

# Now Hear This...

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## Highlights from the 1998 Annual Report on Occupational Noise-Induced Hearing Loss in Michigan

*The fifth annual report on Occupational Noise Induced Hearing Loss in Michigan is now available. You can obtain a complete copy of the 38 page document by contacting the Project SENSOR staff at 800-446-7805, or by visiting the Project SENSOR web site at <http://www.chm.msu.edu/oem/index.htm>. We encourage you to review this information to better understand the incidence of occupational noise exposure and interventions available for Michigan's workers. Highlights of the report are profiled in this issue of the Project SENSOR newsletter.*

Since 1993, the Michigan Department of Consumer and Industry Services (MDCIS) and the National Institute for Occupational Safety and Health (NIOSH) have collaborated on a surveillance program to identify individuals with occupational noise induced hearing loss (NIHL) in Michigan and prevent work related hearing loss through inspection of facilities where these individuals were exposed to excessive levels of noise. The surveillance program identifies facilities that lack hearing conservation programs through reports from audiologists and otolaryngologists. Companies are required to institute hearing conservation programs to prevent NIHL in the workplace if the 8 hour time weighted average noise levels are at, or above 85 dBA (Part 56 of PA of 1978). It

is estimated that Michigan has at minimum 145,000 manufacturing production workers, 20,700 workers in construction, 500 miners, 27,200 blue collar workers in wholesale and retail trade, and 12,100 workers in noisy service industry environments who are exposed daily to noise levels of 85 dBA or greater (NIOSH, 1998 and Bureau of Labor Statistics, 1996). Based on the National Health Interview Survey, it is estimated that 86,000 Michigan citizens have developed work-related hearing loss (Ries, 1994).

In 1998, Michigan's audiologists and otolaryngologists reported 374 cases of known or suspected work related hearing loss (Table 1). Most (89%) of the reports received were for men, with an average age of 50 years (Table 2).

Most reports received by MDCIS were for companies employing 500 or more individuals. However, audiologists and otolaryngologists were more likely to identify individuals with

**Table 1. Patients with NIHL Reported to the Michigan Department of Consumer and Industry Services by Reporting Source: 1991-1998**

<u>Year</u>	<u>Companies # Reported</u>	<u>Audiologists/ENT* # Reported</u>
1991	789	11
1992	1425	5
1993	1937	12
1994	1683	307
1995	1231	488
1996	1589	406
1997	1313	484
1998	1256	374

\*ENT=Ear, Nose Throat specialists.

**Table 2. 1998 Occupational Disease Reports of Noise-Induced Hearing Loss: Age Range of Patients by Reporting Source**

Age Range	Companies		Audiologists/ENT	
	#	%	#	%
20-29	73	6	8	2
30-39	156	13	24	7
40-49	479	39	73	20
50-59	409	33	104	29
60-69	94	8	87	24
70-79	14	1	54	15
80+	0	--	12	3
Total	1225*	100	362**	100

\* Age was unknown for 31 individuals.

\*\* Age was unknown for 12 individuals.

hearing loss in smaller companies that did not have medical departments or hearing conservation programs (Table 3).

Since the inception of the surveillance program Project SENSOR staff have interviewed 97% of the individuals

**Table 3. 1998 Occupational Disease Reports of NIHL: Number of Employees at the Company where Exposure to Noise Occurred**

# Employees	Company Reports		Audiologist Reports*	
	#	%	#	%
<25	0	--	9	7
25-100	15	1	7	5
100-500	17	1	12	9
500+	1224	98	108	79
Total	1256	100	136	100

\*Number of employees unknown for 238 companies.

reported by audiologists and otolaryngologists. 91% of individuals interviewed were Caucasian, 7% African American, 1% Hispanic, 1% Asian and 0.1% of other ethnicity. 86% of individuals identified by audiologists and otolaryngologists were over the age of 40, with 14% under 40 years of age. Many employees (57%) were exposed to noise hazards in the manufacturing sector. Interestingly, nearly 15% of those individuals reported were employed in businesses exempted from the noise standard (i.e. construction, mining). Interviews with these individuals revealed that the duration of noise exposure varied widely, from less than one year to over 35 years. Over 25% of

employees with occupational NIHL had worked in noise for less than 15 years (Table 4). Overall, the interviews indicated that 45% of companies whose workers were exposed to noise did not regularly provide hearing testing or hearing conservation programs.

Table 5 depicts the decade of an individual's first exposure to hazardous noise in the workplace. Most individuals with documented NIHL had their first exposure to noise in the 1960's and 1970's. However, 6% of cases of NIHL were from employees who were first exposed to occupational noise in the 1990's.

In response to audiologists' and otolaryngologists' reports of hearing loss,

**Table 4. Total Duration\* of Years Worked in Noise for Patients with a Fixed Hearing Loss: Michigan 1992-1998**

Number of Years Worked	Patients	
	#	%
1-4	123	9
5-9	121	9
10-14	119	8
15-19	120	8
20-24	187	13
25-29	241	17
30-34	244	17
35+	269	19
Total	1424	100

\*Duration was unknown for 421 patients.

inspections were conducted at companies where individuals indicated that they had never received regular hearing testing. 71% of the 35 companies which exposed employees to noise in excess of 85 dB did not have hearing conservation programs or had deficient hearing conservation programs.

Industrial hygienists from MIOSHA also

**Table 5. Decade of First Exposure to Noise Among Hearing Loss Patients with a Fixed Loss: Michigan 1992-1998**

<u>Decade First Exposed</u>	<u>#</u>	<u>%</u>
1940s and earlier	187	13
1950s	249	17
1960s	445	31
1970s	321	22
1980s	164	11
1990s	<u>91</u>	<u>6</u>
Total	1457*	100

\*Decade unknown for 388 individuals.

conducted 48 work place inspections in 1998, independent of the Project SENSOR surveillance program, where the company was found to be out of compliance with the noise standard. Almost 70% of these 48 companies received citations for complete lack of a hearing conservation program (Table 6).

In 1998, 1,630 reports of occupational NIHL were submitted by company medical departments, audiologists and otolaryngologists. The reports from non-company audiologists and otolaryngologists were generated by 94 of the state's 450 audiologists and 150 otolaryngologists,

**Table 6. Violations of the Noise Standard in Michigan: 1-1-98 to 12-31-98**

<u>Standard Violated</u>	<u># Citations</u>	<u>%*</u>	<u>%**</u>
No Hearing Conservation Program	33	69	47
Exceeded Noise Level	11	23	16
Training	8	17	11
Access to Medical Records	5	10	7
Noise Monitoring	5	10	7
Provide Hearing Protection Devices	3	6	4
Any Audiometric Testing	3	6	4
Follow up on Annual Audiometric Testing	1	2	1
Annual Audiometry	1	2	1
Record Keeping	1	2	1

\* A company may be cited for more than one type of violation, therefore these percentages are based on a total of 48 companies cited and do not add to 100%.

\*\* Percentage based on a total of 71 violations.

showing that only 16% of Michigan's hearing health care providers are reporting cases of known or suspected occupational NIHL.

The report of an individual with work related hearing loss is a sentinel health even that is critical to effective occupational disease surveillance. Reports from audiologists and otolaryngologists provide the base upon which meaningful information on exposure to noise at work can be gained, to intervene and prevent others from developing work related hearing loss.

In 1998, at least 4,200 individuals were employed in 35 noisy workplaces that were inspected because an audiologist or otolaryngologist reported a current or retired worker with a hearing loss from that work place. These inspections found a deficient hearing conservation program in these work places and the companies were required to correct the problem(s). These workers directly benefited from the reports that you submitted to the MDCIS. NIHL is preventable, and your reports will help to identify companies which need hearing conservation programs and ultimately reduce the incidence of work related hearing loss in Michigan.

Please call Connie Spak, MA, CCC-A or Kenneth D. Rosenman, MD at 1-800-446-7805 if you have any questions about the annual report or reporting cases to the MDCIS.

#### References

NIOSH Criteria for a Recommended Standard, Occupational Noise Exposure Revised Criteria 1998. June 1998, DHHS (NIOSH) Publication No. 98-126.

Bureau of Labor Statistics, Michigan Employment Security Commission. Current Employment Statistics. 1996 Annual Report of Michigan Production/Non-Supervisory Workers.

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## Michigan Law Requires the Reporting of Known or Suspected Occupational NIHL

Reporting can be done by:

**FAX** (517) 432-3606

**Telephone** 1-800-446-7805

**E-Mail** [Rosenman@pilot.msu.edu](mailto:Rosenman@pilot.msu.edu)

**Mail** MDCIS Occ. Health Division

PO Box 30649

Lansing, MI 48909-8149

### Suggested Criteria for Reporting Occupational NIHL

1. A history of significant exposure to noise at work; AND
2. A STS of 10dB or more in either ear at an average of 2000, 3000 & 4000 Hz.  
OR
3. A fixed loss.\*

\*Suggested definitions: a 25dB or greater loss in either ear at an average of: 500, 1000 & 2000 Hz; or 1000, 2000 & 3000 Hz; or 3000, 4000 & 6000 Hz; or a 15dB or greater loss in either ear at an average of 3000 & 4000 Hz.

***Now Hear This...***

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