

FARMER'S LUNG

Physical Simulation

Materials needed: respiratory device (cost approx. \$5.00) consisting of Continuous Positive Airflow Pressure (CPAP) Mask, and inspiratory and positive expiratory exhalation (PEEP) adapters (these can be obtained from a local hospital, and the respiratory therapist can show you how it works); a one strap dust mask; a two strap NIOSH approved particulate mask.

Time required: 15 minutes

Give an overview of Farmer's Lung (see Teacher Fact Sheet). Have three students (about the same physical build and ability) line up. Explain that they are all dairy farmers with bad fences. One student has always used respiratory protection that is approved for use (two strap). One student has used respiratory protection but bought the cheapest kind (one strap). The other student never thought it was important to protect his/her lungs. Place the CPAP mask on this student to mimic the restricted inhalation and exhalation caused by Farmer's Lung. **CAUTION: STUDENTS WHO HAVE A HISTORY OF ASTHMA OR THAT HAVE AN ACTIVE RESPIRATORY INFECTION SHOULD NOT PARTICIPATE IN THIS ACTIVITY.**

Line up students. Tell them their cows are out, and they need to round them up. Have all students run to a designated spot and return as fast as they can. They will all be wearing the masks. The first time, do nothing to make breathing difficult for the CPAP student. Let students explain what it is like to wear the masks. Adjust the CPAP mask so breathing requires more effort. This is accomplished by adjusting the PEEP adapter. Repeat the exercise. Each time have students share if breathing is harder or the same. Expect all students to say it is hot under the mask. On the final run, tighten all ports on the CPAP mask, but allow for enough air exchange. By this time, the CPAP student will be working harder to breathe than the other students. Have all students remove their masks and share what wearing the mask was like.

Do not reuse the CPAP unit until you check the manufacturer's recommendation regarding disinfection and reuse. Some units may not be reusable.

Points to include for discussion

- All masks are hot. A two strap mask with a vented inhalation port is the coolest to wear and provides adequate protection. They cost about \$1.85 and are available from farm suppliers like Gempler's.
- It is most important to choose the right mask. To prevent Farmer's Lung, you need a **particulate protective mask**, not the kind you would use while painting or welding. The mask should have two straps, and you should see the term NIOSH imprinted on it. This indicates that the mask meets NIOSH standards.

- Fit the mask to your face. Usually, a mask has a nose adjustment piece made of metal or plastic. Mold this to fit your nose, so you have “breathing space.” Failure to do so will make it more difficult to breathe, hotter, and less protective.
- A one strap mask (called a nuisance mask) is of no value in protecting you against the tiny particles that cause Farmer's Lung. They are only helpful for very large particles. These masks are inexpensive and readily available, but they are not good.
- Farmer's Lung makes you feel really sick the first time you get it, similar to a severe case of flu. After that, the symptoms may not be as bad, but the damage to the lungs continues to add up, until it affects your ability to breathe. First, it affects your ability to breathe in, then to breathe out. By the end of about five years, your lungs are severely damaged. This damage cannot be repaired.
- Masks can be used until they get dirty, then it is time to get a new one.
- It is not a good idea to share masks with others.

Show students different types of respiratory protection that would be appropriate to decrease their exposure to microorganisms. Use the teaching sheets included in this section, and encourage students to purchase respirators. Stress the importance of keeping a clean respirator and changing filters or masks as they become soiled.

NOTE: The term “respirator” is used by manufacturers for any type of device that protects the air zone. More frequently, the term “dust mask” (or particulate mask) is used for the type of respirator needed to protect against Farmer's Lung.