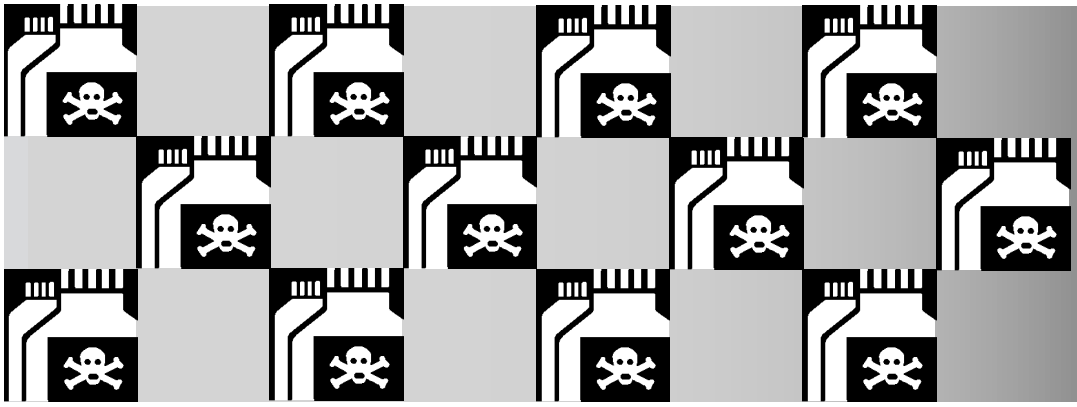

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Chemical Emergency

Produced by the National Disaster Education Coalition: American Red Cross, FEMA, IAEM, IBHS, NFPA, NWS, USDA/ CSREES, and USGS

Why talk about chemical emergencies?

Hazardous materials are chemical substances, which if released or misused, can pose a threat to the environment. These chemicals are used in industry, agriculture, medicine, research, and consumer goods. As many as 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals." Each year, over 1,000 new synthetic chemicals are introduced. Hazardous materials come in the form of explosives, flammable and combustible substances, poisons, and radioactive materials. These substances are most often released as a result of transportation accidents or because of chemical accidents in manufacturing plants.

What is a home chemical emergency, and a major chemical emergency?

Chemicals are a natural and important part of our environment. Even though we often don't think about it, we use chemicals every day. They can be found in our kitchens, medicine cabinets, basements, and garages. Chemicals help us keep our food fresh and our bodies clean. They help our plants grow and fuel our cars. And chemicals make it possible for us to live longer, healthier lives.

Hazardous materials are most often released as a result of transportation accidents or because of chemical accidents in manufacturing plants.

A home chemical emergency arises when chemicals are used improperly. Some chemicals that are safe, and even helpful in small amounts, can be harmful in larger quantities or under certain conditions. In fact, most chemical accidents occur in our own homes, and they can be prevented.

A major chemical emergency is an accident that releases a hazardous amount of a chemical into the environment. Accidents can happen underground, on railroad tracks or highways, and at manufacturing plants. These accidents sometimes result in a fire or explosion, but many times

you cannot see or smell anything unusual.

In the event of a major chemical emergency, you will be notified by the authorities. To get your attention, a siren could sound, you may be called by telephone, or emergency personnel may drive by and give instructions over a loudspeaker. Officials might even come to your door.

Learn more about your risk of chemical emergencies by contacting your local poison control center, local authorities on hazardous materials, the Environmental Protection Agency, your local emergency manager, or local American Red Cross chapter.

Awareness Information

You may be exposed to a chemical even though you may not be able to see or smell anything unusual. You may be exposed in three ways:

1. Breathing the chemical.
2. Swallowing contaminated food, water, or medication.
3. Touching the chemical, or coming into contact with clothing or things that have touched the chemical.

Learn about chemicals and chemical emergencies:

- Chemicals are everywhere. They are an important part of life.
- The most common chemical accidents occur in our own homes, and they can be prevented.
- The best way to avoid chemical accidents is to read and follow the directions for use, storage, and disposal of the product. Mixing products can be hazardous.

If you find someone who appears to have been injured from chemical exposure, make sure you are not in danger before administering first aid. If you think there might be potential danger, call 9-1-1 or your local emergency number. If there is no danger, give first aid as needed.

The best way to protect yourself and your family is to be prepared. Knowing what to watch for and how to respond will keep you alert to potential chemical hazards.

Preventing Chemical Emergencies in the Home

- Learn about household chemical risk. Contact authorities on hazardous household materials, such as the Environmental Protection Agency, for information about potentially dangerous household products and their antidotes. Ask about the advisability of maintaining antidotes in your home for cleaners and germicides, deodorizers, detergents,

drain and bowl cleaners, gases, home medications, laundry bleaches, liquid fuels, and paint removers and thinners.

- Keep all medicines, cosmetics, cleaning products, and other household chemicals out of sight and out of reach of children. The most common home chemical emergencies involve small children eating medicines. Experts in the field of chemical manufacturing suggest that moving hazardous materials out of sight could eliminate up to 75 percent of all poisonings of small children.
- Flush medicines that are no longer being used or that are outdated down the toilet, and place the empty container in the trash. Outdated medicines can sometimes cause ill effects. Flushing them will eliminate the risk of people or animals picking them out of garbage.
- Store household chemicals according to the instructions on the label. Non-food products should be stored tightly closed in their original container so you can always identify the contents of each container and how to properly use the product.
- Avoid mixing common household chemical products. Some combinations of these products, such as ammonia and chlorine bleach, can create toxic gases.
- Always read the directions before using a new product. To avoid inhaling dangerous vapors, do not use some products in a small, confined space. Other products should not be used without gloves and eye protection to help prevent the chemical from touching your body.
- Read instructions on how to dispose of chemicals properly. Improper disposal can result in harm to yourself or members of your family, accidental contamination of the local water supply, or harm to other people. It is also important to dispose of products properly to preserve the environment and protect wildlife. Plus, some products can be recycled, which helps protect the environment. If you have questions about how to properly dispose of a chemical, call the facility or the environmental or recycling agency.
    - Small amounts of the following products can be safely poured down the drain with plenty of water: antifreeze, bathroom and glass cleaner, bleach, drain cleaner, fertilizer, household disinfectant, laundry and dishwashing detergent, rubbing alcohol, rug and upholstery cleaner, and toilet bowl cleaner.
    - Small amounts of the following products should be disposed of by wrapping the container in newspaper and plastic and placing it in the trash: brake fluid, car wax or polish, dish and laundry soap, drain cleaner, fertilizer, furniture and floor polish, insect repellent, nail polish, oven cleaner, paint thinners and strippers, pesticides,

power cleaners, toilet bowl cleaner, water-based paint, and wood preservatives.

  - Dispose of the following products at a recycling center or a collection site: kerosene, motor or fuel oil, car battery or battery acid, diesel fuel, transmission fluid, large amounts of paint, paint thinner or stripper, power steering fluid, turpentine, gun cleaning solvents, and tires.
  - Empty spray cans by pressing the button until nothing comes out, then place the can in the trash. Do not place spray cans into a burning barrel, incinerator, or trash compactor because they may explode.

- Never smoke while using household chemicals. Avoid using hair spray, cleaning solutions, paint products or pesticides near the open flame of an appliance, pilot light, lighted candle, fireplace, wood burning stove, etc. Although you may not be able to see or smell them, vapor particles in the air could catch fire or explode.
- If you should spill a chemical, clean it up immediately with rags, being careful to protect your eyes and skin. Allow the fumes in the rags to evaporate outdoors in a safe place, then dispose of them by wrapping them in a newspaper and placing them in a sealed plastic bag. Dispose of these materials with your trash.
- Buy only as much of a chemical as you think you will use. If you have product left over, try to give it to someone who will use it. Storing hazardous chemicals increases risk to chemical emergencies.
- Keep an A-B-C–rated fire extinguisher in the home and car, and get training from your local fire department on how to use them. Should chemicals ignite, you will have an opportunity to extinguish the fire before it spreads, avoiding greater damage.
- Post the number of the nearest poison control center by all telephones. In an emergency situation you may not have time to look up critical phone numbers.
- Learn to detect the presence of a hazardous material. Many hazardous materials do not have a taste or an odor. Some materials can be detected because they cause physical reactions such as watering eyes or nausea. Some hazardous materials exist beneath the surface of the ground and can be recognized by an oil or foam-like appearance. Recognizing them immediately will allow you to take steps to avoid direct contact and limit your exposure to potentially hazardous chemicals.

- Learn to recognize the symptoms of toxic poisoning:
  - Difficulty in breathing.
  - Irritation of the eyes, skin, throat, or respiratory tract.
  - Changes in skin color.
  - Headache or blurred vision.
  - Dizziness.
  - Clumsiness or lack of coordination.
  - Cramps or diarrhea.

What to Do During a Home Chemical Emergency

- If your child should eat or drink a non-food substance, find any containers immediately and take them to the phone. The poison control center may need specific information from the container to give you the best emergency advice.
- Call the poison control center, emergency medical services (EMS), 9-1-1, or the operator. They will give you emergency advice while you wait for professional help.
- Follow the emergency operator's or dispatcher's instructions carefully. Often the first aid advice found on containers may not be appropriate. Do not give anything by mouth until you have been advised by medical professionals.
- If a hazardous substance comes into contact with an eye, it is important to take immediate action. Delaying first aid can greatly increase the likelihood of injury. Flush the eye with clear, lukewarm water for a minimum of 15 minutes, unless authorities instruct you not to use water on the particular chemical involved. Continue the cleansing process even if the victim indicates he or she is no longer feeling any pain, then seek medical attention.
- If there is danger of a fire or explosion, get out of the house immediately. Do not waste time collecting items or calling the fire department when you are in danger.
- If there is a fire or explosion, call the fire department from outside (a cellular phone or a neighbor's phone). Once you are safely away from danger, call for professional help.
- Stay away from the house to avoid the possibility of breathing toxic fumes.
- Wash hands, arms, or other parts of the body that may have been exposed to the chemical. Chemicals may continue to irritate the skin until they are washed off.

- Discard any clothing that may have been contaminated. Some chemicals may not wash out completely. Discarding clothes will prevent potential future exposure.
- Administer first aid treatment to victims of chemical burns.
  - Call 9-1-1 for emergency help.
  - Remove clothing and jewelry from around the injury.
  - Pour clean, cool water over the burn for 15 to 30 minutes.
  - Loosely cover the burn with a sterile or clean dressing. Be sure that the dressing will not stick to the burn.
  - Refer victim to a medical professional for further treatment.

Plan for Major Chemical Emergencies

- Learn about your community's risk from major chemical emergencies. Contact your emergency management agency or American Red Cross chapter for information on chemical plants and hazardous material transportation routes in your area.
- Find out evacuation plans for your workplace and your children's schools. Different locations have different plans. Know where you or your children may be taken in the event of a major chemical emergency.
- Develop an evacuation plan. (See "Evacuation" in the "Family Disaster Plan" section.) Everyone in your family should know where to go if they have to leave. Trying to make plans at the last minute can be upsetting and create confusion.
- Learn about industry and community warning signals. Different communities may have different ways of providing warnings. Many communities have sirens intended for outdoor warning purposes. Use a NOAA weather radio with a tone-alert feature to keep you aware of warnings while you are indoors.

Assemble a Disaster Supplies Kit

Please see the "Disaster Supplies Kit" section for general supplies kit information. Specific supplies for a chemical emergency should include the following:

- Disaster Supply Kit basics.
- Evacuation Supply Kit.

Discuss chemical emergencies with your family. Everyone should know what to do in case all family members are not together. Discussing major chemical emergencies ahead of time helps reduce fear and anxiety and lets everyone know how to respond.

Media and Community Education Ideas

- Publish a special section in your local newspaper with emergency information on hazardous materials. Localize the information by printing the phone numbers of the local poison control center, emergency services

offices, the American Red Cross, and local hospitals.

- Interview a member of your community's Local Emergency Planning Committee about what hazardous substances may be in your community, where they are kept in large quantities, and by what routes they are transported through the area.
- Publish a chart of warning symbols and terms.
- Publish a series on hazardous materials that can be found in the home and the proper antidotes for them.
- Stage a demonstration to show people how to seal off their homes properly by working with emergency building materials, such as sandbags, plywood, and plastic sheeting.

What to Do During a Major Chemical Emergency

- If you hear a siren or other warning signal, turn on a radio or television for further emergency information. You will be notified of a major chemical emergency by the authorities. To get your attention, a siren could sound, you may be called by telephone, or emergency personnel may drive by and give instructions over a loudspeaker. Officials might even come to your door.
- Listen carefully to the radio or television. The Emergency Alert System (EAS), which has replaced the Emergency Broadcast System, may be activated. You will be given specific instructions for your particular situation.
- Strictly follow instructions. Your life could depend on it.
- You will be told the following:
  - The type of health hazard.
  - The area affected.
  - How to protect yourself.
  - Evacuation routes (if necessary).
  - Shelter locations.
  - Type and location of medical facilities.
  - The phone numbers to call if you need extra help.
- Call EMS, 9-1-1, or the operator only for a possible life-threatening emergency. Telephone lines are frequently overwhelmed in disaster situations. They need to be clear for emergency calls to get through.

What to Do if You Are at the Scene of a Chemical Accident

- Call 9-1-1 or the local fire department to report the nature and location of the accident as soon as possible. Alerting local authorities to a major chemical emergency immediately may help reduce potential injury or damage.
- Move away from the accident scene and help others away. Minimizing the time you are exposed reduces your risk of injury from breathing toxic chemicals. Some chemicals may ignite or explode.
- Stay away from the spilled substance and avoid touching it. If you are not sure of a substance or its effects, wait for authorities on the scene to advise you of proper medical care or attention to minimize injury.
- Try to avoid inhaling gases, fumes, or smoke. If possible, cover your mouth with a cloth while leaving the area. Many chemicals can damage breathing passages.
- Stay away from accident victims until the hazardous material has been identified. Once a substance has been identified and authorities indicate it is safe to go near victims, you can move victims to fresh air and call for emergency medical care. Remove contaminated clothing and shoes and place them in a plastic bag. Cleanse victims who have come in contact with chemicals by immediately pouring cold water over the skin or eyes with running water for at least 15 minutes, unless authorities instruct you not to use water on the particular chemical involved. Minimizing your exposure will decrease potential injury.
- Try to stay upstream, uphill, and upwind of the accident. Chemicals may be carried by water, gravity, or wind. Minimize your exposure.

How to Shelter-in-Place

One of the basic instructions you may be given in a chemical emergency is to shelter-in-place. This is a precaution aimed to keep you and your family safe while remaining in your home. If you are told to shelter-in-place, go inside, close all windows and vents and turn off all fans, heating or cooling systems. Take family members and pets to a safe room, seal windows and doors, and listen to local radio (or television) stations, or a NOAA Weather Radio for instructions.

- While gathering your family, you can provide a minimal amount of breathing protection by covering your mouth and nose with a damp cloth. Many chemicals can cause damage to breathing passages.

- Immediately after the shelter-in-place announcement is issued, fill up bathtubs or large containers for an additional water supply, and turn off the intake valve to the house. Water supplies may become contaminated. Preserve the water you have available.
- If gas or vapors could have entered the building, take shallow breaths through a cloth or a towel. Many chemicals can cause damage to breathing passages.
- Avoid eating or drinking any food or water that may be contaminated. Injury may occur from eating or drinking toxic chemicals.
- Seal house so contaminants cannot enter:
  - Close and lock all windows and doors in your home.
  - Turn off all fans, heating and air conditioning systems.
  - Close the fireplace damper.
  - Seal gaps and cracks under doorways and windows with wet towels and duct tape.
  - Seal gaps around window and air conditioning units, bathroom and kitchen exhaust fans, and stove and dryer vents with duct tape and plastic sheeting, wax paper, or aluminum wrap.
  - Close off nonessential rooms such as storage areas, laundry rooms, and extra bedrooms.
  - Turn off ventilation systems.
- Go to an above-ground room (not the basement) with the fewest windows and doors. Some chemicals are heavier than air, and may seep into basements, even if the windows are closed.
- Take your Disaster Supplies Kit with you. These items may make you more comfortable while you are waiting for further instructions.
- Stay in the room and listen to your radio or television until you are told all is safe, or you are told to evacuate. Local officials may call for evacuation in specific areas at greatest risk in your community. Following the advice of local authorities is your safest choice.
- If you are told there is danger of explosion, close the window shades, blinds, or curtains. To avoid injury, stay away from the windows. If windows break due to the explosion, the shades will help prevent glass from shattering into your home.

Evacuation During a Chemical Emergency

If you are told to evacuate immediately, take your Disaster Supplies Kit. Pack only the bare essentials, such as medications, and leave your home quickly. Follow the route authorities recommend. Don't take short-cuts on the way to the shelter, they may be blocked or expose you to dangerous chemicals.

- It is important to stay calm, listen carefully, and follow all instructions. Authorities will decide if evacuation is necessary, based primarily on the type and amount of chemical released and how long it is expected to affect an area. Other considerations are the length of time it should take to evacuate the area, weather conditions, and the time of day. Authorities will advise you of the safest steps to take for your particular situation.
- If an evacuation order is issued, listen to your radio to make sure the evacuation order applies to you, and to understand if you are to evacuate immediately or if you have time to pack some essentials. Stay tuned to a radio or television for information on evacuation routes, temporary shelters, and procedures. Following the advice of local authorities is your safest choice.
- Avoid using the telephone. Use your phone only in life-threatening emergencies, and then call the poison control center, EMS, 9-1-1, or the operator immediately. Telephone lines are frequently overwhelmed in disaster situations. They need to be clear for emergency calls to get through.
- If you are told to evacuate, do so immediately. Local officials may call for evacuation in specific areas at greatest risk in your community. Following the advice of local authorities is your safest protection.
- Take your Disaster Supplies Kit. These items may make you more comfortable while you are away from home.
- Only if you have time, seal your house so contaminants cannot enter:
  - Shut off all vents.
  - Close fireplace dampers.
  - You don't need to turn off your refrigerator or freezer, but you should turn off all other appliances and lights as you leave.
  - Close and lock your windows and doors.
- Move quickly and calmly. Leaving the area as quickly as possible will reduce your chance of exposure to hazardous materials. Staying calm and rational will help you move safely and avoid delays or accidents caused by irrational behavior.

- Do not assume that a shelter will have everything you need. While shelters provide a safe place to stay and food, specialty items for infants and individuals on restricted diets may not be available. In most major chemical emergencies, shelters will provide only emergency items such as meals, cots, and blankets.
- If you need a ride, ask a neighbor. If no neighbor is available to help you, listen to local radio or television stations for further instructions.
- Check on neighbors to make sure they have been notified, and offer help to those with disabilities or other special needs. Elderly people and people with disabilities may require additional assistance, and people who care for them or who have large families may need assistance in emergency situations.
- Take only one vehicle to the evacuation site. Traffic may be very heavy and parking at a shelter may be limited. Reduce further congestion and keep your family together by eliminating additional vehicles.
- Close your car windows and air vents, and turn off the heater or air conditioner. Many chemicals can cause damage to breathing passages.
- For your safety, follow the exact route you are told to take. Shortcuts may put you in the path of danger.

What to Do After a Major Chemical Emergency

- Return home only when authorities say it is safe. Local officials on the scene are the best source of information for your particular situation.
- Follow local instructions concerning the safety of food and water. Contaminated food or water can cause illness.
- Clean up and dispose of residue carefully. Follow instructions from emergency officials concerning cleanup methods. Local officials will best know proper procedures for your particular situation.