

## Carbon Monoxide Poisoning

Carbon monoxide (CO) is an odorless and colorless gas—and it can kill. Every year in the United States, CO poisoning kills more than 200 people and sends thousands more to the hospital.

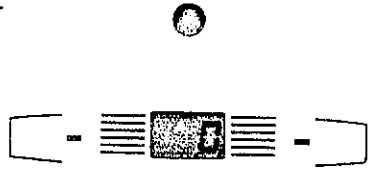
Carbon monoxide gas can come from a lot of places: gas-fired appliances, charcoal grills, wood-burning furnaces or fireplaces, power generators, chain saws and other gas-powered tools, and cars. Running a car or a generator in a closed garage or even under a carport, for instance, is a recipe for disaster.

Everyone is at risk for CO poisoning, but you can do some simple things to prevent a problem:

- Install a CO alarm in your home, and be sure everyone knows the sound of the alarm.
- Make sure your parents have any fuel-burning appliances, furnaces, and chimneys inspected by a professional at least once a year.
- Never use a charcoal grill in the garage or in your home—only outdoors!

Know the symptoms of carbon monoxide poisoning: headache, dizziness, faintness, and ringing in the ears. A person might yawn a lot or feel like vomiting. If you or someone else feels like this, get outside or open windows right away for fresh air.

If someone is overcome by carbon monoxide poisoning, call 911 for medical help. The person may not be able to breathe. Give rescue breathing as you learned to do for the First Aid merit badge. Make sure that all appliances and sources of combustion are turned off. A professional should investigate the source of the CO buildup and repair it.



A carbon monoxide detector, similar to a fire alarm, is a good way to mitigate emergencies due to fumes from incomplete combustion of poorly ventilated gas appliances. Test CO detectors once a month, and replace the batteries every six months.

As much as possible, be prepared before trouble strikes in public. For instance, get into the habit of looking for exits in any public building you enter. Be aware that in some situations, the best thing to do is to keep yourself safe and possibly leave the scene if you can.

## Saving Lives

During an emergency, you may help save lives by using your knowledge of first aid and of situations that might be dangerous. Earning the Lifesaving merit badge, for instance, will prepare you to react safely and effectively in the event of water emergencies. Here are some other emergency situations.

### Contact With a Live Wire

**Household wires.** Electrical appliances usually are safe, but eventually wires fray, plugs break, and parts loosen. Furthermore, circuits in your home might be overloaded with too many extension cords and appliances.

It is extremely dangerous to touch a “live” wire—that is, a wire that has electrical current running through it. Someone who has grabbed a bare spot on a live wire might not be able to let go. Call 911 for help. Pull the plug or cord, grabbing it only where it is well-insulated. Or, get to the main electrical switch in your home and shut off the power.

If you cannot shut off the power, try to push a household wire away with a dry, wooden stick (like a broom handle) or a rolled-up newspaper, which does not conduct electricity. If that does not work, you can separate the victim from the wire. But make sure you are not standing on a wet surface, because water conducts electricity. If possible, put on heavy, dry gloves before trying the rescue. Otherwise, you can use a dry handkerchief, towel, sheet, or other dry cloth to encircle the wire and pull the wire from the victim’s hand. *Do not touch the wire, the victim, or any grounded object such as water pipes.*



Rescuing a person who has come into contact with a live power line outdoors is extremely dangerous. A Scout should not try such a rescue. Call 911 or the fire department.

**Power lines.** Windstorms, rain, ice, and snowstorms can down power lines and plunge towns into darkness.

If you see a power line down outdoors, call the electric company, police, or fire department so that they can shut off the power immediately. Stay nearby to warn others of the danger, but *stay away from the power line. Do not attempt to rescue anyone in contact with a power line using the advice given for someone in contact with a household electrical wire.* Both the current (amount of electricity) and the voltage (the electrical “pressure”) in a power line are extremely high, and simple insulators such as a broom handle do not provide enough protection. Be aware that an incidental electrical charge could travel along a metal fence for a significant distance, so guard against the possibility of fallen power lines you cannot see.

The *Electricity* merit badge pamphlet has more information about electric shock, accident prevention, and rescue techniques that will help you be prepared for electrical emergencies.

### Clothes on Fire

Accidents involving burning clothes are among the most common causes of serious burns. If your clothes catch fire, remember to “stop, drop, roll, and cool.” Running will merely fan the flames and cause them to burn more. Try to keep calm. Stop where you are and drop to the ground. Roll over and over to smother the flames. Cover your face with your hands.

You can use this technique if someone else’s clothes catch fire, too. Get the person to stop and drop, then roll him or her over and over several times. If you can, grab a rug, coat, jacket, or blanket to wrap around the person to help smother the flames. But do not waste time running off to look for something.

After the fire is out, cold water will help cool the skin and reduce damage from burning. Call 911 for medical help as soon as possible.

The rule for clothes on fire, whether yours or someone else’s, is “Stop, drop, roll, and cool.”

### Drowning

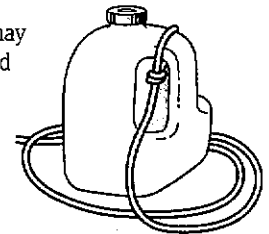
If you know the rescue methods *reach, throw, and row*, then you may not have to go; you might be able to save a drowning person—and avoid drowning, yourself, during the rescue with a reaching or throwing rescue. These are *nonswimming* methods of rescue. If you see someone who is in the water and needs help, you should use a reaching or throwing assist to help that victim. You should **never** endanger yourself by going into the water and swimming out to the victim unless you are trained to do so.



**Reach** with anything you can—your leg or arm, a broom, branch, paddle, pole. Lying down on or otherwise bracing yourself from a dock or solid ground, reach out with something the victim can grab onto. Pull the person to shore. You can lengthen your reach by wading into the water or by holding onto a dock or another firmly anchored object.

**Throw** help to a victim if the person is out of reach. You may find ring buoys attached to a line ready for use at most protected beaches and pools. A throwing rescue does not have to involve something with a line attached to it. Anything that floats well enough to support someone will help—life jackets and flotation cushions, inner tubes, air mattresses, kickboards, empty water jugs, and even coolers.

**Row** to a person in trouble if you cannot reach or throw help. When you get near the victim, row backward to him or her to allow the person to grasp the back of the boat. Once the person has calmed down, decide whether to tow the person a short distance to shore or to carefully help the person aboard over the back end of the boat. If a buddy is with you, your buddy can hold onto the victim while you tow the person ashore or help steady the boat when helping in the victim.



## Throwing Lines

A useful skill in a water emergency is the ability to throw a line smoothly and accurately: Practice first so that you can throw it accurately.

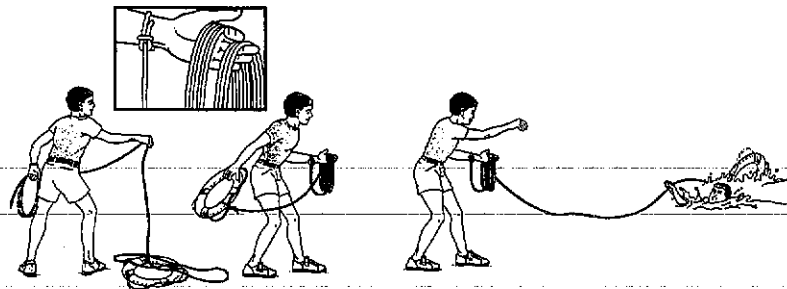
With a light line, tie a small bowline in the shore end of the line. Loop this loosely around your left wrist to anchor the shore end when you throw. (A tight wrist loop could result in your being pulled into the water.) With a heavy line, you might have to tie a knot in the shore end and step on it or tie it down.

Carefully coil a light line to form smooth loops in your left hand. Split the coil and hold half in each hand to make throwing underhand easier and more accurate.

Also throw a ring buoy underhand. Do not divide the coil—the extra weight improves accuracy. Hold the buoy in your throwing hand and the coiled line in your other hand. Throw the ring buoy to land beyond the victim and the attached line will rest over his or her shoulder or within easy reach. The victim can grab either the rope or the ring buoy as you pull him or her to safety.

Quickly retrieve and coil the line for another throw if needed. If you are right-handed, throw with your left foot forward and right foot back. To retrieve the line, drop your left hand in position for holding the coil as you pull in the line with your right hand. Save time by keeping your feet firmly planted in the same position when throwing and pulling in the line.

For heavy line, use these same procedures. If you cannot coil the line in your left hand, or if it is too heavy to hold, coil it neatly on the ground. Step on the shore end of the line or tie it down. Hold only the portion that you can grasp comfortably in your right hand and throw it toward your target.

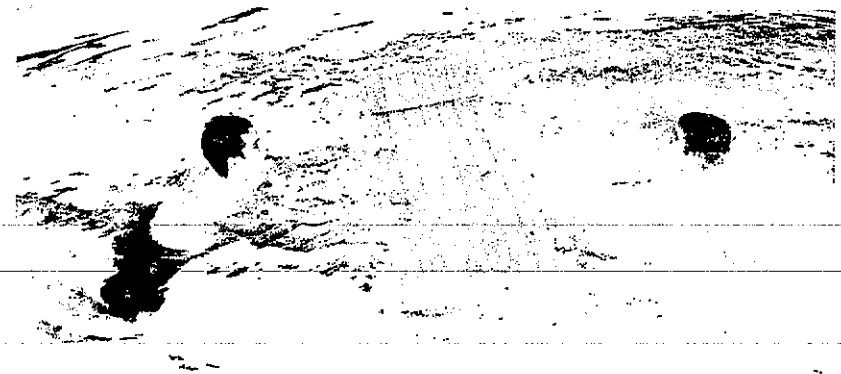


Use a boat with an outboard motor if you can, especially if the victim is far from shore. Stop the motor as you get near the victim, and then reach out with a paddle or pole.

If a canoe is the only craft handy, use it. Approach the victim carefully. If you have a flotation aid, such as an extra life jacket, throw it to the victim as you approach. Otherwise, sit on the bottom of the canoe, extend your paddle to let the victim grab it, and then swing the paddle so that the victim can grasp one end of the canoe. Once the victim has calmed down, decide whether to tow the person to shore holding onto the end of the boat or whether to use your paddle to steady the canoe as the victim climbs in over the side. If you overturn, get the victim to hang on to the canoe. Swim to one end, and with a strong kick push the canoe back to shore. Make sure you are wearing a life jacket, particularly if you are not a strong swimmer.

In a tight spot, you also can use a surfboard, a paddleboard, or an air mattress in the same way as a canoe, but only if you are comfortable in the water. Such a rescue would be considered a *swimming* method.

As a last resort, if you must go to a conscious victim, use a noncontact assist and take any type of rescue aid available (life jacket, oar, air mattresses, towel). Approach facing the victim and say what should be done. Provide assurance that if the victim can hold on to the aid, things will be all right. Present the aid and make sure the victim can reach it. Once the victim has a secure grip, give an instruction to kick. Either escort or, with the aid, tow the victim to safety. Stay nearby, but not close enough that the victim could grab you. Keep encouraging the victim's movements.



## Plane Signals

If you are lost, you might need to get the attention of a rescue plane or helicopter. Fire and smoke get a pilot's attention; however, also be aware of the hazards of wildfire in your area if a drought situation is in effect.

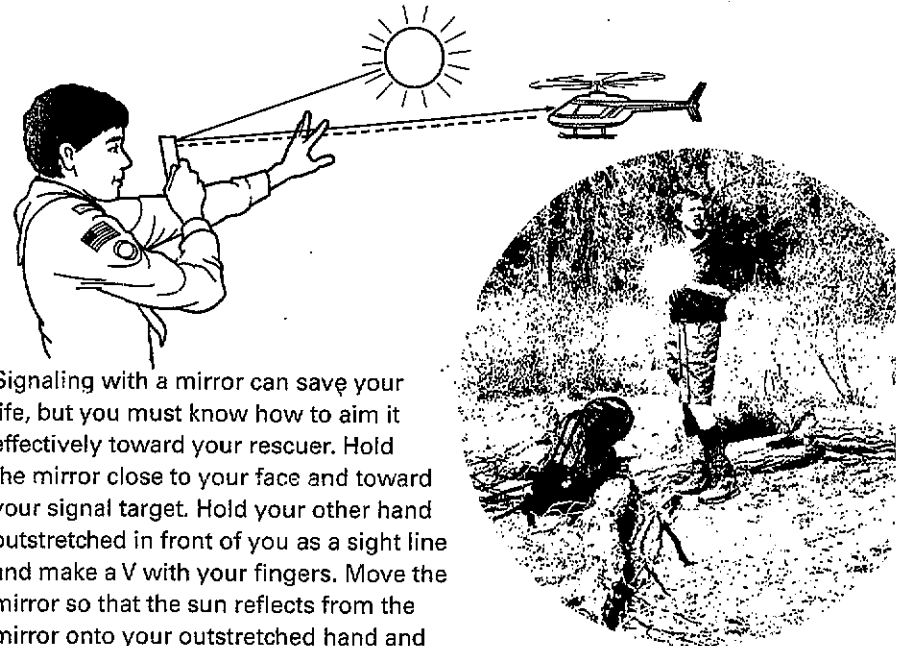
Three fires arranged in a triangle convey a universal SOS. Build fires in an open area where they can be seen. Keep a pile of fuel (brush, twigs, leaves, or grass) nearby so that you can quickly make the fires bigger. If you are short of fuel, lay a fire and be ready to light it when you first hear a plane. During the day, use green wood, damp leaves, rubber, or oil to produce visible smoke. Smoky fires show wind direction. This could be helpful to a pilot who has a chance to land.

With a smoky fire, you can send smoke signals. Cut off the smoke with a wet blanket (or something similar). Release it, but quickly cut off the smoke again. Do this so that you send three short puffs in a row. Pause and repeat.

Three of anything—visual or audible—means “distress.” The signal can be repeated at regular intervals. A pilot might spot three piles of debris when looking for a lost person. Three piles of cut branches or rocks might work. Flashing SOS using Morse code—three short flashes, three long flashes (twice as long as the short ones), three short flashes—is another way to attract help, night or day. The distress answer is two of anything.

In the daytime, a ground-level “sign language” of symbols can attract an aircraft and communicate with the pilot. Because geometric figures are not found in nature, symbols such as squares and triangles will attract attention. For instance, an arrow is the ground-to-air visual code meaning “proceeding in this direction.”

Make the symbols with strips of cloth, rocks, or branches. Use any available material that will contrast with the background that it is placed on. Make the symbols big—10 feet wide or wider—in an open area where they can be seen. You can also stamp the symbols in sand or snow. If possible, line the bottom of such tracks with something dark, such as leafy green branches (or powdered or rehydrated fruit drink in snowy conditions). Pile sand or snow on one side so that the sun will throw a shadow onto the symbols. When in doubt, use the international distress symbol, SOS.



Signaling with a mirror can save your life, but you must know how to aim it effectively toward your rescuer. Hold the mirror close to your face and toward your signal target. Hold your other hand outstretched in front of you as a sight line and make a V with your fingers. Move the mirror so that the sun reflects from the mirror onto your outstretched hand and through the V, and then move your hand and the mirror together and point them toward your target.

Take time to practice signaling with a mirror. Try it with a buddy in the distance as your “rescuer” and signal to each other.

One way to get the attention of a rescue aircraft is to use a mirror to aim a beam of reflected sunlight at the plane or helicopter (see the sidebar on signaling with a mirror). If you do not see or hear an aircraft, sweep the horizon with your reflected sunbeam anyway. This tiny flash of light can be seen for 50 or more miles.

You can make a signaling mirror using an empty can. Cut out the lid or bottom of the can, and you are ready to signal. You can also use the blade of your knife. If you are lost and have none of this equipment, you could use a smooth, wet piece of wood, a flat rock, or anything that will reflect some sunlight.

When you hear a helicopter or low-flying search plane, move to a safe place in an open area and lie on the ground on your back with your arms and legs spread. This will provide an excellent opportunity for detection by the air crew.



See the BSA's new merit badge pamphlet, *Signs, Signals, and Codes*, to find out more about signaling.

Practice signaling before you need to use it.

You can also “talk” to a pilot with body signals. Most pilots know this universal language. Learn the 11 standard body signals illustrated in this chapter.

Know how to “read” a pilot, too. A pilot says “yes” by dipping the nose of the plane up and down. Zigzagging—or fishtailing—the plane means “no.” If your message has been understood, the pilot will rock the plane from side to side or flash green lights with a signal lamp. If your message has not been understood, the pilot will make a complete right-hand circle or flash red lights.

**Search and Rescue**

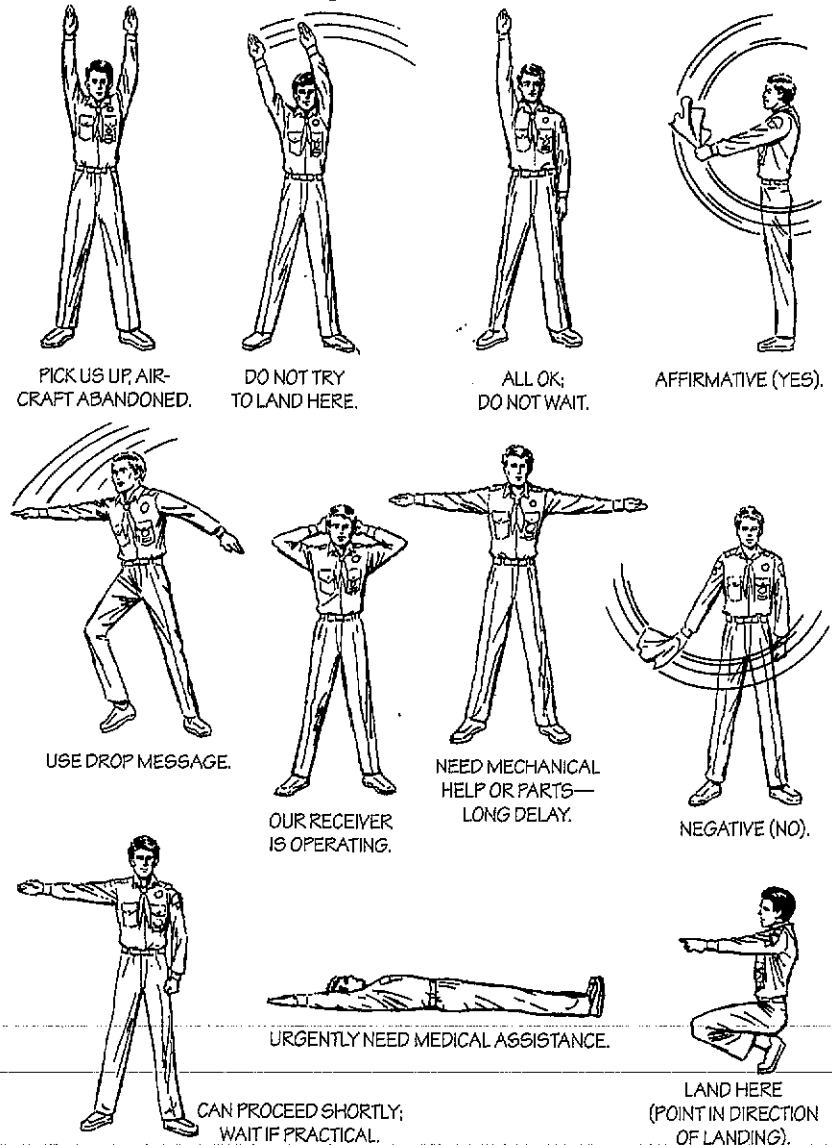
In places where people get lost frequently, such as in mountainous or wilderness areas, volunteer search-and-rescue teams have formed to meet the need. Searchers in helicopters and on horseback, as well as trained dogs, all try to find lost people. In some places, Scouts and Venturers have specialized search-and-rescue activities and participate actively in operations. If your troop is called to be part of a search-and-rescue team, you must be familiar with basic search tactics and detection methods.

**SEARCH TACTICS**

A search director, such as a deputy sheriff or other official, handles the overall planning for a search. A basic search plan follows something similar to this five-step sequence.

1. **Preliminary.** Searchers receive their assignments and information about the lost person (or people): Where was the person last seen? Did the person have wilderness experience? How was the person dressed, and what equipment did the person have?
2. **Confinement.** It is important to keep the lost person from wandering outside of a known area. Barricades and string lines (for stanchions) might be used. Searchers may be assigned to block roads or trails.
3. **Detection.** Searchers need to discover anything within the confined area that might help find the lost person. See the “Lost-Person Search Method” sidebar for one kind of structured grid sweep of an area.
4. **Tracking.** Dogs sometimes are used to track a lost person. Skilled searchers can follow footprints and know how to read other tracking signs.
5. **Evacuation.** When found, the lost person needs to be treated for possible injuries and evacuated.

**Standard Body Signals**



Knowing these signals can help you communicate with a pilot in an emergency situation.