



Compressed Gas ER PPE and Decontamination

May 2013

Proper Procedure and PPE is Critical

Leak check hole on DISS or VCR connection can release a significant amount of gas



TMAI Release Through VCR Leak Check Hole

At a system pressure of 0.7 barg (10 psig) TMAI flowed out at 10.7 gms/sec

In open air this sprayed a distance of 170 cm. This atomized the liquid TMAI creating an intense flame



PPE for Silane ER

Full body protection primarily for thermal/radiant heat exposure.

Silane burned through Nomex in a 1 sec flame exposure

Turnout gear held up to 1 sec flame exposure (Intel Test)

Turnout gear completely destroyed in 10 sec flame (Intel Test)

Nomex Hood



Firegloves
SCBA

Pyrophoric Liquid

For emergency responses where the responder can be splashed with a pyrophoric liquid it will soak into the Nomex which is a woven material. The pyrophoric liquid will burn and char the Nomex

Aluminized material however will resist liquid absorption. Flashover protection is provided with an underlayer of Nomex

Heavy leather had equal protection

Dupont Thermopro offers good chemical and thermal protection

PPE for Multiple Hazards

PPE for a compressed gas with multiple hazards can represent a similar challenge

Ammonia which is corrosive and can reach flammable concentrations in an indoor area requires a chemical resistant suit (level B or higher) and a flashover material

Shrevesport 1984

Two firefighters made entry into a refrigerated warehouse with an ammonia leak in Level A. It ignited and the flashover melted and ignited the suit. One died and the second was permanently disabled

Proper donning of PPE is critical

In one incident the responder did not properly seal his glove to the level B suit. A drip of silicon tetrachloride onto his shoulder flowed right into his glove which was pulled over the sleeve. Despite getting under a safety shower in 10 seconds, he was badly burned

Decontamination

Gases will typically not deposit on PPE surfaces or skin

Can absorb in clothing

Simple aeration will desorb the gas

As a precaution some HazMat units will use a water wash

Water Reactive

Some gases are very water reactive and the hydrolysis byproducts will deposit on PPE or will react with the moisture on the skin, eyes or respiratory system

Some react to a water soluble chemical like Hydrochloric acid (Dichlorosilane, Monchlorosilane)

Some react to inert compounds like Boric Oxide (B_2O_3) (Trimethylboron, Diborane)