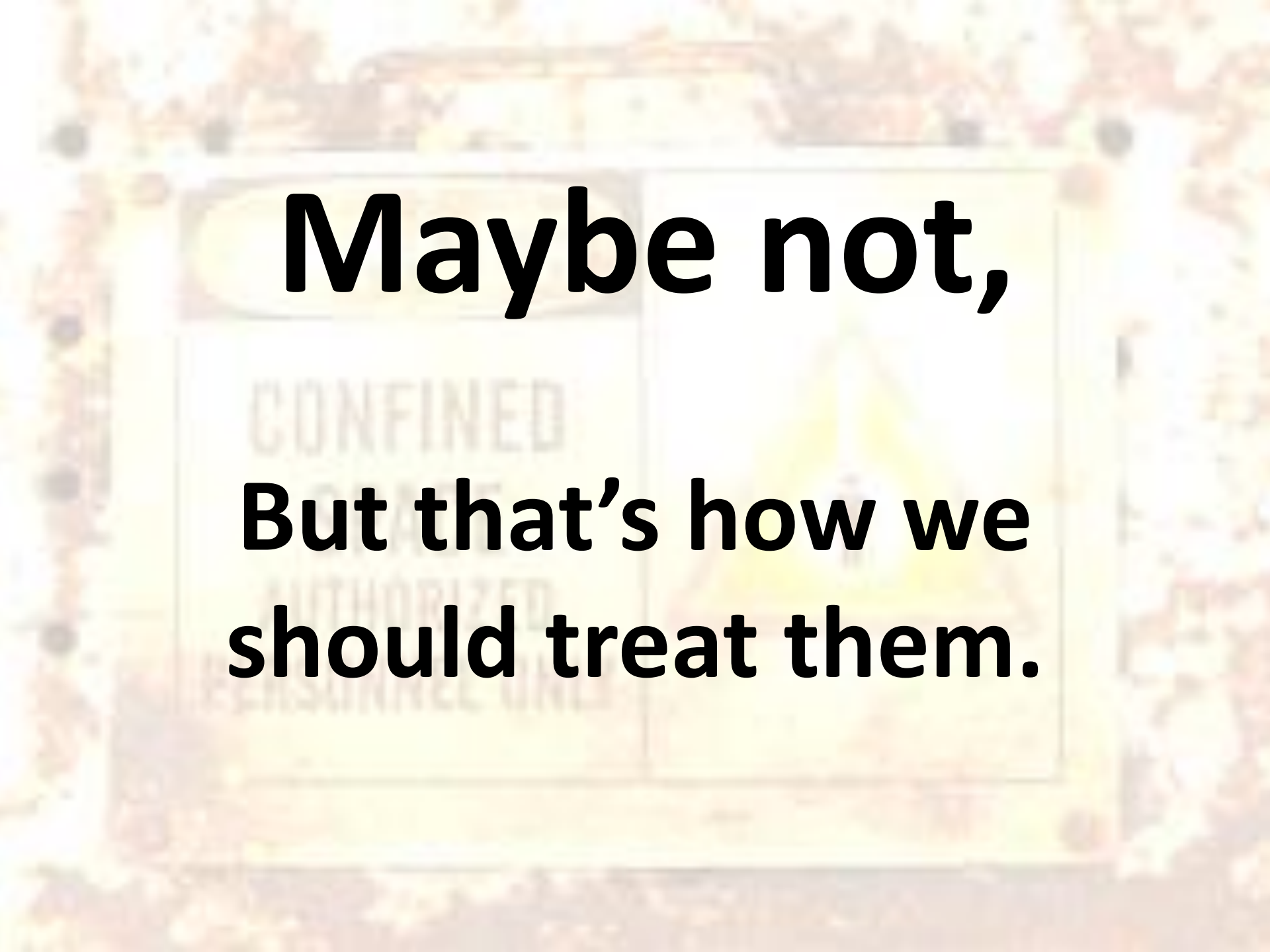


A close-up, slightly blurred photograph of a grizzly bear's face, focusing on its open mouth and sharp teeth. The bear's fur is brown and shaggy, and its eyes are partially visible. The text is overlaid in a bold, yellow, 3D-style font.

**Is there a Grizzly
in your
Confined Space?**



**Maybe not,
But that's how we
should treat them.**

Why do we have a Confined Space standard?

- 122 confined space accidents each year lead to 176 fatalities.
- 60% of the fatalities occurred during rescue attempts.

Intended to protect workers from:

- toxic, flammable, explosive, or asphyxiating atmospheres
- possible engulfment
- any other recognized serious hazard (e.g. - hazardous energy)
- **The standard focuses on areas with immediate health or safety risks, denoting them as “Permit Required Confined Space”**

In other words:

When it comes to confined spaces, you're guilty until proven innocent.

OSHA assumes every confined space you have requires a permit to get into unless you prove otherwise.

You've got to prove AND document the status of every confined space on your property.

Common Confined Spaces

- Scale Pit
- Shredder
- Baler/Logger
- Bag House
- Oil/Water Separator
- Tank
- Z-box



Cyclone



Trommel



Baler Access Door



How to Identify Confined Spaces

1. Limited Openings for Entry and Exit; AND
2. Is large enough and so configured that an employee can **bodily enter** and perform assigned work; AND
3. Not Designed for Continuous Worker Occupancy

Definition of “Bodily Enter”

- **Bodily enter** means the action by which a person passes through an opening into a confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Dangerous Combinations

- Presence of all three confined space characteristics can complicate the situation.
- Working in and around the space.
- Rescue operations during emergencies.
- Worsened conditions due to work activities:
 - Welding and cutting
 - Cleaning with solvents, use of other chemicals
 - Use of gas-powered equipment

Permit Required Confined Space

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section; or
4. Contains any other recognized serious safety or health hazard.

Confined Space


1. Limited Openings for Entry & Egress
2. Large enough to bodily enter and perform work
3. Not designed for continuous worker occupancy

Permit-Required Confined Space

1. Hazardous atmospheres
2. Engulfment
3. Trapped or asphyxiated by inwardly converging walls or by a floor
4. Contains any other recognized serious safety or health hazard

Hazardous Atmosphere

1. Flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL);
2. Airborne combustible dust at a concentration that meets or exceeds its LFL;
3. Atmospheric oxygen concentration below 19.5% or above 23.5%;
4. Atmospheric concentrations of any substance for which a dose or PEL is published in Subpart G or Z of this Part and which could result in employee exposure in excess of its dose or PEL;
5. Any other atmospheric condition that is IDLH

The background of the slide features a faded, large-scale image of a map of the United States. Overlaid on the map is a rectangular warning sign with a yellow background and a black border. The sign contains the text "CONFINED SPACE" at the top, followed by "AUTHORIZED PERSONNEL ONLY" in a larger font. A red diagonal line runs across the sign from the bottom left to the top right. The text on the slide is centered and reads:

Employers are required to
evaluate workplaces to
determine if any spaces are
permit-required confined
spaces.

Signs



Employees must be informed of the existence of confined spaces through the use of signs and/or labels.

Entering Permit Spaces

- If employees will enter permit spaces, the employer shall develop and implement a written permit space program
- The written program shall be available for inspection by employee and their authorized representatives

Contractor

- Obtain any available information regarding permit space hazards and entry operations
- Coordinate entry operations with host employer
- Inform the host employer of any hazards confronted or created in permit spaces, either through debriefing or during entry operations

Hazards of Confined Spaces

- Oxygen Deficient Atmospheres
- Oxygen Enriched Atmospheres
- Flammable Atmospheres
- Toxic Atmospheres
- Temperature Extremes
- Engulfment Hazards
- Noise, Slick/Wet Surfaces, Falling Objects

Oxygen Deficient Atmospheres

19.5 %	Minimum acceptable oxygen level.
15 - 19%	Decreased ability to work strenuously. Impair coordination. Early symptoms.
12-14%	Respiration increases. Poor judgment.
10-12%	Respiration increases. Lips blue.
8-10%	Mental failure. Fainting. Nausea Unconsciousness. Vomiting.
6-8%	8 minutes - fatal, 6 minutes - 50% fatal 4-5 minutes - possible recovery.
4-6%	Coma in 40 seconds. Death

Oxygen Deficient Atmospheres

- Exposure to atmospheres containing 12% or less oxygen will bring about unconsciousness without warning and so quickly that individuals cannot help or protect themselves.

Oxygen Enriched Atmospheres

- Oxygen level above 23.5%.
- Causes flammable and combustible materials to burn violently when ignited.
- Hair, clothing, materials, etc.
- Oil soaked clothing and materials.
- Never use pure oxygen to ventilate.
- Never store or place compressed tanks in a confined space.



Flammable Atmospheres

- The byproducts of work procedures can generate flammable or explosive conditions within a confined space.



Confined Space Testing



FOUR-GAS DETECTOR

- Oxygen content
- Flammability / explosion potential
- Carbon monoxide
- Hydrogen sulfide

CRITICAL ISSUES

- Training
- Procedures
- Calibration

Testing The Atmosphere

- Verify presence of safe work atmosphere.
- Test all areas of a confined space.
 - Top, Middle, Bottom
- Methane is lighter than air.
- Carbon Monoxide is the same as air.
- Hydrogen Sulfide is heavier than air.
- Oxygen Deficiency.

Lockout/Tagout

- First option to eliminate hazards.
- Locking and tagging out electrical sources.
- Blanking and bleeding pneumatic and hydraulic lines.
- Disconnecting mechanical drives and shafts.
- Securing mechanical parts.
- Locking and tagging out shutoff valves.

Ventilation

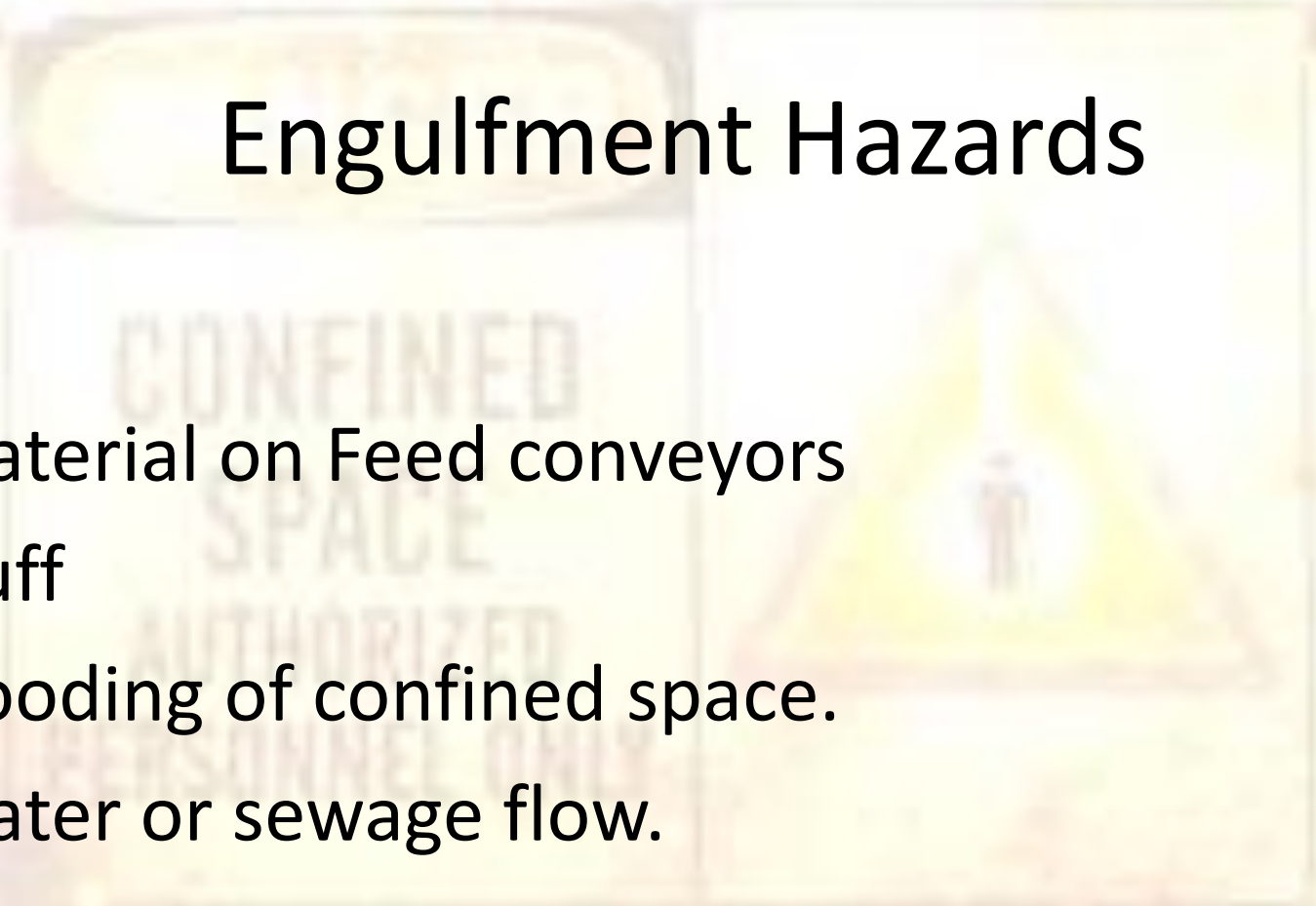
- Must be aware of hazards you are trying to correct in the confined space.
- Air intake in a safe location to draw fresh air only.
- Continuous ventilation whenever possible.
- Retest the confined space before entry.

Ventilation Option



Engulfment Hazards

- Material on Feed conveyors
- Fluff
- Flooding of confined space.
- Water or sewage flow.



Authorized Entrants

Entrants must:

- Know the hazards they are facing
- Be able to recognize signs and symptoms of exposure
- Understand the consequences of exposure to hazards
- Communicate with attendants as necessary
- Alert attendants to warning signs or existence of a hazardous condition
- Exit when ordered or alerted

Attendants

Attendants must:

- Be aware of behavioral effects of potential exposures
- Maintain count and identity of entrants
- Remain outside the space until relieved
- Communicate with entrants
- Monitor activities inside and outside the space and order exit if required

Attendants (cont)

Attendants must:

- Summon rescuers is necessary
- Prevent unauthorized entry
- Perform non-entry rescue



**Attendants may NOT perform other duties
that interfere with their primary duty
to monitor and protect!**

Entry Supervisors

Entry Supervisors must:

- Issue confined space permits
- Know hazards
- Verify that all tests have been conducted
- Verify that all procedures and equipment are in place before signing a permit
- Terminate entry if necessary and cancel permits

Entry Supervisors (cont.)

- Verify availability of rescue services and means for summoning them
- Remove unauthorized individuals, terminate entry if necessary, and cancel permits
- Coordinate shift change

Permit Entry Systems

- Written permit signed by entry supervisor.
- Verifies pre-entry precautions have been taken and the space is safe to enter.
- Posted at entry to confined space.
- Specifies apparent hazards and corrective actions taken prior to entry.
- Requires termination of permit when task is completed or when new conditions exist.

Entry Permit Requirements

- Date, location, and name of confined space.
- Purpose of entry and known hazards.
- Duration of entry permit time.
- Authorized entrants, attendants, supervisors.
- Air testing results - signature of tester.
- Protective measures to be taken.
 - Ventilation, Isolation, Flushing
 - Lockout / Tagout, Purging

Entry Permit Requirements

- Name and phone numbers of rescue and emergency services.
- Communication procedures.
- Special equipment and procedures.
 - Personal protective equipment.
 - Alarm procedures.
 - Rescue equipment.
 - Respirators.

Training and Education

- All workers who must enter confined spaces
- All attendants and rescue team members.
- Prior to initial work assignment.
- Retraining:
 - Job duties change.
 - Change in permit-space program.
 - New hazards are present.
 - Job performance indicates deficiencies.

Training and Education

- Training and emergency drills should be conducted once a year or whenever the procedure or process changes
- Records for training must include:
 - Name of employee(s)
 - Signature of trainer(s)
 - Date(s) of training and
 - Must be retained for 3 years

Sample Confined-Space Entry Permit

ENTRY PERMIT

PERMIT VALID FOR 8 HOURS ONLY. ALL COPIES OF PERMIT WILL REMAIN AT
JOB SITE UNTIL JOB IS COMPLETED

DATE: - - SITE LOCATION and DESCRIPTION _____

PURPOSE OF ENTRY _____

SUPERVISOR(S) in charge of crews Type of Crew Phone # _____

COMMUNICATION PROCEDURES _____

RESCUE PROCEDURES (PHONE NUMBERS AT BOTTOM) _____

* BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED AND REVIEWED
PRIOR TO ENTRY*

REQUIREMENTS COMPLETED	DATE	TIME
Lock Out/De-energize/Try-out	_____	_____
Line(s) Broken-Capped-Blanked	_____	_____
Purge-Flush and Vent	_____	_____
Ventilation	_____	_____
Secure Area (Post and Flag)	_____	_____
Breathing Apparatus	_____	_____
Resuscitator - Inhalator	_____	_____
Standby Safety Personnel	_____	_____
Full Body Harness w/"D" ring	_____	_____
Emergency Escape Retrieval Equip	_____	_____
Lifelines	_____	_____
Fire Extinguishers	_____	_____
Lighting (Explosive Proof)	_____	_____
Protective Clothing	_____	_____
Respirator(s) (Air Purifying)	_____	_____
Burning and Welding Permit	_____	_____

Note: Items that do not apply enter N/A in the blank.

**RECORD CONTINUOUS MONITORING RESULTS EVERY 2 HOURS

CONTINUOUS MONITORING**	Permissible	Entry Level
TEST(S)	TO BE TAKEN	
PERCENT OF OXYGEN	19.5% to 23.5%	_____
LOWER FLAMMABLE LIMIT	Under 10%	_____
CARBON MONOXIDE	+35 PPM	_____
Aromatic Hydrocarbon	+ 1 PPM * 5PPM	_____
Hydrogen Cyanide	(Skin) * 4PPM	_____
Hydrogen Sulfide	+10 PPM *15PPM	_____
Sulfur Dioxide	+ 2 PPM * 5PPM	_____
Ammonia	*35PPM	_____

* Short-term exposure limit: Employee can work in the area up to 15 minutes.

+ 8 hr. Time Weighted Avg.: Employee can work in area 8 hrs (longer with appropriate respiratory protection).

REMARKS:

GAS TESTER NAME	INSTRUMENT(S)	MODEL	SERIAL &/OR
& CHECK #	USED	&/OR TYPE	UNIT #
_____	_____	_____	_____
_____	_____	_____	_____

SAFETY STANDBY PERSON IS REQUIRED FOR ALL CONFINED SPACE WORK				
SAFETY STANDBY CHECK # CONFINED				
PERSON(S) SPACE CHECK # SPACE CHECK #				
ENTRANT(S) ENTRANT(S)				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

SUPERVISOR AUTHORIZING - ALL CONDITIONS SATISFIED

DEPARTMENT/PHONE _____

AMBULANCE 2800 FIRE 2900 Safety 4901 Gas Coordinator 4529/5387

Reclassification Form for Permit-Required Confined Space For Potential Lockout Hazards Only

Permit Confined Space can be reclassified into a non-permit confined space if:

1. The space does not contain actual or potential atmospheric hazards:

Examples: If you are torching or welding you could create an atmospheric hazard. If you are welding or torching complete both sides of this form.

If you are using any chemicals then the space is permit required.

If you must enter the permit confined space to lockout, tagout, blankout or block any hazard then a confined space entry permit must be completed.

Permit is valid only while the confined space remains free from hazards. If hazards arise during the course of entry, the space be evacuated immediately and re-evaluated for hazards.

The reclassification is valid only for the specific entry indicated below.

Location _____

Space Description: Baler Box and Ram Area / Shear Box and Shear Area
Shredder Mill / Shredder UMO / Scale Pit

Other: _____

Purpose of entry: Cleaning / General Maintenance / Inspection / Weld/Torch

Other: _____

Originally In Space (ational, Fall, etc)	Methods of Elimination of Hazard	Verified By

Comments: _____

Certified By: _____ Date: _____

Entrant(s) _____ / _____
 Print Initials Print Initials

_____ / _____
 Print Initials Print Initials

Confined Space Reclassification Form

For Welding /Torching Operation or Potential Toxic Spaces

n of Confined Space (be specific) _____

state the following PRIOR to entry into each confined space considered for reclassification to a non-confined space. If any of the questions below are answered yes, describe how the hazard has been eliminated.

Description of work activity: _____

Atmospheric conditions:

Are there a potential for an oxygen enriched atmosphere caused by leaking tanks, hoses, etc? Y N

Are there a potential for toxic contaminants i.e.: carbon monoxide, hydrogen sulfide, methane, etc? Y

Are there a potential for an explosive or flammable atmosphere (leaking pipes, hoses, tanks – Propane, Acetylene, painting or cleaning chemicals?) Y N

Does work or activity in the area of the space create a hazardous atmosphere as explained above? (e.g. vehicles running, LP or other tanks stored or used near the space, etc) Y N

Verify that all known or potential hazards have been appropriately eliminated prior to entry into the space, thereby allowing for the reclassification of the space as a Non-Permit Confined Space.

Reclassification Authorization By: _____
Print Signature Date/ Time

Any time during the entry the hazards change entrants **MUST** immediately vacate the space.

Location of Work	% Oxygen 19.5 – 23.5%	% LEL Below 10%	Carbon Monoxide Below 35 ppm	Notes i.e. – pre entry reading, start of work, closed...	Atmosphere Tested By: Initials.

Equipment/Model _____ Serial Number _____ Calibration Date _____

Entrants / Problems or Hazards found: _____

Completed and all employees out of space at _____

Inspection by: _____
Print Signature Date

Print Initials / Print Initials / Print Initials

RESCUE



The Necessity of Rescue

- Entrants are in spaces that could quickly render them unconscious
- Over 60% of fatalities in confined spaces are would-be rescuers
- A pre-planned and effectively executed rescue saves lives
- Entry programs that by-pass safeguards will eventually end up requiring rescue

Rescue Members are Trained:

- To perform assigned duties
- As entrants
- In first aid and CPR (at least one member holds current certification)
- To be proficient in use of personal protective equipment
- To practice rescue at least once every 12 months



Questions?

THANK YOU!

- Joe Bateman
- ISRI Safety
- joebateman@isri.org
- 615-517-2251