



Maine Farm Safety Program

by Dawna L. Cyr, farm safety project assistant, and Steven B. Johnson, Ph.D., Extension crops specialist

Using and Selecting Respirators

Respirators protect the lungs from many airborne health hazards on the farm, ranging from deadly silo and manure gases to dust, molds and chemicals. Frequent exposure to airborne health hazards can create long-term health threats. Respirators should be selected based on the air hazards that exist on the particular job. One type of respirator purifies the air breathed and another provides fresh air from a tank strapped to the individual. Farmers working in the areas that may become toxic, oxygen-deficient or smoke-filled, need to wear self-contained, oxygen-supplied respirators. Every respirator must be purchased to fit the person wearing it. Test your respirator before entering a hazardous area. If it fails, leave the work area immediately. Even with respirator equipment, keep your time in a hostile atmosphere as short as possible. (See fact sheet *Care of Respirators*.)

Requirements for the Use of Respirators

Anyone going to work wearing a respirator must first have a medical check-up. If people have breathing problems such as asthma, a heart condition, severely high blood pressure, or are extremely sensitive to heat, they may not be able to work wearing a respirator.

Using and Selecting Respirators

- Select the right respirator for the job.
- Insure a proper fit for the respirator.
- Keep respirators clean and replace them when needed.

Respirators must be initially fit-tested. The test must be repeated at least once a year, and records must be kept of the tests and respirator assignments.

Many things can affect how a respirator fits. Some people have physical features that make it difficult to get a proper fit. Scars, hollow temples, excessively protruding cheekbones, deep creases, or missing teeth can all prevent many kinds of face pieces from sealing properly. Try different sizes of respirators to get the best possible fit. A good fit will not be achieved if anything comes between the skin of the face and the seal of the face piece. This includes hair, a beard, eye glasses, a hat, welding helmet and goggles.

Any time a person experiences a facial physical change, another respirator fit test should be done. Such changes include weight loss or gain, having a tooth pulled or new dentures.

Types of Respirators

Dust masks are simple, low-cost versions of the filter respirators to be used in areas with nuisance dust and chaff.

They are disposable and inexpensive. They provide good protection. Mechanical filter respirators provide respiratory protection against particulates such as dusts, mists or metal fumes. These respirators either trap particulates or neutralize or absorb gasses and vapors. They do not

protect against both. Select the appropriate one for your job. A respirator with toxic dust approval should be used for protection against grain or wood dusts, and spores during silo filling. A fume-approved respirator should be worn when welding. Never rely on this type of respirator in oxygen-deficient areas because it does not supply oxygen.

Choosing the proper air-purifying respirator depends upon a proper face fit, filter efficiency and length of time worn. Workers with beards cannot use air purifying respirators because their facial hair does not allow for direct contact between the skin and respirator. Have air purifying respirators fitted by a professional, and follow the proper fitting procedures each time it is put on.

Air purifying respirators come in two-strap and adjustable strap models. Each has its own individual procedure for putting on and taking off. When putting on the two-strap respirator, prestretch the straps and cup the respirator in your hand with your fingertips at the metal strip. Place the respirator under your chin and over your nose and put on the top strap over your head, and then the lower strap. Using the fingertips of both hands, mold the metal nosepiece low on the bridge of the nose. When removing, take the lower strap off first, and then the top strap. The adjustable strap respirator is put on and fitted almost the same. The only difference is you put the bottom strap on first then the

Anyone going to work wearing a respirator must first have a medical check-up.

top strap, and then adjust the straps accordingly. To remove it, release the tension and remove the bottom strap and then the top.

If an air-purifying respirator becomes damaged in any way, it loses its effectiveness and should be discarded. This type of respirator is damaged if it is torn, if you can smell or taste contaminants, irritation occurs, breathing becomes difficult when wearing it, or dizziness or other distress occurs. Should any of these symptoms arise when wearing the respirator, leave the area immediately, and discard the respirator.

Chemical cartridge respirators and gas masks are not effective when oxygen is lacking. These can only protect against contaminants that have good warning properties; specifically, those which can be smelled at concentrations low enough not to be harmful. Don't use them in silos or manure pits where there might be a lack of oxygen. Make sure that they are National Institute for Occupational Safety and Health (NIOSH) approved respirators.

Supplied-air respirators are available in demand, pressure-demand and continuous-flow models. Make sure the supplied air is of breathable quality by buying from a reputable dealer and testing before use. This kind of equipment is limited use in agriculture, since the length of the hose line limits the mobility of the wearer. Do not wear supplied-air respirators in areas of

oxygen deficiency or atmospheres immediately dangerous to life or health. The wearer cannot escape if the air supply is cut off or if something goes wrong with the respirator.

A self-contained breathing apparatus (SCBA) offers the best protection to agricultural workers entering oxygen-deficient areas or other atmospheres immediately dangerous to life. There are two basic types of SCBA: open circuit and closed circuit. The closed circuit design involves a rebreathing device and the open circuit SCBA expels the exhaled air into the atmosphere instead of recirculating it. SCBAs have the advantage of an independent supply of breathable air, but there are also disadvantages. They are heavy and bulky, can only be used for a short time and require extensive training.



Jobs Requiring Respirators

Several jobs around the farm pose respiratory hazards that can lead to permanent lung damage. The following is a list of jobs that require the use of a respirator of some kind.

- Working in heavy dust or chaff (haying, combining, picking corn, milling, welding, or tilling dusty fields)
- Handling moldy hay
- Applying fertilizer or lime, or other materials that raise heavy mineral dusts
- Handling and applying pesticides
- Fumigating
- Working in silos, high moisture grain storage, and other closed areas where there isn't enough oxygen to support life or when poison gases may be present
- Working in or around manure storage facilities where there are poison gases
- Spraying paint
- Using solvents or other chemicals with noxious or toxic vapors
- Working where known allergens are present if the worker suffers from allergies such as hay fever

This Maine Farm Safety fact sheet is part of an educational fact sheet series produced by University of Maine Cooperative Extension. For more information on farm safety, contact your county Extension office.

For the most current Extension publications, see our online catalog at

www.umext.maine.edu

A Member of the University of Maine System