

Respiratory Protection

Supplied-Air Respirators



Supplied-air respirators provide clean air when you are working in an extremely hazardous environment.

When your work environment contains contaminants that air-purifying respirators cannot filter out, a supplied-air respirator, or SAR (also called an air-line respirator), provides you with an outside source of breathing air. You should use a supplied-air respirator in the following situations:

1. A very high level of contaminants. Clean air is 20%, or one-fifth, oxygen. When the air is very contaminated, such as in enclosed areas where pesticides or spray paints are being used, the air may not contain enough oxygen to support life.
2. Toxic gases that cannot be filtered out by air-purifying respirators. Cartridges and canisters designed to neutralize toxic substances are not available for some contaminants.
3. When the oxygen has been deliberately replaced by another gas, such as in fruit storage sheds, or has been chemically used up, as in a fire.

4. Extremes in temperature. Air that is too hot or cold can damage your sensitive air passages.

5. Environments defined as "immediately dangerous to life and health" (IDLH), such as hazardous-waste sites, may be so toxic that it is too risky to use an air-purifying respirator.

How They Work

A typical SAR has a full-face mask, though some may have half masks and others may include hoods. A hose connects the mask to a stationary source of clean air, such as a compressed-air canister or specially designed air compressor. A regulator delivers a measured amount of air to a breathing tube connected to the face mask. If you are using a demand system, air will be supplied only when you inhale and create negative air pressure inside the mask. This system uses the air supply slowly, but if your face seal is not tight, you will inhale contaminated

air along with the clean air supply. Pressure-demand systems provide continuous, positive air pressure, so that even if your seal fails most contaminants will be forced out of the mask by the incoming clean air. In an IDLH area you must be equipped with a pressure-demand system to safeguard your air supply in case a leak develops in your mask's seal.

Some Limitations

Supplied-air respirators provide a safe, dependable and long-lasting air supply, but they do have disadvantages. Your mobility is limited by the length of the hose, the hose can kink or be damaged, and you must retrace your steps around obstacles when returning to your air supply—a hazard if visibility is poor or if you need to hurry. In situations requiring great mobility or quick action or anytime your hose is in danger of being cut off, you should use a self-contained breathing apparatus unless your system includes an auxiliary self-contained air supply.

Use Every Precaution

Never modify a supplied-air respirator for any reason. Each time you use your SAR you must check the fit carefully. Use both positive and negative pressure tests when you put on the respirator and again before you enter the work area. Your air line must be free of kinks and tangles and must not be more than 300 feet long. Valves and regulator should be working freely. When the air supply gets low, your device will sound an alarm signaling you to leave the hazardous area immediately. For safety's sake, work with a buddy when using your SAR. Taking these precautions every time you use your SAR will ensure your safety on the job. 