FIRE ALARM CONCERNS

OESO has been contacted by persons concerned about hazards related to installed fire alarms systems. These concerns are generally related to one of two issues: noise levels of the audible alarms, and seizure induction by visual strobe alarms. This document presents our position on these concerns.

Noise levels of alarms

During installation, fire alarms are tested and set at noise levels specified by Fire Code. These levels were established to ensure that all building occupants are warned of a life-threatening situation.

OSHA considers noise to be hazardous, i.e. at sound levels that cause permanent hearing loss, when exposures exceed 90 dBA averaged over an eight-hour day. Fire alarms are set at a maximum level of 120 dBA; however even at this high level, an individual's true exposure is unlikely to approach the 90 dBA average due to:

- Distance away from the alarm – noise levels fall off as the square of the distance. At double the distance your exposure is reduced 4 times
- Walls, doors, and other barriers – these absorb and reflect noise based on their properties.
- Duration of exposure – because in an emergency situation, building occupants should be moving toward the exit, their duration of exposure is very short.

Even though building occupants will not be exposed to hazardous noise during fire alarm actuation, we realize that the noise level will be unpleasantly loud, especially when passing close to an alarm. Although keeping disposable earplugs on hand for this purpose is an option, we are concerned that the time it takes to insert these devices could delay an evacuation. We feel that the most expedient action is to simply close your ears with your fingers during your evacuation.

Stroboscopic alarms

Strobe units are now installed in buildings to ensure that hearing impaired occupants will be warned of a life-threatening situation. Because stroboscopic stimuli have been shown to induce seizures in some individuals, fire alarm strobes are set up to flash at frequencies below 2 per second. This frequency was chosen as least likely to cause seizures. Where multiple strobes may be visible to an individual, they are synchronized to flash at the same time. This avoids a situation where multiple unsynchronized strobes create an effective frequency higher than 5 flashes per second.

Though it is unlikely that the strobe units will induce seizure, if you know that you are sensitive to flicker, you may want to consult your medical caregiver to discuss. Employee Occupational Health and Wellness (EOHW) may also be contacted for a consult.