bert H Jones citation in "References"

The American Conference of Governmental Industrial Hygienists for a number of years have recommended limits of exposure to chemical agents in the working environment by the setting of threshold limit values During the past few years, a number of suggested limits of exposures for physical agents have been proposed by various organizations, but none of the limits have been accepted universally Due to this lack of uniformity, the American Conference of Governmental Industrial Hygienists (ACGIH) in May 1967 established a Committee on Physical Agents This Committee was directed to review the existing data on exposures of individuals to various physical agents and to recommend to the Conference safe limits of exposure

In establishing any limit of exposure, many factors have to be considered Among these are the types of data available and the validity of this data, methods of control of exposure and their feasibility, and of primary importance, the percentage of the group which will be protected by the established limits

Various procedures have been suggested in the past for rating the hearing loss potential of noise These have included "C" scale reading of a sound level meter, "A" scale reading of a sound level meter, average of the 500, 1000, and 2000 Hz octave bands, maximum limits in each of the three octave bands of 500, 1000, and 2000 Hz, and limits for each of the eight octave bands After considering the merits of each system and their ease of application it was decided to use the "A" scale reading from the sound level meter It must be pointed out that the "A" scale reading is used for hazard rating only, but if studies are made for the purpose of engineering control, then octave band analysis should be made of the noise

After considering the above factors, the Committee decided to establish a limit of 90 dBA for an eight hours per day, forty hours per week exposure Data indicates that this will protect about 90 per cent of the people exposed to this level for a normal working lifetime As more exposure data becomes available and the cost of engineering controls are reduced, it would be desirable to revise the limit, if necessary, to protect a larger percentage of the exposed population

For a number of years it was assumed that equal energy would produce equal damage to the ear If this assumption were true, then each time the sound level is increased three decibels the exposure time should be reduced one-half Laboratory data on temporary threshold shift and field data indicate that for the shorter exposure times the ear can tolerate more acoustical energy per day than for a continuous eight-hour exposure Also laboratory data and very limited field data indicate that if the exposure is intermittent in nature, (rest periods between exposures) the ear can tolerate considerably more acoustical energy than for a single exposure to continuous noise Considering these two factors, the limit is increased five decibels for each halving of the exposure time Thus these limits are a compromise between the more conservative equal energy concept and the more liberal intermittent exposure concept

At one time it was thought that limits of exposure for narrow bands of noise or pure tones should be 10 decibels lower than for broad band noise This was then revised to only five decibels, but some of the latest data available indicated that even five decibels is too conservative In the present limit no correction is made for pure tones or narrow bands of noise

There is very little data available on the effects of exposure to impact or impulsive noise Many factors possibly influence the effects, among them are peak sound pressure level, rise time, decay time, repetition rate, time interval between impacts or impulses, number per day, and background sound pressure levels It is known that exposure to a small number of 140 dB impulsive noises of short duration will produce a temporary threshold shift Until additional data are available, a limit of 140 dB peak sound pressure level is recommended

As additional data becomes available to the Committee it will be reviewed and, if necessary, revisions will be recommended to the Conference These revisions are normally made at the annual meetings of the Conference which are held in May of each year

Any comments or questions regarding these limits should be addressed to Herbert H Jones, Chairman, Threshold Limits Committee for Physical Agents, American Conference Governmental Industrial Hygienists, 1014 Broadway, Cincinnati 45202