

CHEMBAYO™

▶ CHEMICAL/BIOLOGICAL SAFETY MASK

The CHEMBAYO™ is specifically designed to meet the needs of the following sectors:



Emergency Personnel



Law Enforcement



Military



DURAM MASK 
PERSONAL ESCAPE MASK

**PERFECT FOR
POLICE DEPARTMENTS**

SEE INSIDE

**THE EVERYDAY
WORK OF POLICE
OFFICERS IS RIFE
WITH HAZARDS.**



RESPIRATORY HAZARDS



As first responders, officers often find themselves in situations involving dangerous gases that can lead to incapacitation and injury. They are frequently exposed to toxic fumes emitted from burning plastics, ammonia, and a wide variety of dangerous chemicals found in drug labs. A study on the effects of acute chemical incidents on several types of first responders, which reviewed 566 incidents, noted that in the incidents studied police officers were the second-most frequently injured group (after firefighters) and that typically their injuries were related to illegal drug labs. The most common injury to police officers was respiratory irritation, often from ammonia and illegal meth-related chemicals.

MORE POTENTIAL HAZARDS



The overwhelming majority of drug labs produce methamphetamine. According to the DEA, the number of methamphetamine labs increased by more than 500% between 1994 and 2000, and has continued to grow since. The mildest reactions to entering meth labs documented are headaches, irritation of the mucus membrane, coughing, runny nose, burning eyes, and blurry vision. The list of long-term effects of exposure to meth labs is extensive: pneumonia, respiratory problems, permanent lung damage and lung disease, hearing loss, gout, non-Hodgkin's lymphoma, liver cancer, thymoma (a rare type of cancer), and several other rare types of cancer.

A study on possible treatments for police officers exposed to meth labs notes that "responding to an active laboratory has been associated with a 7- to 15-time higher risk of becoming ill when compared to other activities with apparently lower chemical exposures." Furthermore, it notes that meth, its ingredients, and its waste products permeate walls and even wood construction, and are dangerous even in low concentrations. One pound of methamphetamine generates 5-6 pounds of hazardous waste. Among the ingredients of this waste are phosphine, iodine, anhydrous ammonia and hydrogen chloride. A study of law enforcement officers exposed to phosphine showed that it caused respiratory difficulties, dizziness, coughing, headaches, and diarrhea. It also found that "more than 70 per cent of law enforcement personnel involved in methamphetamine laboratory investigations also experienced headaches, central nervous system symptoms, respiratory symptoms and sore throats." These materials are so dangerous that even their residue outside the lab can have adverse effects and cause symptoms of illness, including nausea, vomiting, headaches, and a burning sensation in the eyes and throat.

▶ More than 70 per cent of law enforcement personnel involved in methamphetamine laboratory investigations also experienced headaches, central nervous system symptoms, respiratory symptoms and sore throats.



CRIME SCENE DO NOT CROSS



- ▶ Responding to an active laboratory has been associated with a 7- to 15-time higher risk of becoming ill when compared to other activities with apparently lower chemical exposures.

Many of the chemicals present in the labs are toxic, corrosive, reactive, flammable, and explosive. Furthermore, most lab operators or “cooks” acquired their knowledge through hand-written recipes, online information, or from other inmates during incarceration. These circumstances often lead to extremely unsafe working environments, with increased hazards of fires and chemical spills. A report published by the DOJ on the dangers of clandestine labs states that they are not limited to active labs or accidental fires or spills. As the report notes, “the dangerous chemicals used in the production of illicit drugs expose officers to a range of health risks not ordinarily associated with law enforcement. These risks include explosions, inhalation of toxic substances, and booby traps...”

Ammonia also poses a hazard to police officers. It is considered the most important commercial nitrogen compound and is a starting substance for many chemical compounds that are used in fertilizers, the plastics industry, the livestock industry and more. In the aforementioned study on acute chemical reactions “police officers were mostly associated with incidents involving ammonia, which could be related to thefts or other releases related to meth production (26.3%) and unspecified, illegal meth-related chemicals (25.5%).” Ammonia, therefore, is a danger in both legitimate commercial settings and in criminal ones.

The same study also noted that “among police officers, 93.4% wore no PPE at all, and only 3.1% wore minimal protection. The degree of protection offered by uniforms and available PPE varies among police departments. A high percentage of police officer injuries were respiratory problems (70.2%) and headaches (13.7%). In addition, 68.8% of injured police officers sought hospital treatment for their injuries.” Such findings suggest that respiratory hazards are a problem that may require more attention than it has hitherto received.

DURAM PRODUCTS



Duram products are designed using the “emergency mindset”, meaning they are meant to allow a rapid and level-headed response to a dangerous environment, an approach which is congruent with the OSHA guidelines instructing the use of such masks only for escape from IDLH environments, and that they must be made readily available to employees. Duram’s escape hoods are designed to be lightweight and compact enough to be carried on one’s person throughout the workday, meaning they are immediately accessible in an emergency. Their neck-seal design requires minimal fastening and makes them a one-size-fits-all solution that can be used by persons with facial hair, long hair, and even glasses (if necessary for escape). This design also provides protection for the eyes, allows clear verbal communication, and incorporates a wide visor treated with an anti-fogging agent to allow maximum visibility. These masks offer a great value proposition, as their pricing makes it possible to equip every officer with a personal mask unlike other solutions that are too expensive and bulky for widespread implementation.

- ✓ Rapid Response
- ✓ One size fits all
- ✓ Lightweight
- ✓ Compact
- ✓ Eye protection
- ✓ Minimal Fastening



Guidelines for the design and selection of PPE (Personal Protective Equipment) emphasize that it must always be a compromise between the type of protection it can afford and other factors such as weight, size, visibility, mobility, communication, the physical and psychological stress they might cause, and ease of use. The goal in the selection process is to have a balance between the potential risks of known scenarios and the limitations of the PPE, and avoid under-protection and over-protection. Escape masks are meant to allow the user to escape from dangerous situations, and should therefore put an emphasis on mobility, compactness, and protection from the most immediate and common dangers present in the emergency for which they are designed.

CO is frequently cited as the major hazard in fires given its ubiquity in post mortem dissections, which can often be misleading due to the fact that other toxins such as cyanides decompose in the blood much faster than CO. However, a comprehensive book studying fire casualties concludes with the following insight: "The scenario accepted by most fire scientists is that during quantitative decomposition people are exposed to chemicals that injure them and render them unable to escape. They then inhale the high concentration of carbon monoxide during the combustion stage and die as the result of the combined dose." From this it follows that in an evacuation scenario, the most acute problem is the inhalation of toxic chemicals during quantitative decomposition (the early stage of fires), as it is they, and not CO, that cause incapacitation in most cases. Protection from the fire-gases of burning plastics is the most crucial attribute for an escape mask.



The findings and statistics reviewed here suggest that hazardous materials are a threat that must be addressed through policy. Among the possible solutions are training and guidelines for dealing with sites suspected to contain respiratory hazards (warning signs, entrance protocols) as well as technical solutions such as protective gear specifically designed for the most common risks involved in such situations. The OSHA guidelines allow for the use of non-CBRN masks meant for escape from hazardous environments, provided that their use is voluntary and not mandated by the employer. However, it is difficult to imagine officers electing not to use them if they experience a burning sensation in the throat or the eyes. The potential hazards and costs of inadvertently entering IDLH environments unprepared and unprotected far outweigh the cost of training and equipping first responders with appropriate measures. When answering the call of duty, and in their dedication to protect the public in exigent circumstances, officers may find themselves entering into situations that do not allow for complete risk-assessment. In such cases, the need for protection that is portable and accessible is paramount.

DURAM MASK 
PERSONAL ESCAPE MASK

ABEEY

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Exclusive distributor of CHEMBAYO in North America and CIS