

CIRCULAR



Title
Hazardous Materials Information

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Related To:
GO-OPS-802.04 (Hazardous Material Incidents)

DISTRICT OF COLUMBIA

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I. BACKGROUND

Hazardous materials can create a variety of problems when released, intentionally or unintentionally, from containers. Initial responders should be aware of the effects of, and symptoms from, exposure to hazardous materials. The purpose of this circular is to provide information that will assist Metropolitan Police Department members in recognizing and understanding the effects of various hazardous materials. The circular will also provide information regarding the associated risks of various chemicals following their release.

Members should refer to GO-OPS-802.04 (Hazardous Materials Incidents) for guidance on the policy and procedures of the Metropolitan Police Department for guidance relating to identifying and taking the appropriate actions when responding to incidents involving uncontrolled or unplanned release of hazardous materials.

II. HAZARDOUS MATERIALS RISKS

A. There are two (2) major categories of materials that are hazardous to human health. The first type attacks the body internally: irritants, asphyxiants, carcinogens, and nerve and liver poisons. These materials must enter the human body in order to do harm. The second type attacks and damages the body externally: corrosives, cryogenics, and flammable liquids. Radioactive materials can affect the body internally and externally.

1. Internal Risks

a. Hazardous materials enter the body through inhalation, ingestion, injection, or absorption. Vapors, smoke, gasses, and suspended dust particles can be inhaled when a positive

pressure, self-contained breathing apparatus is not worn. Food, smoking materials, and even drinking water can absorb or contain, in suspension, poisonous, substances. Some materials pass easily through areas of the body where the skin is the thinnest and allows the least resistance to penetration. The eyes, wrists, neck, hands, groin, armpits, and breaks in the skin are prime areas through which absorption may occur.

b. Internal irritants produce a wide range of physical symptoms. Members should be aware that the symptoms may not be immediately apparent and can be masked by common illnesses such as the flu or smoke inhalation. Some general symptoms of exposure include:

- (1) Confusion, light-headedness, anxiety, and dizziness;
- (2) Blurred or double vision;
- (3) Changes in skin color or blushing;
- (4) Coughing or painful respiration;
- (5) Tingling or numbness of extremities;
- (6) Loss of coordination;
- (7) Nausea, vomiting, abdominal cramping, and diarrhea;
and
- (8) Unconsciousness.

2. External Risks

a. Many substances are corrosive to the skin tissue, while others become corrosive when mixed with water. Corrosive materials cause severe chemical burns and extensive tissue damage when in contact with body tissue. Examples include hydrochloric, hydrofluoric, sulfuric, and nitric acids; ammonium hydroxide; methylamine; and caustic soda.

b. Corrosives have different effects on the body depending on whether they are acidic or basic. Acids will generally cause pain on contact, while basics (caustics) do not. One sign of exposure to basics is a greasy feeling on the skin. This

greasy feeling is caused by the breakdown of the fatty tissues.

c. General symptoms of external corrosive exposures include:

- (1) Burning around the eyes, nose, and/or mouth;
- (2) Nausea and vomiting;
- (3) Difficulty breathing or swallowing;
- (4) Coughing; and
- (5) Localized burning or skin irritation.

3. Refrigerated Liquids (Cryogenics)

- a. Liquid gasses that turn into a liquid at or below -130 (minus one hundred thirty) degrees Fahrenheit have the ability to instantly freeze materials, including human tissue, on contact. Some refrigerated liquids, such as chlorine or fluorine, have other hazardous properties because they are corrosive, oxidizing, and poisonous in a liquid state.
- b. Refrigerated liquids will vaporize rapidly when released from containers. Any clothing splashed with a refrigerated liquid must be removed. If the vapors are flammable, initial responders will be unable to escape the flames from trapped vapors if there is an ignition of the substance. Other examples of refrigerated liquid material are liquid oxygen, liquid helium, liquid hydrogen, and Liquid Natural gas (LNG).
- c. Exposure to refrigerated liquids will cause freeze burns and bites that can be treated as low temperature injuries according to their severity.

4. Radiation Hazards

- a. Radiation can have internal and external effects on the body. Any responder handling an incident involving radioactive materials must wear fully protective clothing and a positive pressure respirator or, at a minimum, an air purifying respirator. This protective clothing will protect the member only from inhalation and skin contact of radioactive dust.

- b. Ionizing radiation will penetrate most materials and will cause severe cellular damage to human tissue. The only protective measures are time, distance, and shielding. Members should limit their time around radioactive material, maintain proper distance, and/or utilize heavy shielding such as concrete walls, engine blocks, or large amounts of dirt.
- c. Exposure to radiation may result in:
 - (1) Radiation sickness. Radiation sickness is caused by exposure to large amounts of radiation. This level of exposure causes nausea, vomiting, diarrhea, malaise, and hemorrhage, and lowers the body's resistance to disease and infection. Additional symptoms include weight and appetite loss, fever bleeding, and mouth and throat sores. The symptoms occur typically the day after the exposure and may last for days. The symptoms may occur more quickly when exposed to very high amounts of radiation.
 - (2) Radiation injury. Radiation injury consists of local injuries such as skin burns, skin lesions, and hair loss. Radiation injuries are generally confined to the hands since large amounts of exposure occur during improper handling.
 - (3) Radiation poisoning. Radiation poisoning is caused by dangerous amounts of internal radiation. Internal radiation may cause diseases such as anemia and cancer.

III. INFORMATION REQUIRED TO RESPOND TO HAZARDOUS MATERIAL INCIDENTS

- A. The failure of MPD members, as initial responders, to identify and recognize the presence and potential harm of hazardous materials at incidents, fires, spills, and other emergencies could seriously threaten the health and safety of the responding members and the general public in the area of the emergency.
 - 1. Emergency scenes can be safely controlled only when emergency response personnel have sufficient information to make informed decisions. Although an incident may involve either a fixed facility or a transportation situation, members of the Department will be primarily concerned with transportation incidents.

2. Hazardous materials located within a fixed facility are best identified before released from the containers. Therefore, the D. C. Fire and Emergency Medical Services Department (DCFEMS) has established an inventory of the major facilities in the District of Columbia that use and store hazardous materials. MPD members should be alert to the various products that are commonly present in their response areas and those most likely to be encountered during an incident requiring a DCFEMS response.

NOTE: Attachment A to GO-OPS-802.04 (Hazardous Materials Incidents) contains the listing of District of Columbia hazardous materials locations and their addresses.

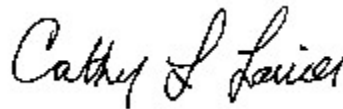
3. Identifying hazardous materials involved in transportation incidents will be a primary task of MPD members as initial responders. It is extremely important for the safety of responding members and the general public that the presence of a hazardous material is determined and, if at all possible, its specific type identified before any emergency action is initiated.
 - a. The two (2) primary means by which hazardous materials can be identified are shipping papers and placards/labels.
 - b. Shipping papers provide the best and most reliable source of identification of the material involved in an incident. These are legal documents that are in the custody of a vehicle driver or train conductor. All shipping papers contain the following information:
 - (1) Proper shipping name;
 - (2) Hazard classification;
 - (3) Commodity identification number;
 - (4) Number of packages;
 - (5) Type of package;
 - (6) Correct weight (except cargo tanks and cylinders); and
 - (7) Emergency response information.
 - c. Placards are the ten and three-quarter (10 $\frac{3}{4}$) inch, on point, diamond shaped signs that are affixed to each end of any

vehicle or rail car containing hazardous materials. The placard indicates the primary or the most dangerous hazard of the material and may display a specific four-digit commodity identification number on the placard or, in the case of a cargo tank, on an accompanying orange panel.

NOTE: Attachment B to GO-OPS-802.04 (Hazardous Materials Incidents) provides examples of U.S. Department of Transportation hazardous materials marking and labeling and placards.

4. *Emergency Response Guidebook* (DOTP 5800.5)
 - a. The *Emergency Response Guidebook* was developed by the U.S. Department of Transportation for use by initial responders to a hazardous materials incident site. It is a guide to the initial actions to be taken by MPD members to protect themselves and the general public and to communicate to members of the Office of Unified Communications all of the relevant information pertaining to the incident site.

The *Guidebook* is cross-referenced to allow members to identify materials by name or by the four-digit United Nations (UN) identification number. Once the material has been identified, the *Guidebook* provides specific information regarding the potential hazard of the material and the protective measures that should be taken.
 - b. Pursuant to Part IV.D., GO-HSC-802.04 (Hazardous Materials Incidents), a copy of the *Emergency Response Guidebook* shall be maintained in all marked Police District and Homeland Security, Special Operations Division vehicles.



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