

PPE for Methamphetamine Clandestine Drug Lab Response



Situation

Incidents concerning small-scale methamphetamine clandestine drug laboratories or “meth clan labs” have increased domestically over the past several years, following passage in 2005 of The Combat Methamphetamine Epidemic Act (CMEA) that places restrictions on over-the-counter pseudoephedrine purchases, and in part due to a shift of large-scale meth production to Mexico.

Small meth clan labs remain a threat to individuals and communities. These labs are run by one or several individuals may turn up in houses, apartments, motel rooms, garages, trailers (a type of “rolling” lab), or sheds and other buildings in rural areas. Labs may in fact be rigged with explosive devices set to detonate upon entrance by law enforcement, in order to rid the area of evidence.

Methamphetamine, (A.K.A. crystal meth, crank, ice) a particularly potent and highly addictive chemical stimulant, can be produced cheaply and quickly in small spaces using common kitchen equipment and drugstore items. Meth users risk long-term physiological effects such as aggression and psychosis, as well as heart, brain and nerve damage.

*Because every life has a **purpose...***

PPE for Methamphetamine Clandestine **Drug Lab Response**

Methamphetamine production can result in serious health-related conditions to those in proximity: Special Forces, first responders, medical personnel, cleanup crews and neighbors. All risk exposure to toxic substances in the event of a clan lab explosion. Meth lab waste includes chemicals of reactive, combustible, corrosive, and toxic nature, that when combined with poor structural ventilation create high concentration levels of these gases, severely increasing potential for explosion.

Lab explosions can also be responsible for environmental issues: groundwater contamination and damage to homes and property due to careless handling of lab-related substances. It is imperative that those entrusted with the task of finding, securing and closing down meth clan labs employ proper personal protective equipment (PPE), including respiratory gear and portable gas detection instruments, to reduce risks associated with these potentially hazardous undertakings.

Meth Production Methods

Several "cook" methods employ a long menu of toxic and combustible substances, among them ephedrine, pseudoephedrine, lithium metal, hydrochloric acid, acetone, iodine, lye, hydriodic acid, red phosphorus, mercuric chloride, phosphine, and ammonia. Hotplates, strainers, garden hoses, cooking pots, and other ordinary household items are often used to outfit a small meth clan lab. Many meth cook formulas can be narrowed down to several basic methods, each with its own manufacturing hazards and production of toxic and often combustible waste. The most well-known and common production methods are listed here.

P-2-P: Phenyl-2-propanone used with methyl alcohol, methylamine, aluminum, ether, sodium hydroxide, and lead acetate produces meth; cook residue is likely to contain toxic mercuric chloride, lead, and combustible solvents that can affect the central nervous system. However, this method is not used in the United States as frequently as in past years, due to chemical regulation and supply difficulties. Instead, meth manufacturers have come to rely upon the following methods that employ ephedrine reduction.

Rep P: Red phosphorus combined with iodine produces hydriodic acid. This acid reduces ephedrine or pseudoephedrine to produce methamphetamine. Phosphine gas by-product is toxic when inhaled; combustible, toxic white phosphorus is left behind.

Nazi: The name is derived from this method's WWII-era German origin; the cook employs ephedrine or pseudoephedrine, liquid anhydrous ammonia (sometimes obtained from liquid ammonia fertilizer) and sodium or lithium. This cook's popularity is due to manufacturing speed, purity of finished product and relative low supply cost. Liquid ammonia and alkali metals (sodium or lithium) may boil explosively. Associated substances include water-reactive metals and combustible solvents.

Shake 'n Bake: This fairly new, quick, small-batch method uses pseudoephedrine, ammonium nitrate, water, toxic solvent, lye, and lithium in one container; salt and sulfuric acid react to produce meth crystals. Lithium can react with water or air to produce an explosion or fire; many individuals using this method have been severely burned as a result.

Assessment and PPE

Once a meth lab site has been found and secured, tactical teams begin site assessment using intrinsically-safe portable instruments for detection of combustible and toxic gases, vapors, fumes, oxygen levels, and volatile organic compounds. When atmospheric measurements are completed and related safety criteria have been satisfied, potential chemical hazards must be identified in order to determine proper PPE for those who must deactivate the lab, collect information and remove and dispose of toxic waste and equipment before exit from the lab site.

Those who risk potential exposure to hazardous substances are required to complete **OSHA Hazardous Waste Operations and Emergency Response Standard (HAZWOPER)** 40-hour training. State and local regulations may dictate meth lab assessment, cleanup procedures and site-specific PPE; however, the **United States Environmental Protection Agency** has issued voluntary guidelines as well as a breakdown of PPE levels, listed here, along with corresponding MSA PPE:

Recommended MSA Respiratory Personal Protective Equipment (PPE) for Meth Lab Applications

For unknown hazard concentrations or where APR maximum use concentration is exceeded, SAR is recommended:

FireHawk® M7 Responder Air Mask for use within potentially combustible, toxic and/or oxygen-deficient atmospheres

- Versatile air mask transforms quickly from CBRN SCBA to either APR or PAPR.
- Provides emergency responders with maximum level of protection for CBRN environments.
- Mask features one-way inhalation check valve, wide-view lens with Kevlar Speed-ON® head harness



For atmospheres where ammonia, phosphine, organic vapors, hydrogen chloride, iodine, and/or methamphetamine particulates are present at levels less than APR maximum use concentration: SAR, CBRN APR or CBRN PAPR is recommended:

Ultra Elite® or Millennium® Facepiece with CBRN Canister for particulate and CBRN gases

- High-performance, custom-fit comfort in a variety of military- and riot-style masks
- Flexible lenses, wider field of view, permeation-resistant construction, built-in speaking diaphragms, comfortable fit, superior visibility



Responder™ PAPR with Ultra Elite or Millennium Facepieces for particulate and CBRN gases

- Responder CBRN PAPR provides non-IDLH respiratory protection for up to 8 hours
- Choice of two MSA gas mask CBRN facepieces and three cartridges designed for CBRN, particulate and toxic gases or vapors.
- Compatible with MSA Millennium and Ultra Elite Facepieces



For atmospheres where methamphetamine particulates only are present at levels less than APR maximum use concentration, SAR, CBRN APR, CBRN PAPR, or riot control canister is recommended:

Ultra Elite® or Millennium® Facepiece with CBRN Canister (see earlier description)

Responder™ PAPR with Ultra Elite or Millennium Facepieces (see earlier description)

MSA Portable Instruments for Meth Lab Applications

Sirius® Multigas Detector with PID (photoionization detector) for measurement of volatile organic compounds (VOCs) such as benzene, toluene and acetone

- Simultaneously monitor for volatile organic compounds (VOCs) with low vapor pressures while measuring for combustible, toxic or oxygen-deficient atmospheres
- Stable zero readings with fast response/clear times



ALTAIR® 5X Multigas Detector with electrochemical sensors detects other clan lab contaminants such as ammonia and phosphine in addition to combustible and various toxic gases, and oxygen deficiency.

- Rugged multigas detector offers ease of use, response speed, sensitivity, and versatility
- Glow-in-the-dark housing is easy to see in a confined space
- Large buttons and bright display makes operation possible even when users wear gloves



Sources:

- U.S Environmental Protection Agency, *Voluntary Guideline for Methamphetamine Laboratory Cleanup*
- Drug Enforcement Administration, *Guidelines for Law Enforcement for the Cleanup of Clandestine Drug Laboratories, 2005 Edition*
- Drug Enforcement Administration, *Drug Fact Sheet, Methamphetamine*
- Drug Enforcement Administration, *General Information Regarding The Combat Methamphetamine Epidemic Act of 2005*
- Office of National Drug Control Policy, *Methamphetamine Trends in the United States*
- Vince McLeod, CIH and Glenn Ketcham, CIH, 2007, *The Safety Guys: What's Cooking?*

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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