

Industrial Noise

- 1 Careful acoustical design of new machines
- 2 Modification of design of machines now in use
- 3 Proper upkeep and repair of equipment
- 4 Muffling of exhausts
- 5 Changes in methods of processing

In contrast to the loud noises just cited, a survey^{*} of private and government engineers who design office buildings, stores, and hospitals found average (overall) sound levels considered good comfort (air) conditioning design practice to be

General office	47 dB
General	44
Reception room	43
Conference room	39
Private office	38 5
Hospital patient room	36

Reduction in amount of noise transmitted through air or building structures. Control of noise transmission may lower the overall noise level in a general work area, but it has little if any effect on the noise levels in the immediate vicinity of the source. A reduction in the amount of noise transmitted to the work area can be accomplished by

- 1 Increasing the distance between the work area and the source of noise
- 2 Construction barriers between the work area and the source of noise
- 3 Sound treating work areas to reduce reverberation
- 4 Placing equipment on vibration mounts

Revision of operational procedures. When necessary and possible, these procedural changes may be used to reduce noise-exposure

- 1 Changing job schedules
- 2 Rotating personnel
- 3 Enclosing remote control stations
- 4 Constructing observation booths (Fig 45-9 shows a transportable acoustically treated room which can be used as a super-

visory room, construction office, or first-aid station—either in buildings or in the field)

Use of personal protection

Ear protectors in effect reduce noise levels at the inner ear. Ear protection is particularly important when noise-exposures cannot be controlled adequately by environmental changes.

Types of ear protectors. Ear protectors may be

- 1 Ear plugs, or
- 2 Ear muffs

EAR PLUGS are designed to occlude the ear canal. They may be made of rubber, neoprene, or plastic. In general, ear plugs should be made of nonporous pliable material, never hard material. Contrary to popular opinion, dry cotton affords little or no protection. Material and shape also have little to do with the effectiveness of commercially available plugs except as they affect acceptance by users.

EAR MUFFS are designed to cover the external ear. At frequencies above 1000 Hz, muffs provide about the same protection as plugs. At frequencies below 1000 Hz, muffs provide more protection than plugs. (See section "Head and Ear Protection" in Chapter 38, "Personal Protective Equipment," for details.)

The choice of plugs or muffs or both depends in part on the work situation. Will the employee's head be confined to a work space so small there is no room for muffs? Must he wear a safety hat in addition to ear protection? And so forth. There are advantages and disadvantages to the use of either plugs or muffs, and before a choice is made between the two, all the circumstances of a particular job should be considered.

Fitting and indoctrination. An employee's ears should be examined and his hearing tested at the time he is fitted with ear protectors. Plugs should be fitted individually for each ear if the ear canals are not the same.

^{*}Technical Report No. 35, Building Research Advisory Board, Washington, D.C. (1959)