# HAZARDOUS MATERIALS



## PURPOSE

The response to Hazardous Materials Incidents by the Phoenix Fire Department and the regional partners will continually adapt as hazardous materials are ever changing. Firefighters and hazardous materials technicians must follow our Standard Operating Procedures (SOPs) and utilize the Strategic Decision-Making Model. Each of these references assist in developing a response and guides decisions and actions for desired outcomes.

The Strategic-Decision-Making Model or SDM (reference Command Procedures; MP 204.01) must be applied on every type of incident, with Hazardous Materials incidents being no exception. The SDM begins with a size-up of the critical factors that are present on these types of incidents that may include:

- Life safety
- Duration of exposure
- Physical State and properties of the chemical (s) involved
- Size or potential size of the release
- Containment systems already in place

These factors, like any other incident, drive our Risk Management Plan (Risk Management and Safety; M.P. 201.0) and the strategy used to accomplish the tactical objectives.

This procedure is specifically applicable to hazardous materials incidents, but it does not reduce the need for appropriate safety precautions at every incident. When responding to and operating at a hazmat incident, firefighters and hazmat technician's actions and the level of their PPE must provide life safety and allow them to operate in the hazard zone to control the incident. Proper research and planning on the front end of these incidents is imperative to the safety of the crews and to mitigate the hazard present.

OSHA defines a hazardous material as any "substance or chemical which is hazardous to people's health or is physically hazardous." Hazardous Materials incidents include explosives, gases, flammable liquids, flammable solids, oxidizers, poisons and toxins, radioactive material, corrosives, or any other miscellaneous hazards.

## RESPONSIBILITIES

### Dispatch

The Dispatch Center will attempt to obtain any and all information from the person reporting a hazardous materials incident. The information should, if possible, include material name and/or type, placard information, amount and size of container(s), problem (leak, spill, fire, etc.) and dangerous properties of the materials AS WELL AS THE NUMBER OF PERSONS INJURED OR EXPOSED. The incident taker should remain on the telephone with the caller to gain additional information after entering the call for dispatch.

Any additional information shall be relayed to responding units after dispatch. THIS SHOULD INCLUDE PERTINENT INFORMATION THAT COULD AFFECT THE SAFETY OF THE RESPONDING CREWS.

If the call comes from a person or a responsible party (RP) with particular knowledge of the hazardous material, that person SHOULD BE INSTRUCTED TO meet and direct the arriving units. Dispatch shall relay that person's location and level of knowledge to responding units.

The Dispatch Center will dispatch the appropriate Hazardous Materials Assignment to all reported hazardous materials incidents.

**First Arriving Unit**

The first arriving unit will establish Command and begin a size-up. The first unit will take a pessimistic approach and ensure the safety of their crew members. Never spot the apparatus near a potential blast zone, over a storm drain, downwind, or downhill of a hazardous material incident.

When approaching, slow down or stop to assess any visible activity taking place. Evaluate effects of wind, topography and location of the situation. Route any other responding companies away from any hazards.

Command should consider establishing level II staging if necessary. Staged companies must be in a safe location, upwind, uphill, and outside of any potential blast zone.

THE DEPARTMENT OF TRANSPORTATION EMERGENCY RESPONSE GUIDE (DOT ERG) SHALL BE USED BY THE FIRST ARRIVING COMPANIES AS A RESOURCE FOR SPOTTING APPARATUS SAFE DISTANCE FROM THE INCIDENT. Whenever possible, research and or observe local weather conditions and communicate with the first arriving hazmat crews or C957 to determine the safest approach to the scene.

As the incident escalates, the RESEARCH TEAM within HAZARD SECTOR will provide recommendations for the incident response based on the information gathered.

**Size-Up**

Command must make a careful size-up before making a commitment. It may be necessary to take immediate action to make a rescue or evacuate an area. This action is based upon a critical factor (life hazard) that is determined in the size-up, which occurs on the front end of the Strategic Decision-Making Model (SDM). The SDM must be applied throughout the entire incident.

Firefighters on scene must use the proper personal protective equipment (PPE) in these situations for protection from the hazardous material(s) involved. DEPENDING ON THE HAZARDOUS MATERIAL RELEASED, TURNOUTS AND AN SCBA MAY NOT PROTECT THE MEMBER.

Communication between the first arriving crews and the first arriving Hazmat crew, or C957, must be made prior to committing resources into the hot zone. This communication contributes to an accurate size-up that identifies the nature and severity of the immediate problem and gathers sufficient information to formulate an Incident Action Plan. Command must identify a hazardous area that is based on the potential danger of the incident that takes into account the materials involved, time of day, weather conditions, location of the incident and degree of risk to unprotected personnel. Again, immediate action should be taken to evacuate and/or rescue persons in critical danger, while also providing for safety of firefighters and hazmat personnel on scene.

The primary objective is to identify the type of materials involved in a situation, and the hazards present, before formulating a plan of action. Look for any labels and placards that include the NFPA 704 placard, DOT placard and UN numbers, shipping papers, or any other information to help determine the type and quantity of the hazardous material released. If a Responsible Party (RP) is near the scene, keep them within reach. Any pertinent information shall be communicated over the radio to assist the hazardous response teams enroute.

> Example: “Engine 1 has located a NFPA 704 marking with a blue 4, red 0, yellow 0, and the letters “O” “X” in the white”.
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> Example: “Engine 1 has a liquid leaking from a hole in the side of a tanker. The placard on the tanker is red, reads 1203, and has a 3 at the bottom of the placard.”
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> Example: “Engine 1 has met with the RP on scene and states this is an ammonia leak, and the shut-off valve was closed prior to evacuating the building”


NFPA 704 MARKING PLACARD

**Blue = Health Hazard**
4 - Deadly
3 - Extreme Danger
2 - Hazardous
1 - Slightly Hazardous
0 - Normal Material

**Yellow = Instability**
4. May detonate
3. Shock and heat may detonate
2. Violent chemical change w/ high temp
1. Unstable if heated
0. Stable

**Red = Flammability Hazard**
*Flash Points*
4. Below 73°F (boiling point below 100°F )
3. Below 100°F
2. 100°F to 200°F
1. Above 200°F
0. Will Not Burn

**White = Specific Hazard**
OX = oxidizer
ACID = acid
ALK = alkali
COR = corrosive
W = use no water

# DOT Placard Examples


**Action Plan**

Based on the initial size-up and any information available, Command will formulate an action plan to deal with the situation.

**The Action Plan Must Provide For:**

1. Safety of all fire personnel
2. Evacuation of endangered area, if necessary
3. Control of the situation
4. Stabilization of hazardous materials, and/or
5. Disposal or removal of hazardous materials

Most hazardous materials are intended to be maintained in a safe condition for handling and use through confinement in a container or protective system. The emergency is usually related to the material escaping from the container or system, creating a hazard - once released. The strategic plan must include a method to control the flow or release. This may involve getting the hazardous material back into a safe container, neutralizing it, allowing it to dissipate safely, or coordinating its proper disposal.

The specific action plan must identify the method of hazard control and identify the necessary resources to accomplish this goal.

Avoid committing personnel and equipment prematurely or "experimenting" with techniques and tactics. Many times, it is necessary to evacuate and wait for special equipment or TECHNICAL help from the Hazardous Materials Teams responding to the scene.

As a general policy, the Hazardous Materials Team will respond to any situation where a private contractor is required to clean up hazardous materials. In these situations, ensure Car 99 is responding and is used as a resource.

**Control of Hazardous Area**

A hazardous material incident has two INITIAL zones associated with the scene, similar to a Fire - the **HOT ZONE** and the **LIMITED ACCESS ZONE**.

**Hot Zone (HZ)**

The Hot Zone is the area in which personnel are potentially in immediate danger from the hazardous conditions. This is established by Command, continuously evaluated by Hazard Sector, and controlled by the Fire Department. Access to this area will be rigidly controlled and only personnel with proper protective equipment, radios, and an assignment will enter. All companies will remain intact outside the Hot Zone (HZ) until assigned. A Lobby Control Sector or Team will be assigned to monitor entry and exit of all personnel from the HZ. The HZ should be geographically described to all responding units, if possible and identified by white/red hazard zone tape.

1. Establish a safe perimeter around the hazardous area and identify with Hazard Zone tape.
2. Request adequate assistance to maintain the perimeter.
3. Identify an entrance/exit point and inform Command of its location.
4. Coordinate with Hazard Sector to identify the required level of protection for personnel operating in the Hot Zone.
5. Collect/return accountability PASSPORTS of all companies entering/leaving the controlled area.

Restriction of personnel access into the HZ includes not only Fire Department personnel, but any others who may wish to enter the area (Police, press, employees, tow truck drivers, ambulance personnel, etc.). Command is responsible for everyone's safety.

**Limited Access Zone (LAZ)**

The LAZ is the larger area surrounding the HZ in which a lesser degree of risk to personnel exists. All civilians should be removed from this area. The limits of this zone will be enforced by the Police Department based on distances and directions established in consultation with Command and Hazard Sector. The area to be evacuated depends on the nature and the amount of the material and type of risk it presents to unprotected personnel (toxic, explosive, etc.).

In some cases, it is necessary to completely evacuate a radius around a site for a certain distance (i.e., potential explosion).

In other cases, it may be advisable to evacuate a path downwind where toxic or flammable vapors may be carried (and control ignition sources in case of flammable vapors).

> NOTE: When toxic or irritant vapors are being carried downwind, it may be most effective to shelter in place, keeping everyone indoors with windows and doors closed to prevent contact with the material instead of evacuating the area. In these cases, companies will be assigned to patrol the area assisting citizens in shutting down ventilation systems and evacuating persons with susceptibility to respiratory problems.
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> Reference: M.P. 201.05E Evacuation Sector