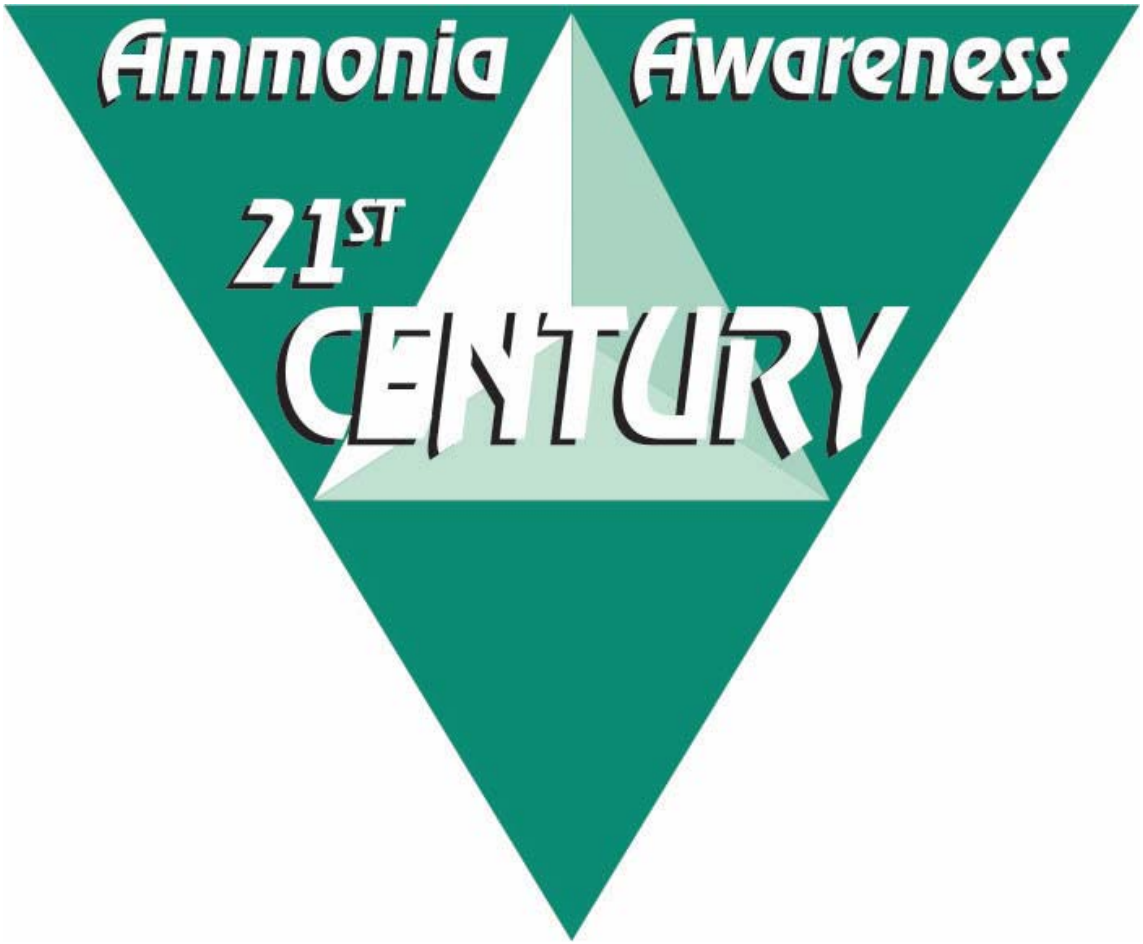
Ammonia – Hazards, Risks, and Threats



HAZARDS: WHERE IS IT?

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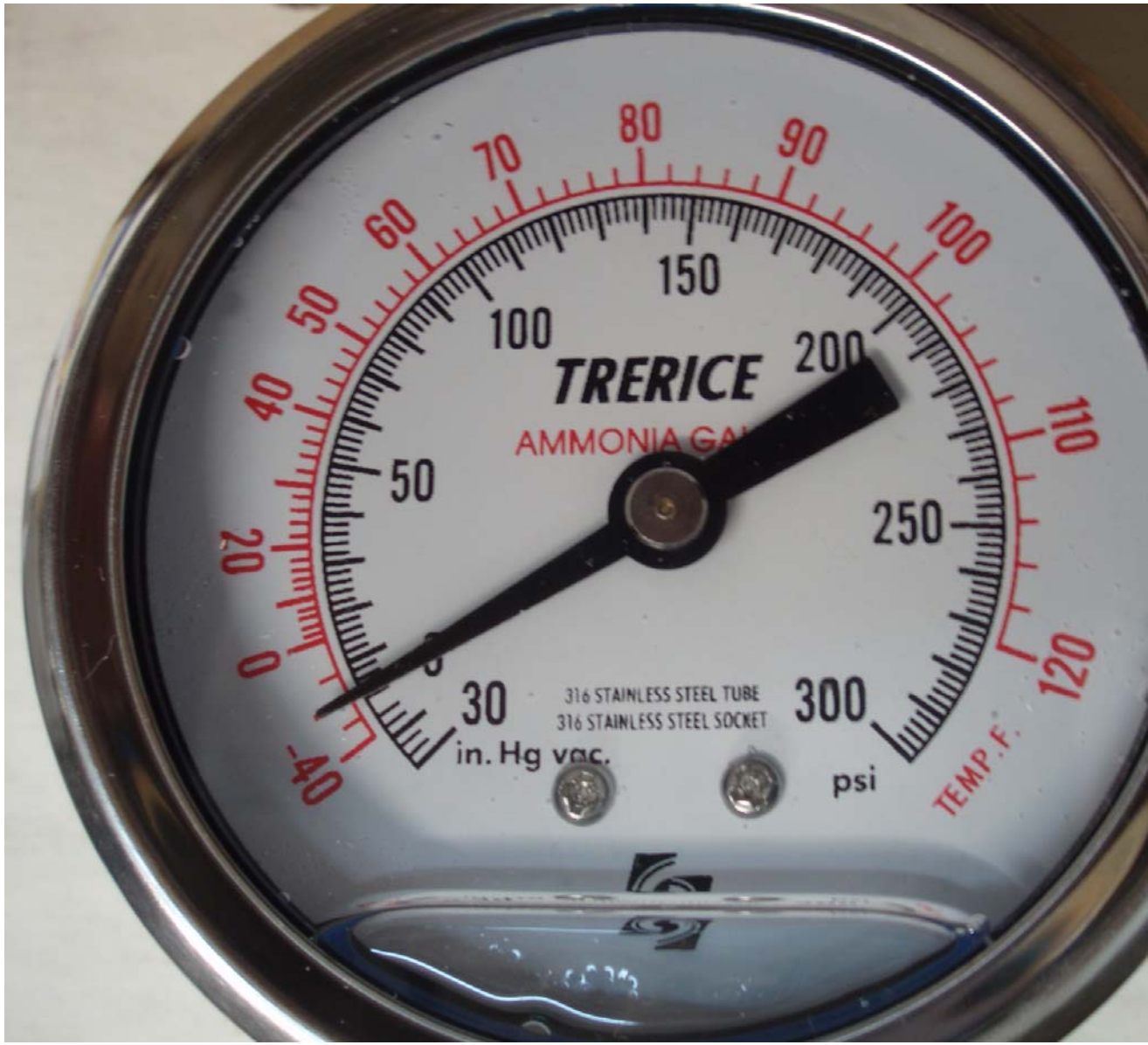
Hazards: What Is It?

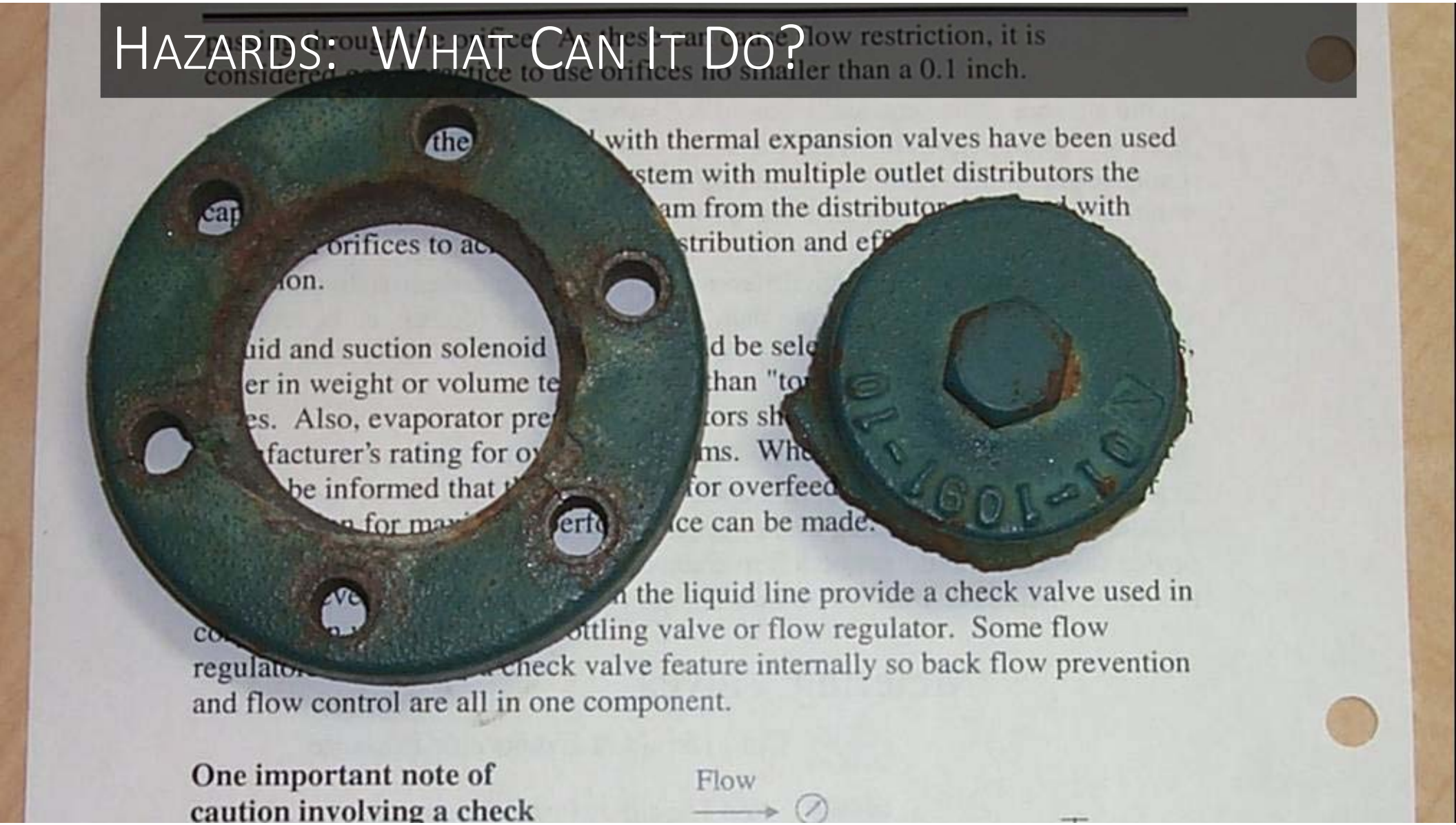
- Demonstration of Properties

Hazards: What is it?

- Pressure / Temperature Relationship



Hazards: What Can It Do?



Hazards: What Can It Do?

Hazards: what Does It React With?

Hazards: How Will It Affect Me?

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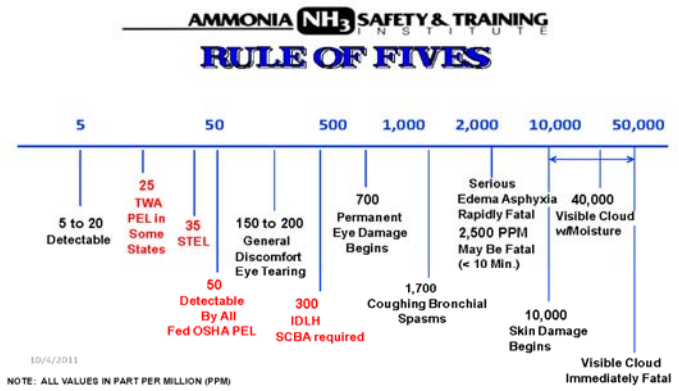

5-50 PPM: Odor and Discomfort

50-300 PPM: Discomfort and IDLH (30 minutes exposure)

NOTE: The ERPG-2 represents the concentration below which it is believed nearly all individuals could be exposed for up to one hour without irreversible or serious health effects. The ERPG-2 for ammonia is 200 ppm.

300-1,500 PPM: Potential eye and respiratory injury

1,500- 2,500 PPM: Bronchial Spasms and Asphyxia

2,500-5,000 PPM: Potentially fatal within first 10 to 15 minutes

5,000 to 10,000: Self rescue techniques (e.g. wet towel) to mitigate exposure

10,000 to 30,000 PPM: Skin irritation, burns, and immediately fatal

15,000 PPM: Flammability concerns for a contained release

20,000 to 40,000 PPM: Dense gas cloud concerns

Ammonia 7664-41-7 (Final) - Expressed in PPM					
	10 min	30 min	60 min	4 hr	8 hr
AEGL 1	30	30	30	30	30
AEGL 2	220	220	160	110	110
AEGL 3	2,700	1,600	1,100	550	390

Hazards: How Will It Affect Me?

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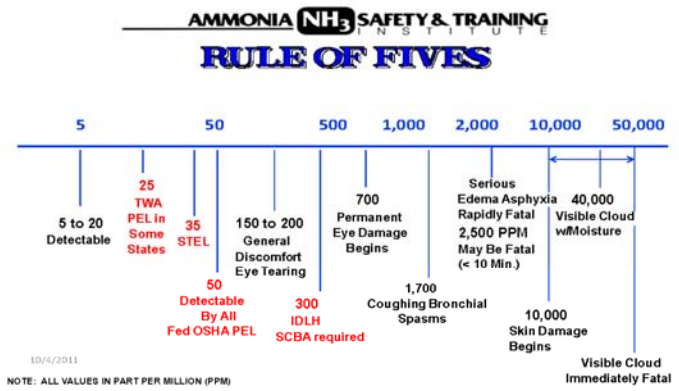

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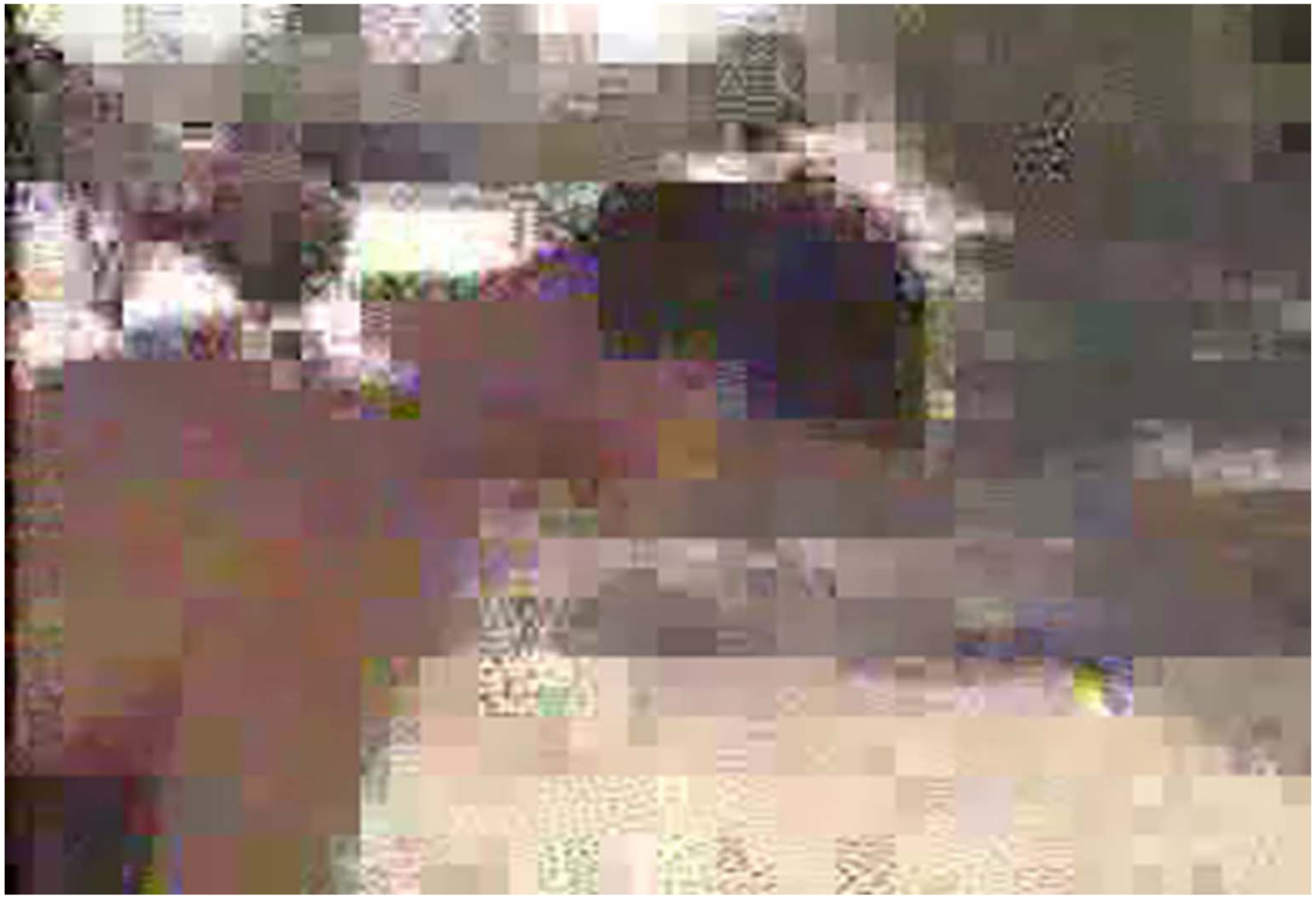

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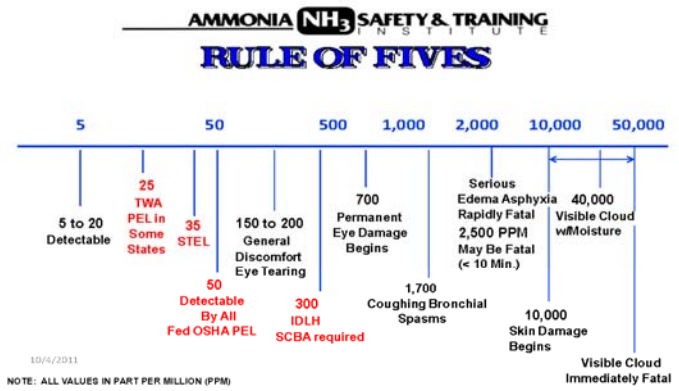

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Risks: What Can Happen if.....?

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Threats: Why Do We Continue To Do This.....?

Key Points To Learn, Understand, and Remember

- Ammonia can be detected by smell or other sensation(s) at levels far below the intensity that brings injury
- Move 90 degrees to the wind direction, then upwind, when removing yourself from an ammonia atmosphere. This is the fastest way to escape an ammonia atmosphere to better air
- Ammonia inhaled in high concentration will cause an involuntary clamping down of the esophagus. This can be a frightening experience if a person is not aware that it can happen
- Exposure to liquid ammonia brings three injuries in one exposure:

Key Points To Learn, Understand, and Remember

- A chemical burn from the HIGH pH caustic solution formed as ammonia interacts with the water in a person's body
  - A thermal injury, the ammonia is evaporating from the body's surface at -28°F or colder – this can bring about a frostbite type tissue damage
  - A dehydration injury – that ammonia absorbing into the body's water content is drawing water from the tissue.
- The first aid for liquid ammonia exposure is WATER – WATER – WATER. Flowing water applied to the injury area for at least 15 minutes is needed to draw ammonia from the body tissues. Twenty minutes of flushing is better

Key Points To Learn, Understand, and Remember

- Ammonia stored under pressure is more dangerous than a pool of liquid ammonia
- Ammonia gas can burn under the right fuel/air mixture ratios – control ignition sources when addressing an ammonia release in an enclosed space, such as an engine room
- Do NOT allow the application of anti-biotics salve on an ammonia exposure to the eyes. The suspending gel of the salve works as a "cap" and prevents the removal of ammonia from the wound site. This causes the ammonia to continue attacking the tissue of the eyes or other affected portions of the body. Continue water/saline flush of eyes to neutralize and reverse the ammonia's ingress into body tissue

Key Points To Learn, Understand, and Remember

- Be aware that a liquid exposure can cause clothing to be frozen to the body. Removing the clothes before thawing can cause additional injury as skin and muscle is pulled from the body with the clothes

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