



## Study Suggests a Synergistic Relationship between High Frequency Hearing Loss and Carbon Monoxide Exposure

A University of Montreal study suggests that workers exposed to noise and carbon monoxide present a greater degree of high frequency hearing loss compared to those exposed to noise only.

While previous research had suggested significant correlations between hearing loss and carbon monoxide exposures in animal studies, a paper entitled *Noise and Carbon Monoxide Exposure Increases Hearing Loss in Workers* (Adriana Lacerda; Tony Leroux; Jean-Pierre Gagné; School of Speech-Language Pathology and Audiology, University of Montreal; <http://www.aip.org/149th/lacerda.html>) presents evidence to suggest similar human interactions.

In their study, historical data (charts) of 8647 workers (collected by the Quebec National Public Health Institute between 1983 and 1996) were analyzed; demographic (job description, noise level, and years exposed), audiometric, and medical history data was available. Records of persons with known ear-related pathologies were not used in the study. The authors report that a significant number of occupations represented included firefighters, miners, foundry workers, welders, garage mechanics, industrial mechanics, truckers, diesel engine operators, and forklift operators.

The study compared the hearing threshold levels of workers exposed to levels of noise below 90 dB(A) (8 hours) versus those exposed to noise levels above 90 dB(A) (8 Hours), while both groups contained workers with known carbon monoxide exposures.

The study concluded that workers exposed to carbon monoxide and noise levels above 90 dB(A) presented poorer hearing threshold levels in the high frequency range (3, 4, and 6 Hz); additionally, persons in this category demonstrated a greater degree of loss (shift) when (work-related) exposure durations were reported to be between 20-29 years.

This research falls in line with earlier studies which suggest that concomitant exposure to ototoxic agents (solvents, heavy metals, and tobacco smoke, and now carbon monoxide) may act synergistically with noise to inflict greater degrees of hearing loss.

Current hypotheses suggest that offending agents (such as carbon monoxide) may act to reduce oxygen levels in the blood stream, which in turn accelerate the deterioration of the sensory (inner hair) cells.

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