TEST CHAMBER DESIGN

Purpose:

To design a chamber for respirator fit testing that has readily available, inexpensive, and easily assembled components.

Materials

- A clear polyethylene bag, approximately 24 inches in diameter and 60 inches long (e.g., a 55 gallon drum liner).
- A 24-inch diameter disc (e.g., cut from ¼" plywood or hardboard) with a ¼" diameter hole at the center.
- A ¼" diameter eye bolt with nuts and washers.
- A binder clip or a 2" thread screw hook.
- A pulley and 50' cord**.**

Assembly

1. Screw one nut to the top of the eyebolt stem. Slide one washer up to the nut and insert this assembly through the disc. Slide the second washer over the stem and tighten the second nut against the disc.

2. If using a binder clip, screw another nut approximately ½" up the eyebolt stem and slide another one washer up to the nut. Place one arm of the binder clip over the eye bolt stem, up against washer. Then slide another washer against clip, and screw the last nut onto the eye bolt stem. Tighten nuts so that the bottom of the eyebolt stem is flush with the bottom nut. Or, if using a screw hook, place the screw hook into the disc, as close as possible to the center on the side opposite the eyebolt.

3. Hold the polyethylene bag with the open end pointed down and slide the disc (with the eyebolt pointed upward) up through the bag towards the closed end. The disc becomes the chamber ceiling.

4. Make a small hole in the top of the bag for the eyebolt to pass through. Tie one end of a long (45') nylon cord to the eyebolt. Run the other end of cord over pulley wheel. Attach a shorter (5') cord through the swivel eye on the pulley assembly. A short cord can now be attached to the ceiling, truss, or other sturdy appendage of sufficient height to allow for chamber height adjustment to suit subjects of varying height.

5. Adjust the chamber so that the chamber ceiling is approximately 6" above the top of the test subject's head.

The unit is now ready for use as a respirator fit test chamber