Hazardous Material

Waller County ARES training material used with permission from Christine Smith, N5CAS.

This discussion is really just meant to be an introduction to Hazardous Materials (HazMat). I would like to also stress the need for personal safety when dealing with Hazardous Materials. Amateur operators sometimes encounter HazMat incidents, or you may be asked to assist with emergency communications in such incidents. Proper training is required for your own safety. Moreover, the wrong move by you during a HazMat operation can endanger not only your own safety, but also the safety of other responders as well as the entire local community.

The term "hazardous materials" (HazMat) refers to any substances or materials, which if released in an uncontrolled manner (e.g., spilled), can be harmful to people, animals, crops, water systems, or other elements of the environment. The list is long and includes explosives, gases, flammable and combustible liquids, flammable solids or substances, poisonous and infectious substances, radioactive materials, and corrosives.
One of the major problems faced by emergency responders, including ARES members, is determining which chemicals are involved and in what quantities.

Hazardous Chemicals On The Move

The US Department of Transportation (DOT) has established several systems to manage HazMat materials. They have defined various classes of hazardous materials, placards and other marking requirements for containers and packages to quickly identify cargoes, and an international cargo commodity numbering system.
The DOT requires that all freight containers, trucks and rail cars transporting these materials display placards identifying the hazard class or classes of the materials they are carrying. The placards are diamond-shaped, 10-inches on a side, color-coded and show an icon or graphic symbol depicting the hazard class (flammable, caustic, acid, radioactive, etc). They are displayed on the ends and sides of transport vehicles. A four-digit identification number may be displayed on the placard or on an adjacent rectangular orange panel. You have probably seen these placards or panels displayed on trucks and railroad tank cars. You may recognize some of the more common ones, such as 1993, which covers a multitude of chemicals including road tar, cosmetics, diesel fuel, and home heating oil. Or you may have seen 1203 placards on tankers filling the underground tanks at the local gas station.

In addition to the placards, warning labels must be displayed on most packages containing hazardous materials. The labels are smaller versions (4 inches on a side) of the same placards used on trucks and other vehicles. In some cases, more than one label must be displayed, in which case the labels must be placed next to each other. In addition to labels for each DOT hazard class, other labels with specific warning messages may be required. Individual containers also have to be accompanied by shipping papers that contain the proper product name, the four-digit ID number and other important information about the hazards of the material.

Hazardous Chemicals in Buildings

The National Fire Protection Association (NFPA) has devised a marking system to alert firefighters to the characteristics of hazardous materials.
Known as NFPA 704M, the label is diamond-shaped, and is divided into four parts, or quadrants. The left quadrant, colored blue, contains a numerical rating of the substance's health hazard. Ratings are made on a scale of 0 to 4, with a rating of 4 indicating a danger level so severe that a very short exposure could cause serious injury or death. A zero, or no code at all in this quarter, means that no unusual hazard would result from the exposure. The top quadrant of the NFPA symbol contains the substance's fire hazard rating. This quadrant is red. Again, number codes in this quadrant range from 0 to 4, with 4 the most serious hazard. The NFPA label's right quadrant, colored yellow, indicates the substance's likelihood to explode or react. As with the health and fire hazard quadrants, ratings from 0 to 4 are used to indicate the degree of danger. If a 4 appears in this section, the chemical is extremely unstable, and even under normal conditions may explode or react violently. A zero in this quadrant indicates the material is considered to be stable even in the event of a fire. The bottom quadrant is white, and contains information about any special hazards that may apply. There are three possible codes for the bottom quarter of the NFPA symbol:

OXY means this material is an oxidizer. It can easily release oxygen to create or worsen afire or explosion hazard.

The symbol **W** indicates a material that reacts with water to release a gas that is either flammable or hazardous to health.
If the material is **radioactive**, the tri-blade "propeller" symbol for radioactivity will appear.

Guidelines for Handling HAZMAT Incidents

1. **Be sure you are up-wind and up-hill from the incident site. Once you are in a safe position, try to identify the material. However, it cannot be over emphasized that you MUST stay well away from the site. Do NOT be tempted to get just a little closer so that you can read placards or other items. If you cannot read these items using binoculars or a scope, simply report what you can see from a safe position. If you are able to see from a safe position, look for:**
   - **The four-digit number on a placard or orange panel.**
   - **The four-digit number preceded by the initials "UN/NA" on a shipping paper, package or drum.**
   - **The name of the material on the shipping papers, placard, or package.**
2. **Call for help immediately and let the experts handle the situation. Remember, even ordinary firefighters and police are prohibited under federal law from taking certain actions at some HazMat incidents. Do not attempt to personally take any action beyond your report. This is an instance when it is vitally important to know your limitations, not just for your own safety, but also for the safety of others.**
3. **When calling in the experts, you should consider including the following information:**
   a. **Identify yourself.**
   b. **Give your current location and the location of the incident, i.e. street address or across streets, road and mile marker, distance from nearest town, etc.**
   c. **Briefly describe what you see (from a distance), i.e. liquid spill, gaseous cloud, etc.**
   d. **If gaseous cloud or liquid, give the direction the contaminant is flowing or moving. Give any other pertinent weather information you observe from a safe distance that might help the experts in responding to the incident. Be brief but concise.**

Remember, as emergency communicators, it is our purpose to help provide communications during times of emergencies. This **DOES NOT MEAN** you are to put yourself into **ANY** situation that you feel might be hazardous to your health and safety.

We **DO NOT** have the equipment or resources to physically get involved in any of these type situations. **ALWAYS** stay a safe distance from any incident.

Who to call:

The emergency response information services shown below have requested to be listed as providers of emergency response information and have agreed to provide emergency response information to all callers. They maintain periodically updated lists of state and Federal radiation authorities that provide information and technical assistance on handling incidents involving radioactive materials.

1. **CHEMTREC**®, a 24-hour emergency response communication service, can be reached as follows:

   CALL **CHEMTREC**® (24 hours)
   1-800-424-9300
   (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

2. **CHEM-TEL, INC.**, a 24-hour emergency response communication service, can be reached as follows:

   CALL **CHEM-TEL, INC.** (24 hours)
   1-800-255-3924
   (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

3. **INFOTRAC**, a 24-hour emergency response communication service, can be reached as follows:

   CALL **INFOTRAC** (24 hours)
   1-800-535-5053
   (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

4. **3E COMPANY**, a 24-hour emergency response communication service, can be reached as follows:

   CALL **3E COMPANY.** (24 hours)
   1-800-451-8346
   (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

5. **National Response Center (NRC)**

   The NRC, which is operated by the U.S. Coast Guard, receives reports required when dangerous goods and hazardous substances are spilled. After receiving notification of an incident, the NRC will immediately notify the appropriate Federal On-Scene Coordinator and concerned Federal agencies. Federal law requires that anyone who releases into the environment a reportable quantity of a hazardous substance (including oil when water is, or may be affected) or a material identified as a marine pollutant, must **immediately** notify the NRC. When in doubt as to whether the amount released equals the required reporting levels for these materials, the NRC should be notified.

CALL **NRC** (24 hours)
1-800-424-8802
(Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

Calling the emergency response telephone number, CHEMTREC®, CHEM-TEL, INC., INFOTRAC or 3E COMPANY, does not constitute compliance with regulatory requirements to call the NRC.

6. MILITARY SHIPMENTS

For assistance at incidents involving materials being shipped by, for, or to the Department of Defense (DOD), call one of the following numbers (24 hours):

703-697-0218 (call collect) (U.S. Army Operations Center) for incidents involving explosives and ammunition.

1-800-851-8061 (toll free in the U.S.) (Defense Logistics Agency) for incidents involving dangerous goods other than explosives and ammunition.

The above numbers are for **emergencies** only.

Links for further related information:

Details of the placards and emergency response procedures can be found in the comprehensive DOT *Emergency Response Guidebook*, copies of which may be available for your review at your local Emergency Management, police, sheriff or fire department. A copy is also available online at: http://hazmat.dot.gov/gydebook.htm

Some of the information in this discussion was taken from this guidebook.