



Sawmill Industry Hearing Conservation

By Heather Gillis and Michael Song, WCB of BC

Hearing conservation programs have been required by WCB occupational health and safety regulations since 1978. One element of the hearing conservation program is annual hearing testing, which monitors hearing levels of noise exposed workers. The hearing test results are discussed with the individual worker at the time of the hearing test, to provide information on the status of his hearing and to motivate him to use appropriate hearing protection. Hearing test results are submitted to a central data registry at the WCB Hearing Conservation Section, and can also be used to evaluate the success of the hearing conservation program, by determining trends for groups of workers.

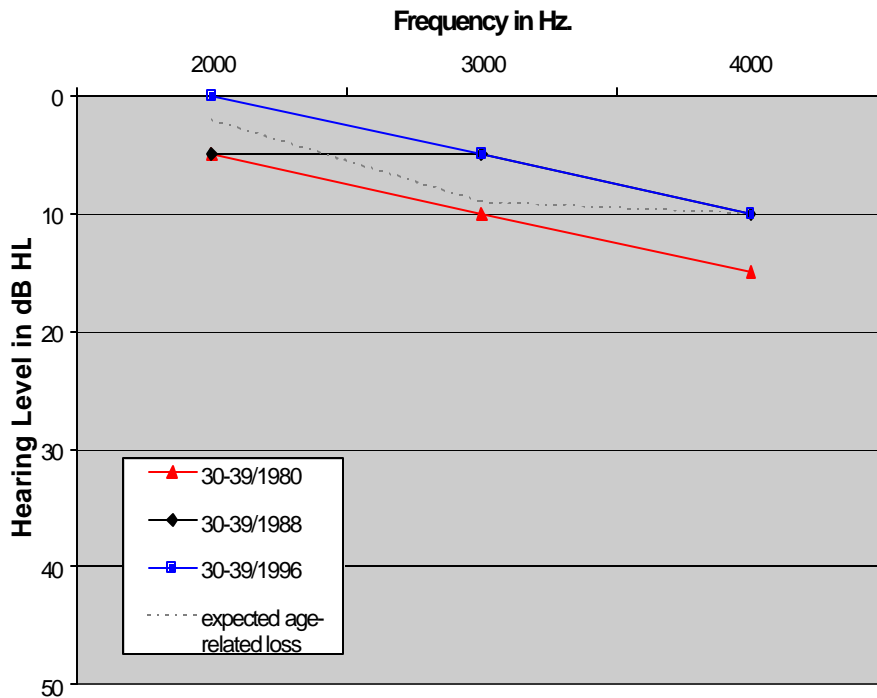
Sawmill industry (Classification Unit 714022) employers have submitted thousands of hearing test results to the central data registry since 1978. An analysis of an extract of this data covering the period 1979 to 1996 is presented below. Hearing test records for workers in non-noisy occupations (such as office workers, first aid attendants, etc.) were eliminated from the analysis. Only male workers' records were included. Records for three test years were analyzed: 1980, 1988 and 1996. Since age is known to be associated with hearing loss in the absence of occupational noise exposure, workers were divided into three age groups: 30-39, 40-49, and 50-59 years. See the table below for a summary of the characteristics of the study population.

Test	Year	Age groups				
		30-39	40-49	50-59	Total	
	1980					
		mean age	34	45	54	
		mean years at occupation	5	8	12	
		number of audiograms	3248	2508	2050	7,806
	1988					
		mean age	34	44	54	
		mean years at occupation	9	14	18	
		number of audiograms	4995	3105	2200	10,300
	1996					
		mean age	35	44	54	
		mean years at occupation	8	13	18	
		number of audiograms	4386	4058	2274	10,718

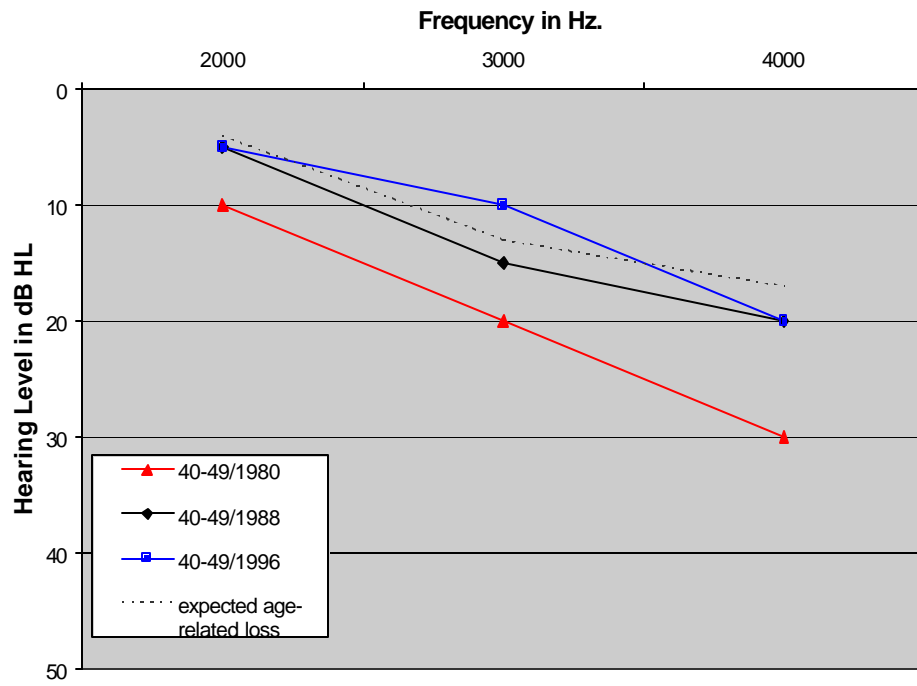
Median hearing levels were calculated for three age groups (30-39, 40-49, and 50-59 years) in each of the three test years. This data is presented on the following three charts, along with the expected age-related hearing loss for a non-noise exposed male population. The expected age-related hearing levels are taken from ISO-1999 "Determination of occupational noise exposure and estimation of noise-induced hearing impairment", database B.

For all three age groups, median hearing levels were lower (indicating better hearing) at 2000, 3000 and 4000 Hz. in 1988 than in 1980, and lower in 1996 than 1988. That is, a group of workers in a given age range in 1996 had substantially less hearing loss than a group of the same age in 1988 who in turn had less hearing loss than another group of the same age in 1980. These three frequencies (2000, 3000 and 4000 Hz.) were selected for analysis because occupational noise-induced hearing loss is greatest at the higher frequencies. Improvements in median hearing levels are greatest in the age group 50-59 years, the group with the highest number of years of noise exposure.

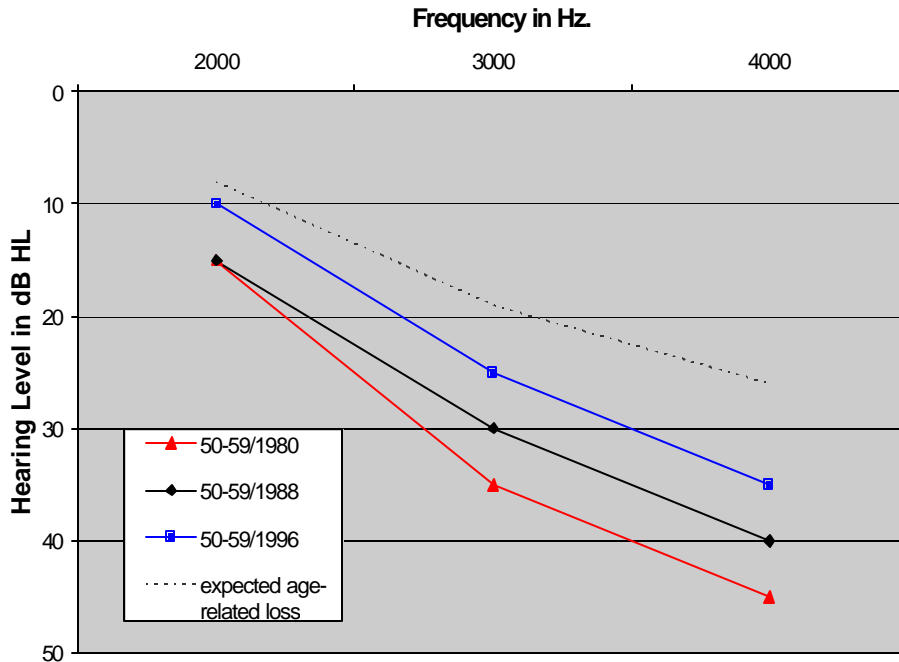
Median Hearing Levels Age Group 30-39 Years



Median Hearing Levels Age Group 40-49 Years



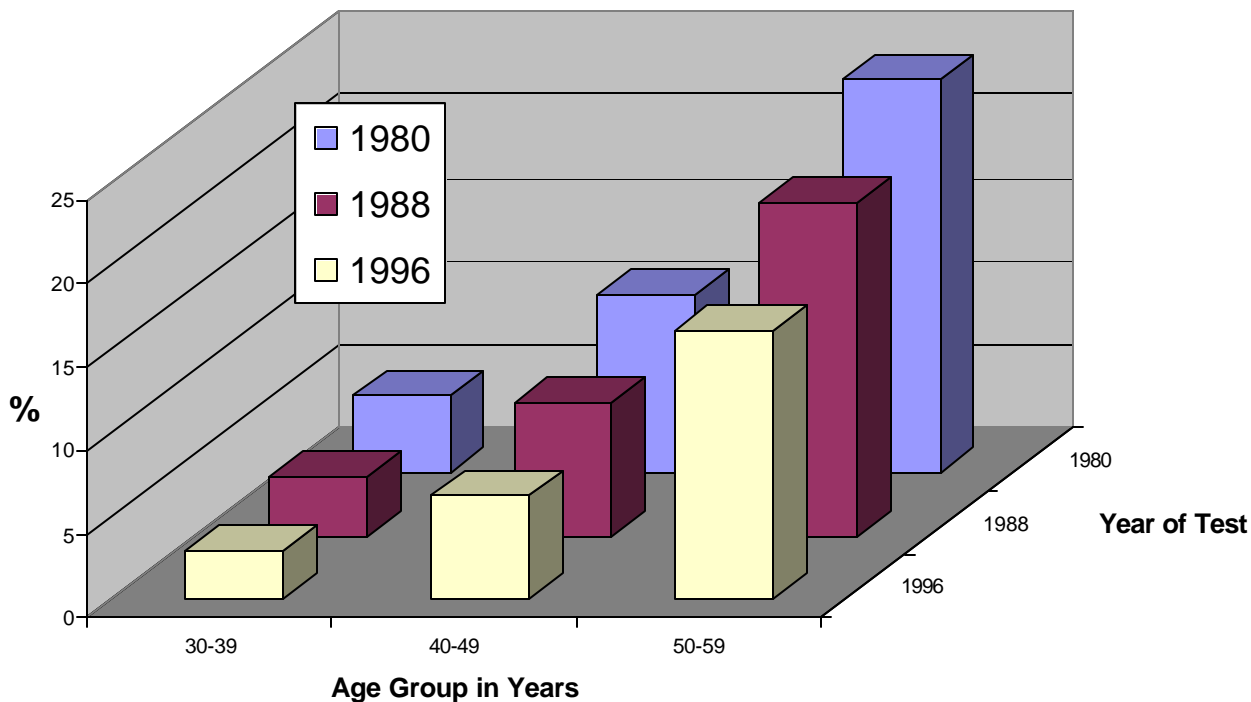
Median Hearing Levels Age Group 50-59 Years



One of the benefits of an effective hearing conservation program should be reduced costs of occupational hearing loss claims. The following chart displays the percentage of sawmill industry workers with a compensable degree of hearing loss in either or both ears. A compensable degree of hearing loss is defined in Schedule D of the Workers' Compensation Act as an average loss at 500, 1000, and 2000 Hz. of 28 dB or greater in either ear.

It can be seen that the percentage of workers with a potentially compensable degree of hearing loss has declined over the years from 1980 to 1996 for every age group. In 1980 1244 out of 14,429 workers tested (8.6%) in all age groups had a compensable degree of hearing loss in at least one ear. In 1996, 921 out of 14,128 (6.5%) had a compensable degree of loss. The actual number of accepted noise-induced hearing loss claims from the sawmill subclass in 1996 which warranted a pension was 114; the average cost per claim was \$5385. As the degree of occupational hearing loss is reduced in this industry, the cost of hearing loss pensions will decrease.

Sawmill Workers with Compensable Degree of Hearing Loss



Another measure of hearing ability is the average hearing at 500, 1000, 2000 and 3000 Hz. When this average exceeds 25 dB, a hearing handicap exists, as defined by the American Academy of Ophthalmology and Otolaryngology. Hearing handicap means a hearing loss sufficient to affect the activities of daily living. Using this measure, 2358 of 14,429 sawmill workers (16.3%) tested in 1980 had a hearing handicap, compared to 1653 of 14,128 (11.7%) in 1996. The following table displays a breakdown of percentage of workers with a hearing handicap in the various age groups.

Sawmill Workers with 25 dB or greater Average Hearing Loss at 500-3000 Hz.

