- n **REACTIVITY**
- n **EXPLOSIVE**
- n **OXIDIZER**
- n **HEALTH HAZARDS**
- n **PHYSICAL HAZARDS**
- n **OTHERS**

MSDS SPECIFIC INFORMATION

- n **CHEMICAL NAME**
- n **MANUFACTURER**
- n **EMERGENCY PHONE NUMBERS**
- n **CHEMICAL HAZARDS**
- n **ROUTES OF ENTRY INTO THE BODY**
- n **HAZARD CODE**
- n **FIRST AID MEASURE IF EXPOSED**
- n **FIRE FIGHTING MEASURES**
- n **EXPOSURE CONTROL**

MSDS SPECIFIC INFORMATION

- CONTINUED -

- n **TOXICOLOGICAL & ECOLOGICAL**
- n **TRANSPORTATION**
- n **RELEASE MEASURES AND PPE**
- n **REGULATORY INFORMATION**
- n **DISPOSAL**
- n **PROPER HANDLING AND STORAGE**
- n **STABILITY AND REACTABILITY**

LABELS AND LABELING

- n LABELS MUST BE IN ENGLISH AND ANY OTHER LANGUAGE USED BY EMPLOYEES**
- n APPROPRIATE HAZARD WARNING**
- n CHEMICAL MANUFACTURE INFORMATION**
- n SIGNS, PLACECARDS, SYMBOLS MAY BE USED IN PLACE OF LABELS AS LONG AS THE INFORMATION IS CLEARLY**

PERSONAL PROTECTIVE EQUIPMENT

- n ASSESSMENT OF ALL HAZARDS
IN THE WORKPLACE**
- n SAFEGUARDS TO REDUCE
HAZARDS**
- n THE USE OF PPE IS NOT AN
OPTION**
- n SPECIFIC TRAINING SHOULD BE
TAKEN FOR PERSONS USING
COMPLEX PPE SUCH AS
RESPIRATORS**

CHLORINE SAFETY

WRITTEN PROCEDURES REQUIRED

- n CHANGING CHLORINE CYLINDERS**
- n EACH WORKER SHALL RECEIVE A COPY OF THE EMERGENCY PLAN**
- n SINGLE WORKER PLAN**
- n PROCEDURES POSTED IN WORK AREA**
- n ALARM, VENTILATION, WORKER ALONE PLAN**

WRITTEN PROCEDURES REQUIRED - CONTINUED-

- n **FIRE/RESCUE AGENCY
FAMILIARIZATION**
- n **COMMUNICATIONS**

TRAINING

- n **APPROPRIATE, ONGOING TRAINING**
- n **USE, MAINTENANCE, STORAGE OF RESPIRATORY PROTECTION/PPE**
- n **FOLLOW UP TRAINING**
- n **DOCUMENTATION**

PHYSICAL HAZARDS

- n **GREENISH YELLOW GAS,
PUNGENT ODOR**
- n **CHLORINE WILL REACT
VIOLENTLY WITH ACETYLENE,
ETHER, TURPENTINE AND OTHER
CHEMICALS**
- n **CHLORINE HIGHLY TOXIC**
- n **HIGH DOSES CAN CAUSE DEATH**

CHLORINE ROOM

- n CHAIN GAS CYLINDERS**
- n VENTILATION**
- n LABEL CONTAINERS**
- n DON'T BREATHE FUMES**
- n AMMONIA TO DETECT LEAKS**
- n IN CASE OF MAJOR LEAKS, LEAVE THE ROOM AND CALL 911**

WARNING SYSTEM

- n **INSTALL CHLORINE DETECTOR**
- n **WARNING SYSTEM
INSIDE/OUTSIDE**
- n **IF NO WARNING SYSTEM,
REQUIRES WEARING OF
PRESSURE DEMAND OR AIR
SUPPLIED RESPIRATORS**

VENTILATION

- n **30 AIR CHANGES PER HOUR FOR SWIMMING POOL OPERATIONS**
- n **20 AIR CHANGES PER HOUR FOR WATER TREATMENT**
- n **EXHAUST PICKUP FLOOR LEVEL**
- n **MANUAL CONTROL**
- n **EXHAUST OUTLETS OUTSIDE AWAY FROM AIR INTAKES**

EMERGENCY EXITS

- n **DOORS OPEN OUTWARD, PANIC HARDWARE, NOT SELF LOCKING**
- n **200 SQ FEET - MORE THAN ONE EXIT**
- n **SEALED VIEWING WINDOW**
- n **ALL OPENINGS SEALED, OTHER THAN VENTILATION AND EXIT/ENTRANCE**

EQUIPMENT

- n EYEWASH STATION**
- n DRENCH SHOWER**
- n VALVE STEM WRENCH KEPT ON VALVE STEM OR CYLINDER IN USE**
- n CYLINDERS SECURED WHEN CYLINDER NOT CONNECTED TO CHLORINATOR**
- n CYLINDER VALVE CAPS IN PLACE**

EQUIPMENT

- CONTINUED -

- n LEAK TEST KIT WITH AMMONIUM HYDROXIDE**
- n REPAIR/CAPPING KIT
AVAILABLE FOR 100 & 150#,
ONE TON OR GREATER**
- n CHLORINATOR AUTOMATICALLY
CEASE OPERATION WITH THE
SHUTDOWN OF RECIRCULATING
PUMPS**

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- n CLOTHING**

- n RESPIRATORY PROTECTION**

 - A. 1 WORKER**

 - B. 2 WORKERS**

- n OVER 150 POUNDS -BOTH OPERATOR AND OBSERVER WEAR PRESSURE-DEMAND OR AIR SUPPLIED WITH FULL FACE SHIELD**

FIRST AID

- n **INHALATION**

- n **SKIN CONTACT**

- n **EYE CONTACT**

- n **INGESTION**

FIRE FIGHTING

- n **FIRE/EXPLOSION HAZARDS**
- n **EXTINGUISHERS**
 - **CLASS A – WATER**
 - **CLASS BC – SODIUM BICARBONAT**
- n **DO NOT USE CLASS ABC – HALON OR AMMONIUM-BASED**
- n **MOVE CONTAINERS IF IT CAN BE DONE WITHOUT RISK**

FIRE FIGHTING

- CONTINUED -

- n COOL CONTAINERS WITH WATER**
- n EVACUATION OUT TO ONE-HALF MILE**