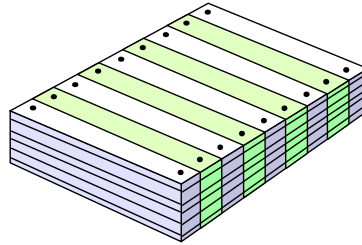


Hearing Conservation in British Columbia--2003

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General Statistics 2003

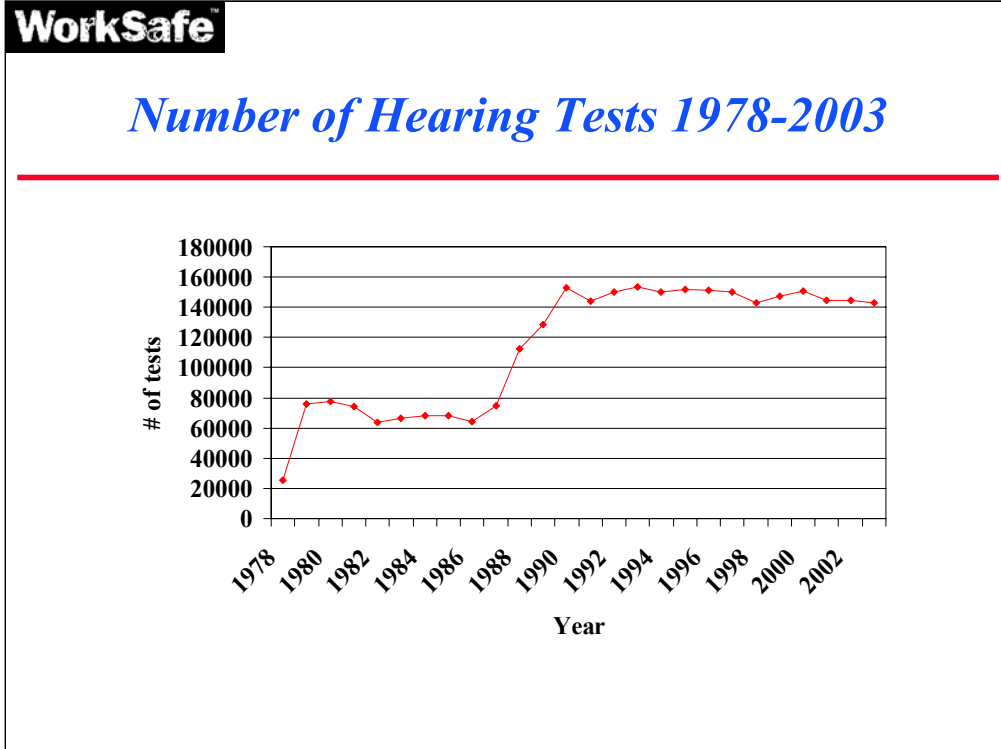
- **142,564 workers tested**
- **284 active I.A.T.s**
- **86 in-house programs**
- **21 mobile contractors**
- **22 fixed contractors**



90% of all hearing tests are performed by audiometric contractors. These are private businesses with people authorized by the WCB to perform industrial hearing tests. The contractors also have facilities (vans or offices) that are inspected annually by the WCB to ensure compliance with relevant standards. The other 10% are tested by their own employers, who have staff authorized to perform hearing tests.

Of the almost 143 thousand hearing tests submitted to the WCB, 8% fell into the EWC category. EWC is an abbreviation for “early warning change” and indicates a deterioration, or worsening, of hearing in the higher frequencies. These are the frequencies damaged by continued noise exposure.

Hearing Conservation in British Columbia--2003



The number of workers tested since the implementation of mandatory hearing testing (1978) steadily rose from 1978 to 1980. Numbers leveled off from 1981 to 1987 and then rose again from 1987 to 1990. Once again, numbers have levelled off since 1990.

Hearing Conservation in British Columbia--2003

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Hearing Conservation Program 2003- All Industry

	Normal		Early Warning		Abnormal		Total #
	#	%	#	%	#	%	
First Timers	2297	73.9	668	21.5	148	4.6	3108
Baseline	11713	66.1	4748	26.8	1270	7.2	17731

	N.Change		E.W. Change		A. Change		Total #
	#	%	#	%	#	%	
Periodic	107839	88.6	10018	8.2	3873	3.2	121725

Total tested in B.C. 142,564

Glossary:

First Timers--workers who have never worked in noise before; generally, but not always, young workers. The presence of Early Warning audiograms indicates that these workers have received noise exposure prior to ever working in noise. The annual EWC rate in First Timers has consistently exceeded 20% since 1978.

Baseline--workers who have not had an industrial hearing test before, but have worked in noise.

First Timer and Baseline tests will be categorized as:

- Normal--no significant hearing loss
- Early Warning--shows a high frequency hearing loss suggestive of noise damage
- Abnormal--a significant hearing loss is present and a doctor should be consulted

Periodic--workers having at least one previous hearing test on record. The 2003 test is compared to the previous test to determine the category:

- N.Change = Normal Change--no significant change in hearing since previous test
- E.W. Change = Early Warning Change--deterioration in the higher frequencies, frequencies susceptible to noise damage; may be due to improper use or fit of hearing protection
- A. Change = Abnormal Change--deterioration sufficient to warrant a visit to a doctor to find out why hearing has dropped since last test

Hearing Conservation in British Columbia--2003

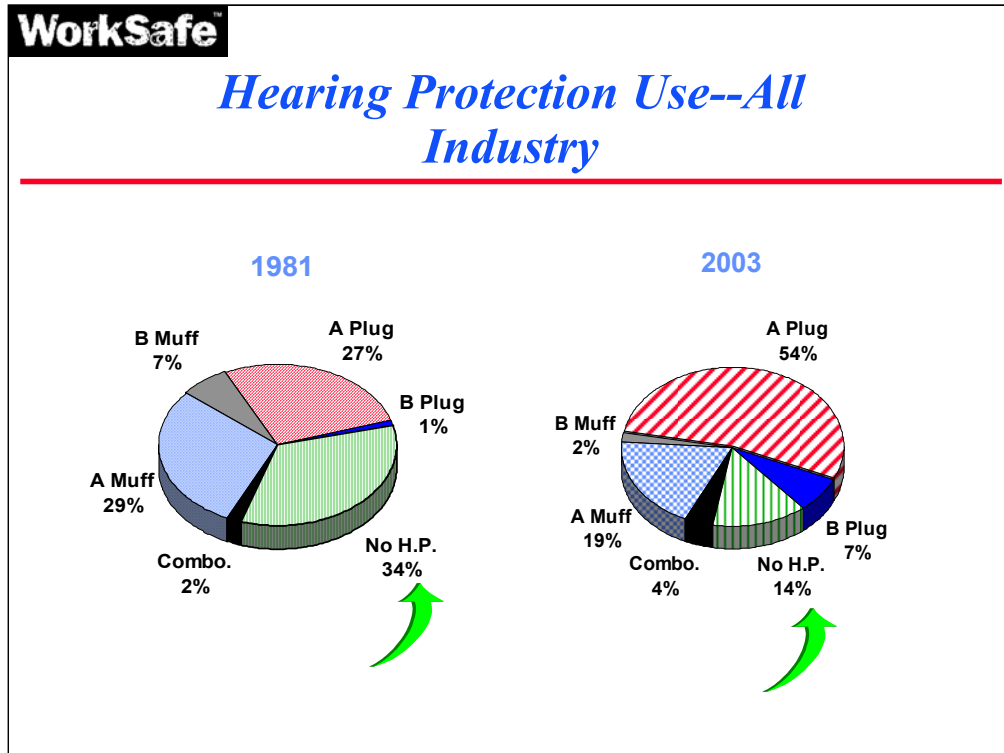
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Hearing Conservation Statistics 2003--Selected Classes

<u>Classification Unit</u>	<u># of Periodics</u>	<u>%EWC</u>
Logging	5408	9.5
Wood Products Man.	30423	6.4
Heavy Manufacturing	11906	7.3
General Construction	18959	11.2
Heavy Construction	732	9.7
Road Construction	3694	10.5
Municipalities	9343	7.1
Public School/Colleges	2658	7.3

Looking at EWC on an industry level can assist the WCB in targeting industries for more education and/or consultation. This information is useful for program review.

Hearing Conservation in British Columbia--2003



Non-use of hearing protection by industry:

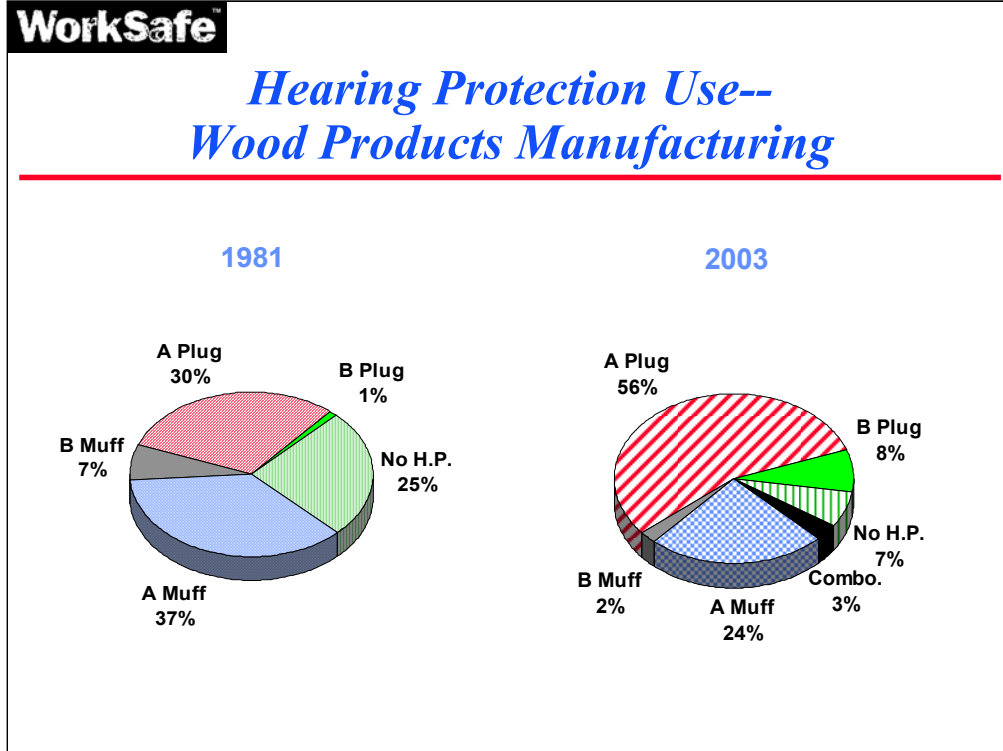
	1981	2003
Wood Products Manufacturing	25%	7%
Logging	33%	14%
Manufacturing	39%	14%
Construction	49%	14%

Overall, industries show less non-use now than 22 years ago (good news).

Typical excuses for non-wearing of protection for any worker include:

- cannot hear others,
- cannot hear machinery or warning signals,
- it's uncomfortable (hot, heavy, itch, bulky),
- I forgot, it was not provided,
- I'm used to the noise,
- I've lost most of my hearing anyway,
- it's not macho or respectable, not part of the safety 'culture'.

Hearing Conservation in British Columbia--2003

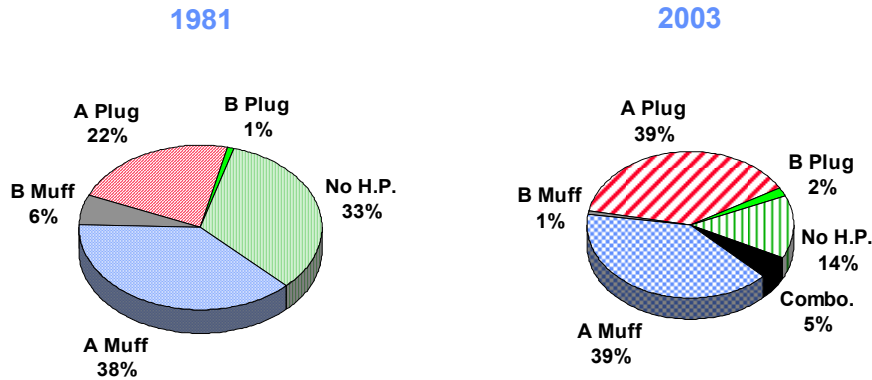


Wood products manufacturing employers (sawmills, pulpmills) have a very high HPD use rate, that is, a very low non-use rate.

Hearing Conservation in British Columbia--2003

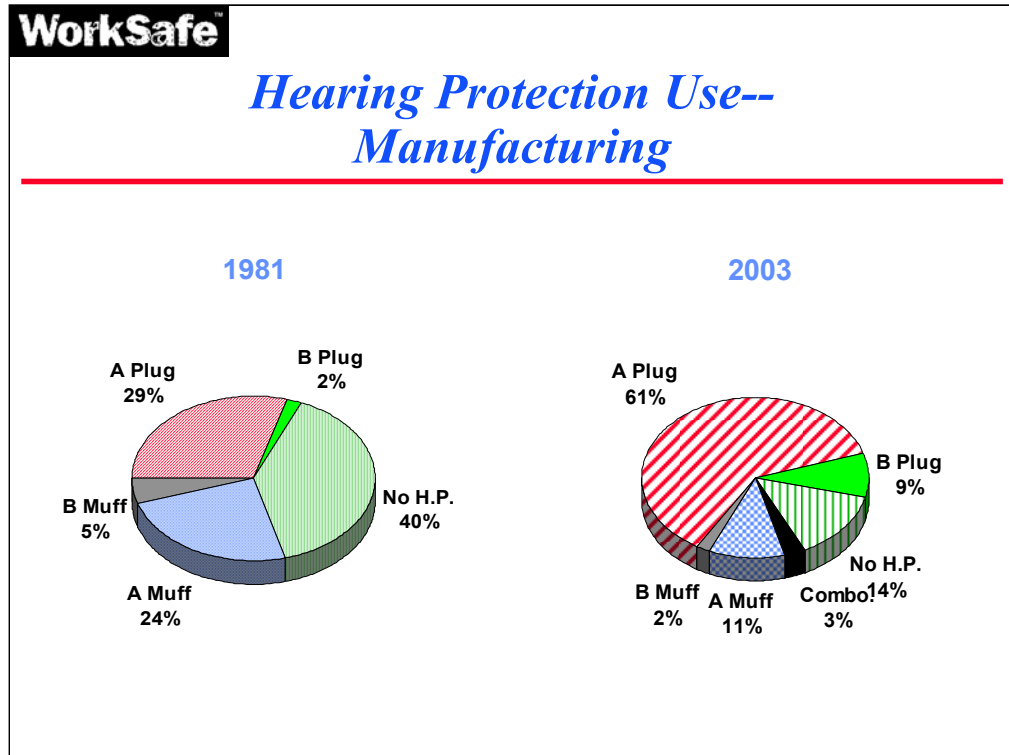
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Hearing Protection Use--Forestry



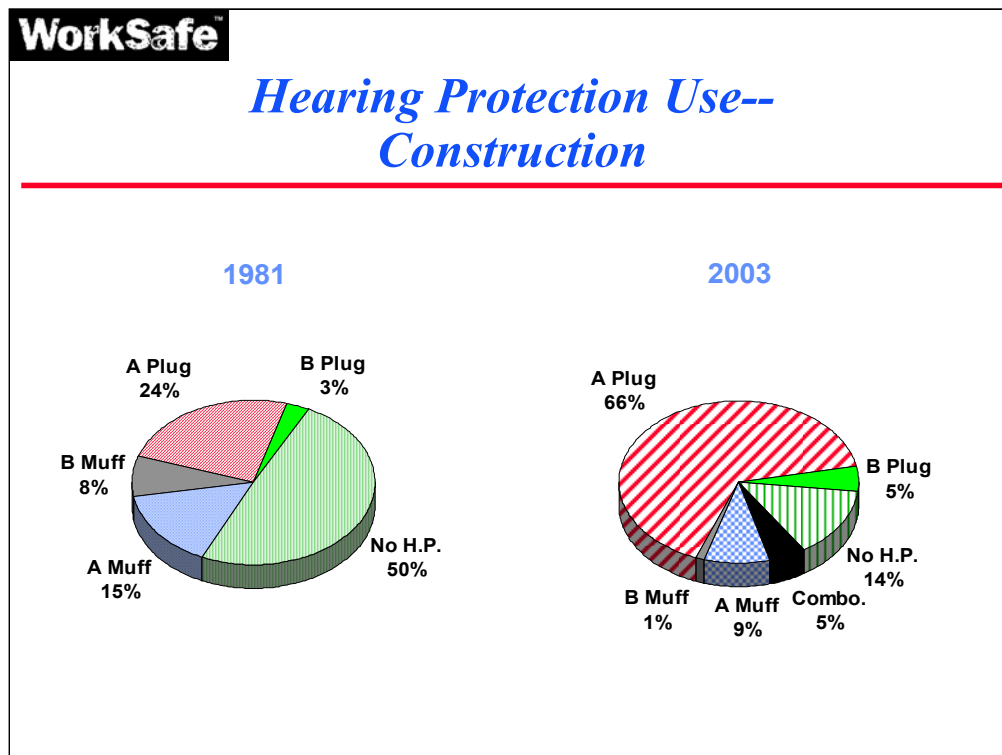
Although the forest industry has been involved in hearing conservation for over 22 years, the *non*-use rate is still surprisingly high (14% compared to wood products manufacturing at 7% non-use).

Hearing Conservation in British Columbia--2003



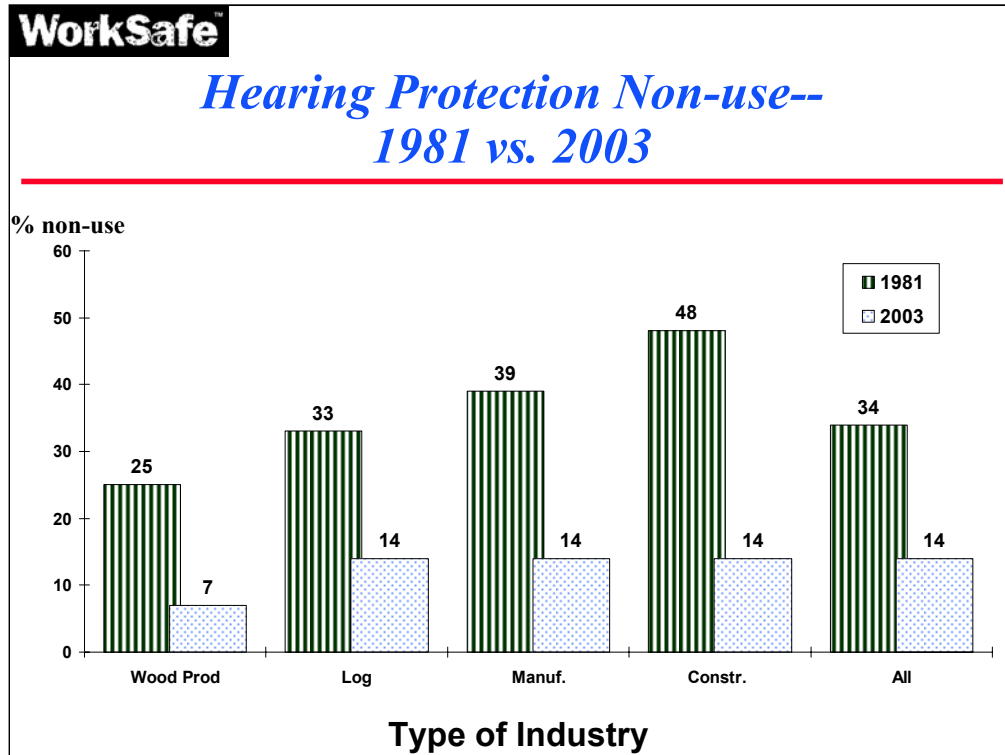
Manufacturing has increased the use of hearing protection greatly over the last 22 years.

Hearing Conservation in British Columbia--2003



Use of HPDs in the construction industry has increased dramatically since 1981.

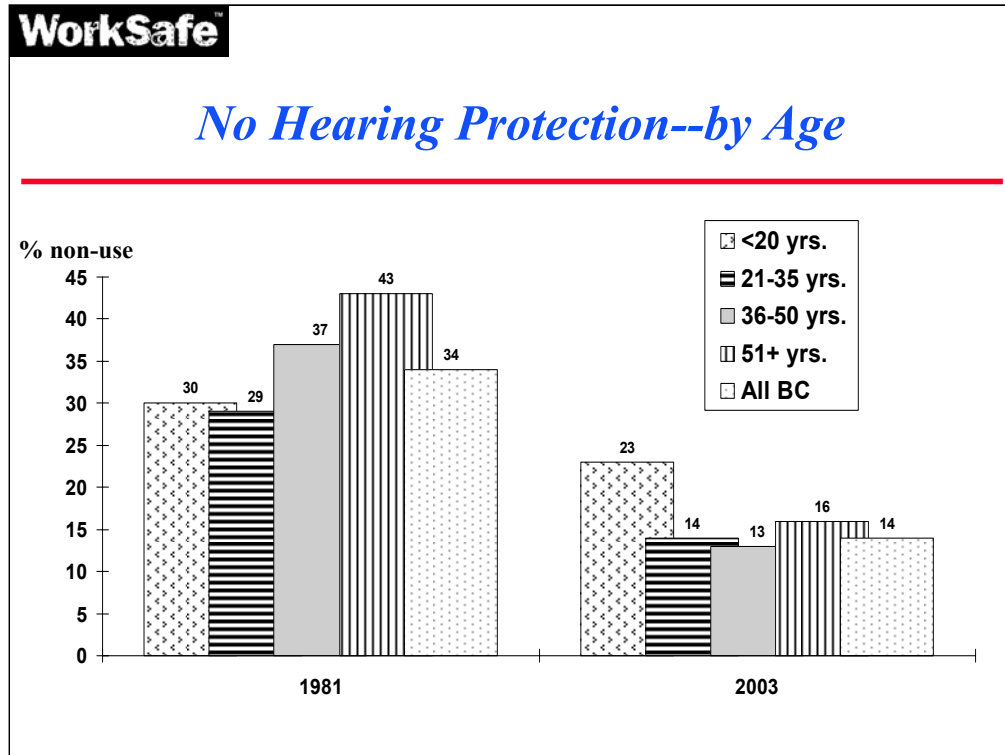
Hearing Conservation in British Columbia--2003



This shows a comparison of HPD *non-use* rates across industry sectors.

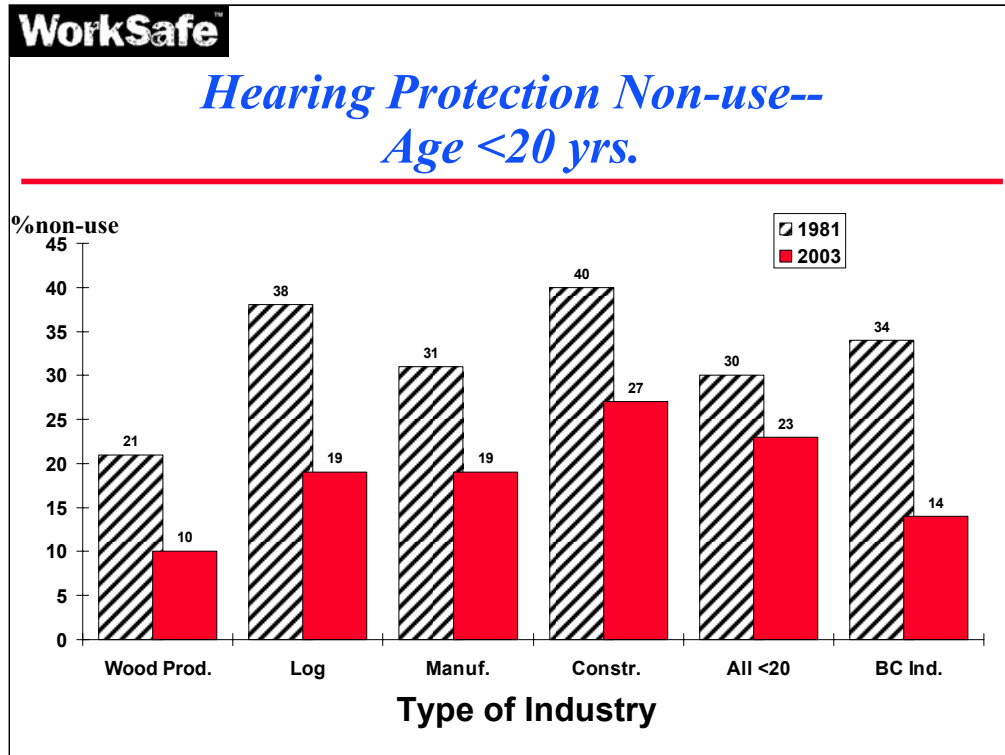
If logging is the noisiest industry, why does it have such a high rate of non-use of HPDs? Wood products manufacturing is quieter than logging, yet has a lower non-useage rate? Why might this be?

Hearing Conservation in British Columbia--2003



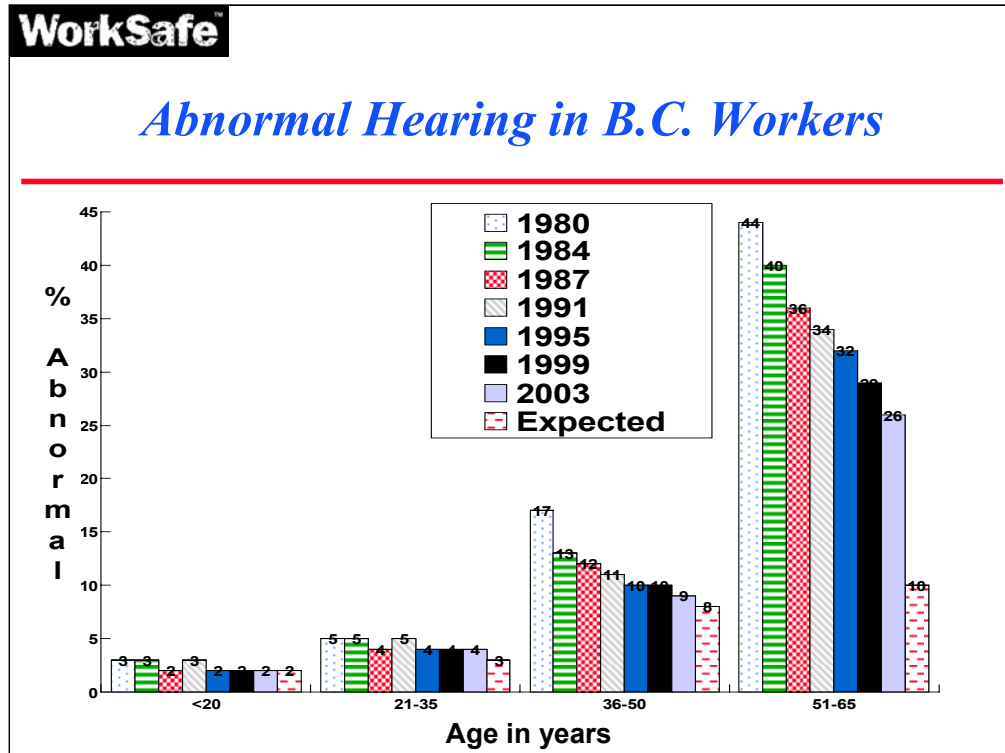
In 1981, it was the oldest workers who wore the least hearing protection. Currently, it is the youngest.

Hearing Conservation in British Columbia--2003



All industry sectors show improved useage rates over the past 22 years. However, this improvement has not been as great for the youngest workers.

Hearing Conservation in British Columbia--2003



The next two charts attempt to address the question “Are hearing conservation efforts effective ?“

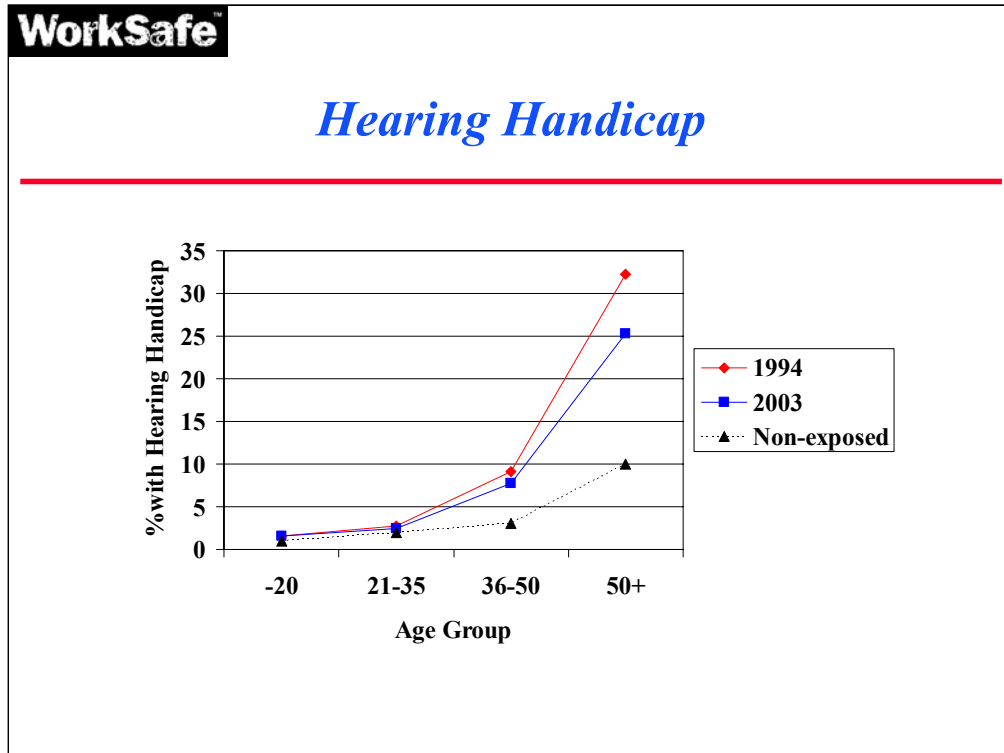
Abnormal Hearing” means audiograms which show one threshold, or more, recorded at 30 decibels, or worse, in either ear. This degree of hearing loss is sufficient to need hearing aids.

The incidence of Abnormal audiograms has not changed for workers under 36 years of age over the last 23 years. This is because the common causes of hearing losses in these age groups are ear disease, trauma, and congenital problems. As the Hearing Conservation Program is NOT designed to address those problems, it is not surprising that those problems have not changed in incidence.

For the 36+ age groups, occupational noise induced hearing loss (ONIHL) is present. So, the decrease in percentage of workers with Abnormal hearing can be interpreted to mean a decrease in ONIHL. For the 36-50 age group, the recorded rate of “abnormal” audiograms is close to what non-noise exposed people have.

For people over 50 who do NOT work in noise, the expected rate of “abnormal” hearing is about 10 %. Although the %s are decreasing, in the older age groups, there is still room for improvement. Currently the rate is 26%.

Hearing Conservation in British Columbia--2003



This graph shows the percentage of workers tested who have a hearing handicap*—defined as hearing loss sufficient to cause communication difficulties in daily life.

The dotted line represents the expected percentage of people with hearing handicap due to aging or other causes—people not exposed to occupational noise.

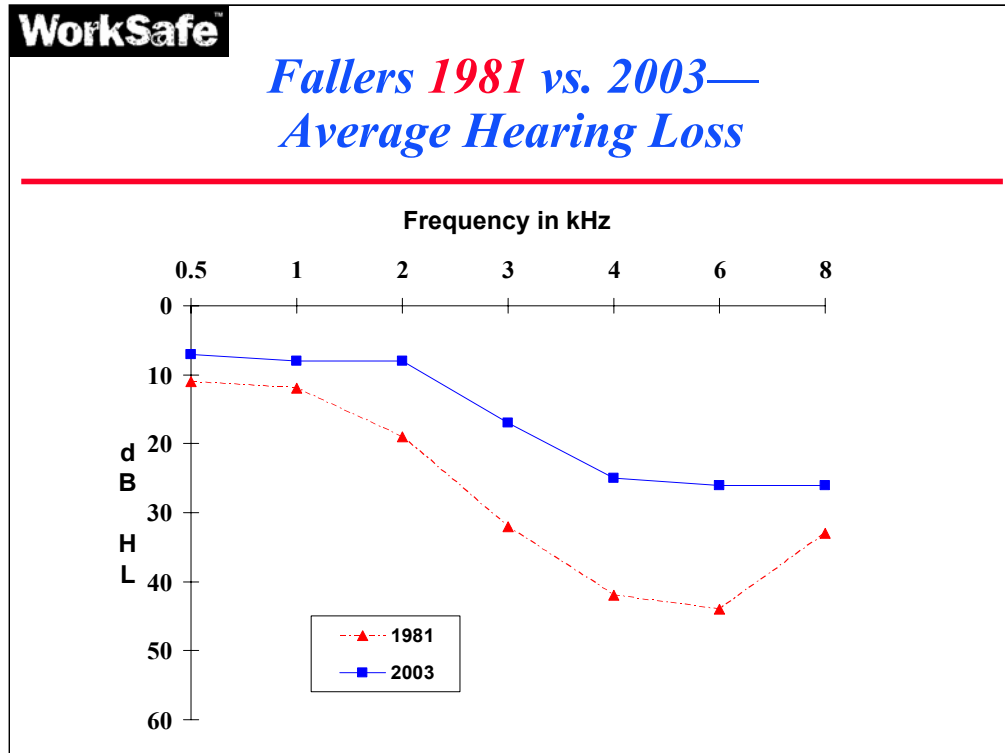
The amount of hearing handicap is low in age groups under 20 and 21-35 years of age. These people are too young to have age-related hearing loss and in the case of workers, they have not had enough noise exposure to cause significant hearing loss.

The 36-50 and 50+ year olds have likely had substantial occupational noise exposure which may account for much of the hearing loss that is evident.

From 1994 to 2003, the percentage of workers with hearing handicap decreased in the two oldest age groups. However, in 2003 the percentage of workers with hearing handicap is still higher than in a non-noise exposed group of the same age.

*American Academy of Otolaryngology— average hearing level at .5, 1., 2, and 3 kilohertz greater than 25 decibels.

Hearing Conservation in British Columbia--2003

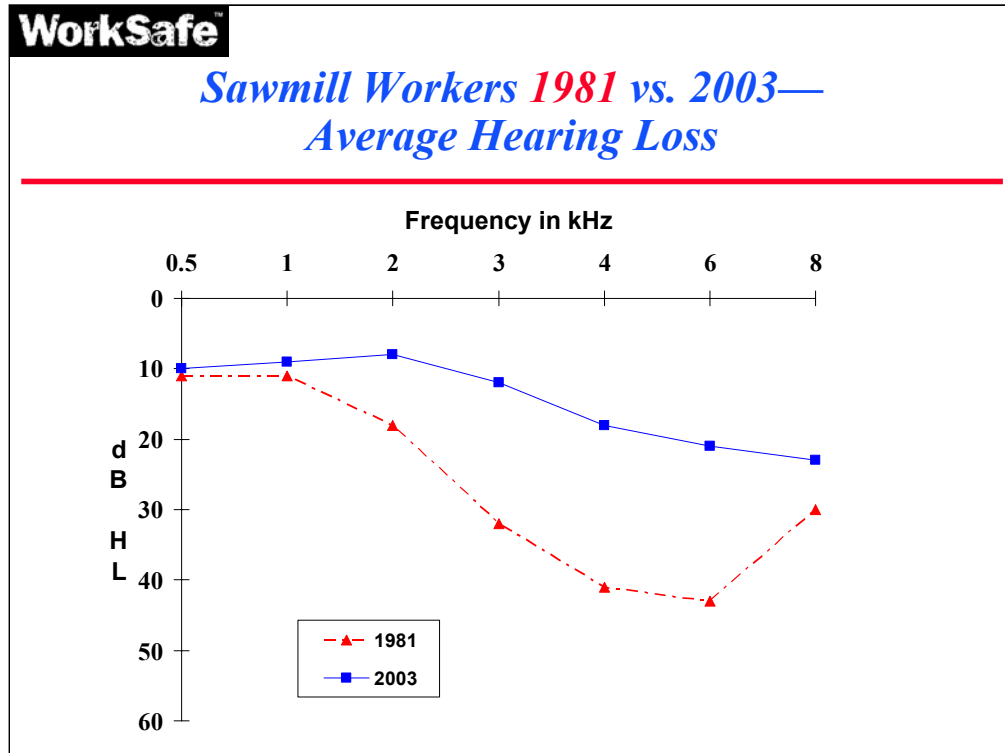


These are average hearing levels for male fallers with 16-25 years of experience in that industry, with an average age of 42 years.

It is clear that there has been an improvement in hearing levels for this occupation over a 22 year period.

Regarding claims costs, the average cost per claim has been cut in half since 1977. The cost of pensions is directly related to degree of loss, so as degree of loss has decreased, so has the dollar amount of pensions awarded.

Hearing Conservation in British Columbia--2003



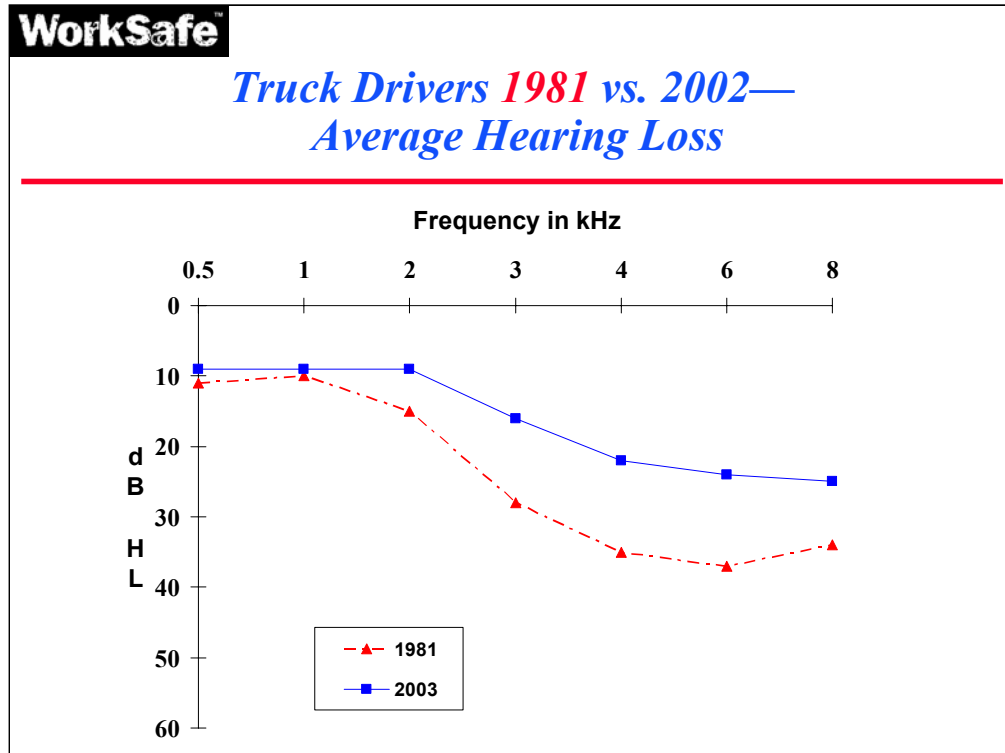
These are average hearing levels for male sawmill workers with 16-25 years of experience in that industry, with an average age of 42 years.

It is clear that there has been an improvement in hearing levels for this occupation over a 22 year period.

This industry has had a very long history of relatively consistent use of HPDs and hearing testing of workers, as well as engineered noise control at the workplace.

Regarding claims costs, the average cost per claim has been cut in half since 1977. The cost of pensions is directly related to degree of loss, so as degree of loss has decreased, so has the dollar amount of pensions awarded.

Hearing Conservation in British Columbia--2003

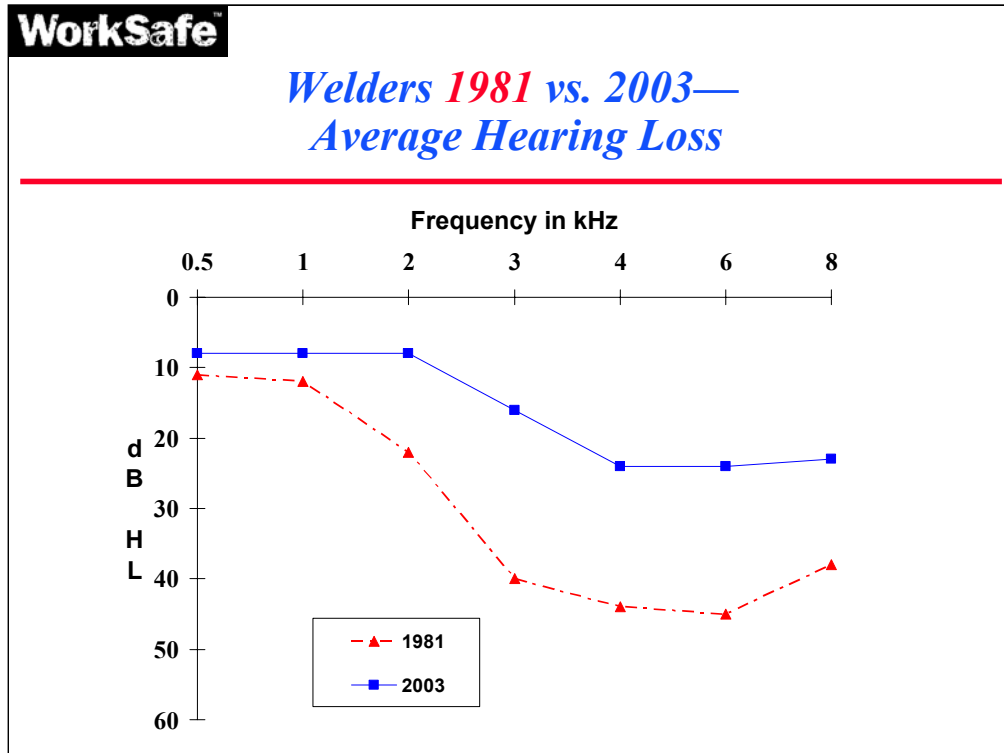


These are average hearing levels for male truck drivers with 16-25 years of experience in that industry, with an average age of 42 years.

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Hearing Conservation in British Columbia--2003

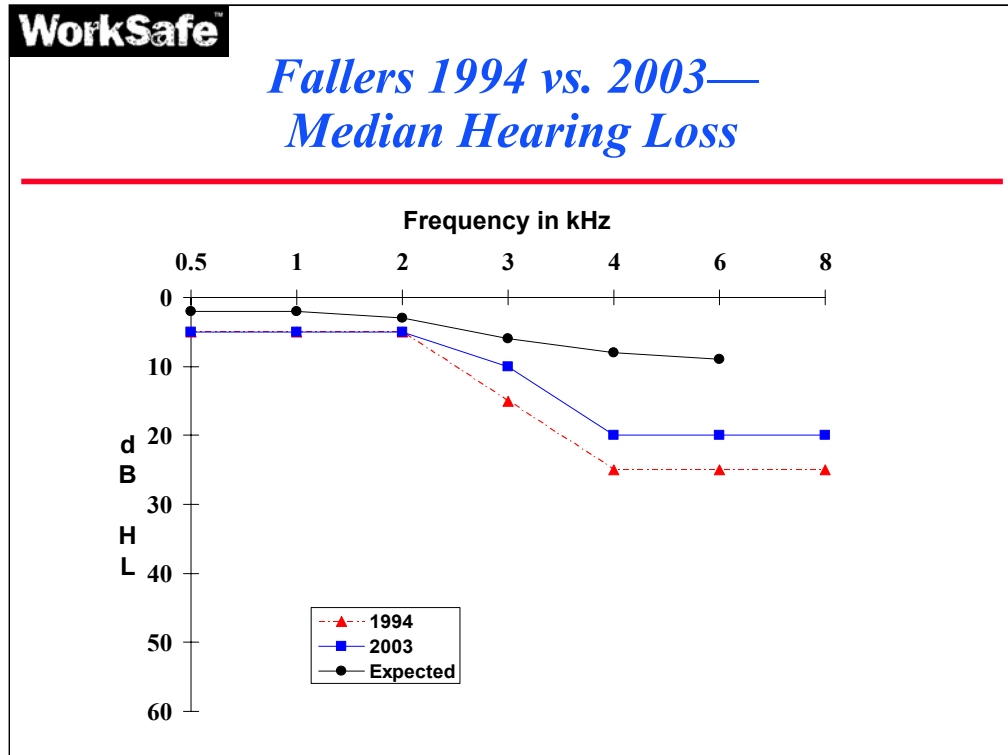


These are average hearing levels for male welders with 16-25 years of experience in that industry, with an average age of 42 years.

It is clear that there has been an improvement in hearing levels for this occupation over a 22 year period.

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Hearing Conservation in British Columbia--2003



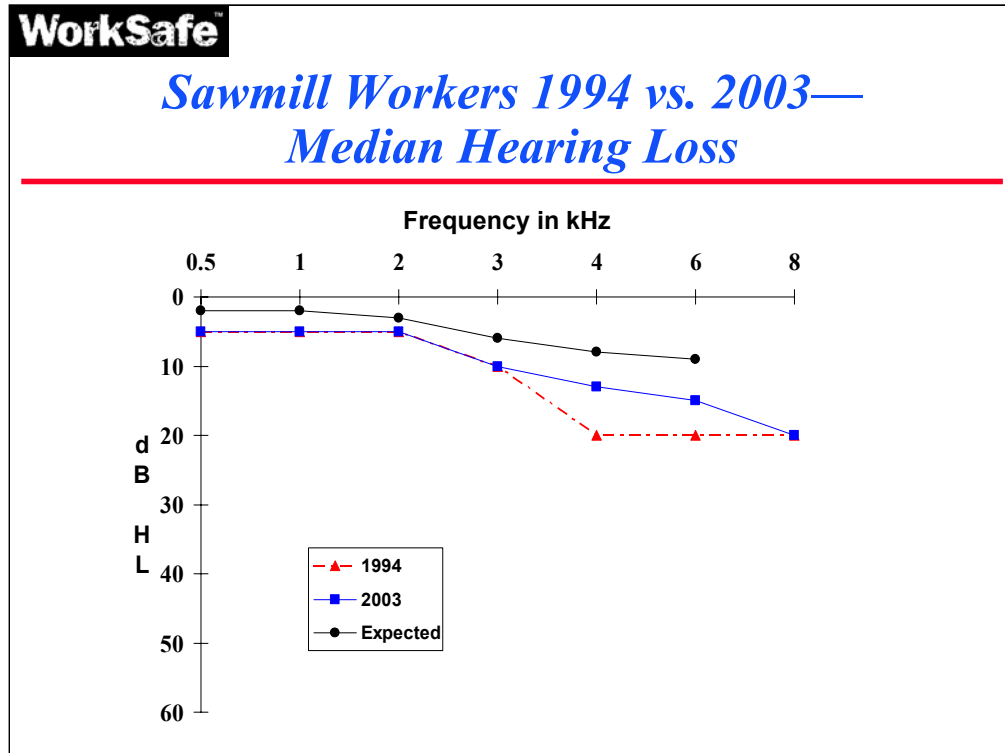
These graphs represent median hearing thresholds for fallers with 16-25 years of noise exposure.

The term median means that 1/2 the fallers tested had hearing better than the recorded values on the graph, while 1/2 had worse hearing.

The “expected” line comes from an International Standards Organization (ISO) standard on expected hearing loss for males who do not work in noise and who are age 40.

There has been an improvement in hearing levels for this occupation over a 9 year period, particularly in the higher frequencies, which are the ones most susceptible to noise damage.

Hearing Conservation in British Columbia--2003



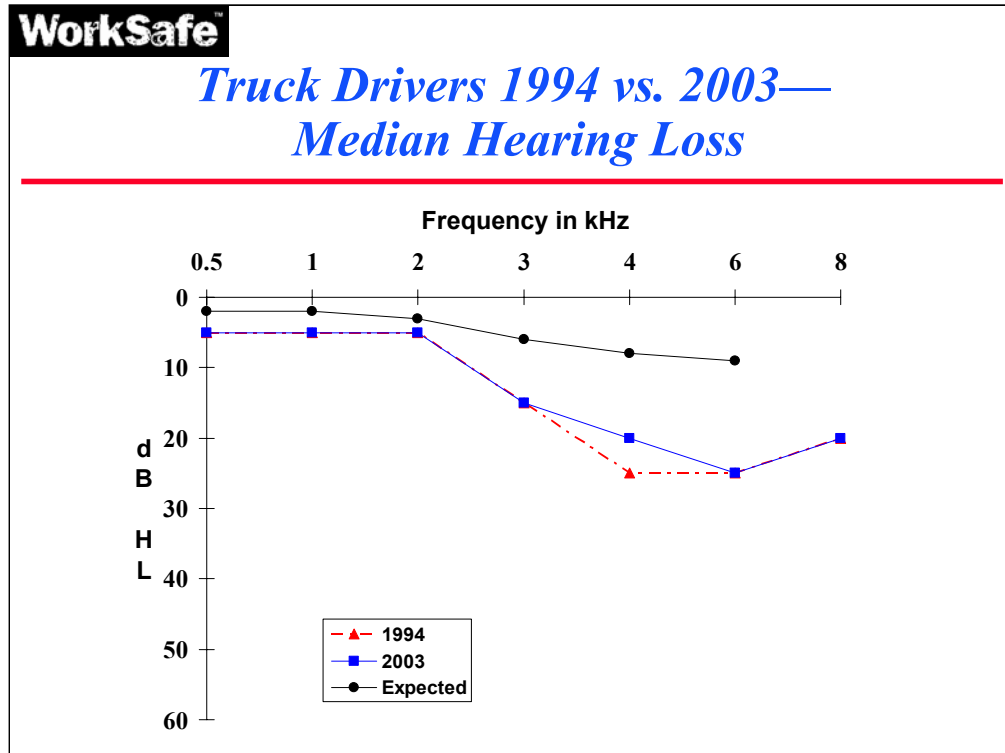
These graphs represent median hearing thresholds for sawmill workers with 16-25 years of noise exposure.

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There has been an improvement in hearing levels for this occupation over a 9 year period, particularly in the higher frequencies, which are the ones most susceptible to noise damage.

Hearing Conservation in British Columbia--2003



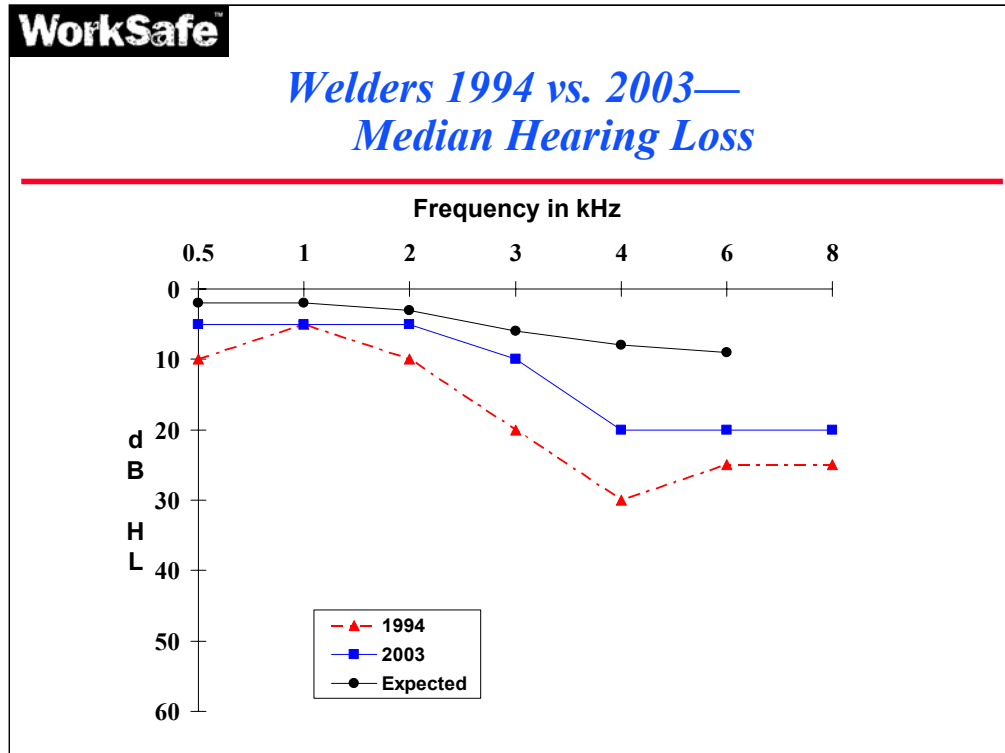
These are median hearing levels for male truck drivers with 16-25 years of experience in that industry, with an average age of 42 years.

The term median means that 1/2 the truck drivers tested had hearing better than the recorded values on the graph, while 1/2 had worse hearing.

There has been an improvement in hearing levels at 4000 Hz (the frequency most susceptible to noise damage) over a 9 year period, the median values are still not as close to expected as for other occupations with *higher* noise exposures (fallers, sawmill workers).

This occupation has some unique challenges when it comes to selection of appropriate hearing protection, particularly due to the communication demands.

Hearing Conservation in British Columbia--2003



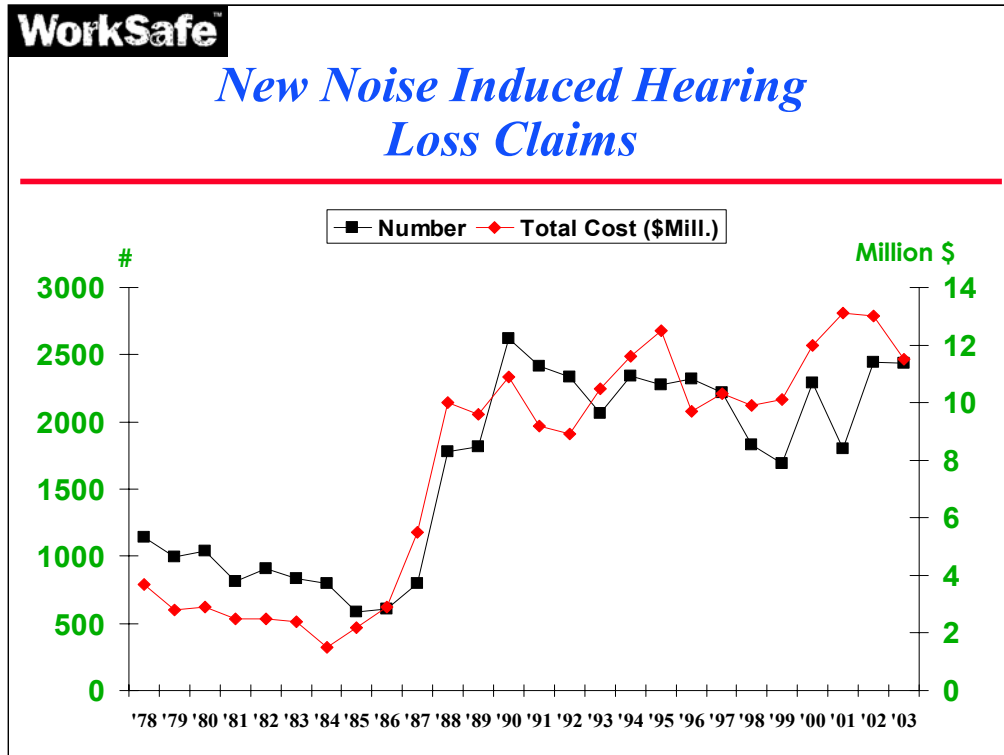
These are median hearing levels for male welders with 16-25 years of experience in that industry, with an average age of 42 years.

The term median means that 1/2 the welders tested had hearing better than the recorded values on the graph, while 1/2 had worse hearing.

It is clear that there has been an improvement in hearing levels for this occupation over a 20 year period. Improvements are similar to those recorded for fallers and not as good as those recorded for sawmill workers.

This occupation has some unique challenges when it comes to selection of appropriate hearing protection, particularly due to the use of face shields.

Hearing Conservation in British Columbia--2003



In B.C., occupational noise induced hearing loss has been compensable since 1975, while Regulations to prevent it have existed since 1978.

For 2003-- 2439 new NIHL claims filed

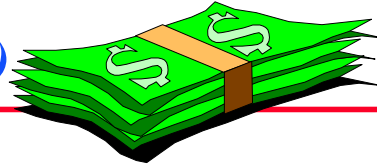
Cost by Industry Sector for 2003:

Industry Sector	Total Cost for Occupational NIHL
70--logging	\$2.07 million
71--wood products manufacturing	\$3.3 million
72--construction	\$1.7 million
73--transportation	\$.7 million
76--service, education	\$1.5 million

Hearing Conservation in British Columbia--2003

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Claims Costs (Awards)



Year	#	Total (million\$)	Average\$ per claim
1977	566	2.9	5260
1982	247	1.1	4565
1987	481	3.6	7590
1992	558	3.3	5996
1997	562	3.3	5872
2003	219	1.1	5100*

*** multiply by .328 to convert to 1977 \$s = \$1673/ claim**

This table shows the amount of money allotted to pensions for 6 different years and the average amount awarded to each eligible claimant.

To account for inflation, the 2003 figures should be multiplied by .328 to make them equivalent to 1977 dollars. Thus, the average amount of pension awarded on each claim in 2003 is equivalent to \$1673 in 1977 dollars, less than **one-third** the average amount awarded in 1977.

The total expenditure for hearing loss claims in 2003 was over 11.5 million dollars--for health care benefits (e.g. hearing aids) and awards (pensions) combined.