

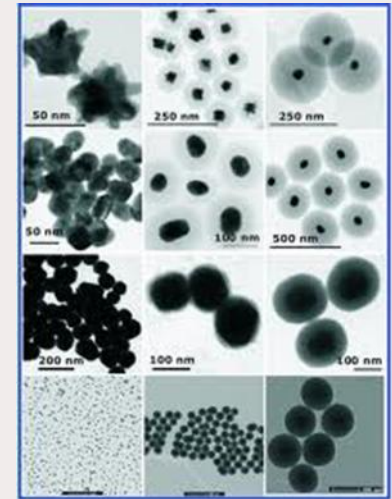
# **Re-emergence of old workplace hazards**

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**Centre for Occupational & Environmental Health  
Monash University, Victoria, Australia**



- In recent years, concern about emerging workplace hazards



- BUT, it is important not to ignore the continuing impact of older traditional hazards
- Strong perception these under control



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## Case study: Noise induced hearing loss

- In 2005 financial cost of hearing loss was estimated: \$11.75 Billion or 1.4% of GDP (Access Economics)
- 37.1% of Hearing loss in adults is NIHL (Wilson et al, 1998)
- High proportion of NIHL is due to the workplace
- Workplace noise has been around since ancient times
- Strong perception that noise exposure is under control
- Well established hierarchy of controls
- Despite this, concerns about increase in the burden of occupational NIHL





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## Occupational NIHL in Victoria

Aim was to analyse time trends and the demographic and occupational characteristics of workers claiming for NIHL related Impairment Benefits (IB) and hearing aids (HA) through WorkSafe Victoria

- Funded through the Institute for Safety, Compensation and Recovery Research (ISCRR) – a joint initiative of Worksafe Victoria, the Transport Accident Commission and Monash University – Research Compensation Database – valuable research tool



### ISCRR

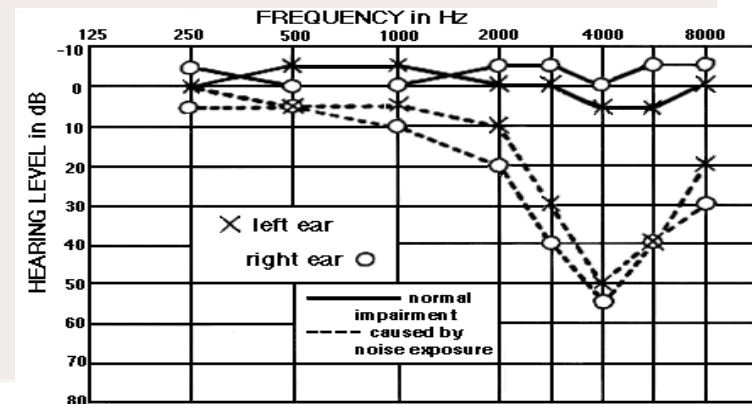
Institute for Safety, Compensation  
and Recovery Research





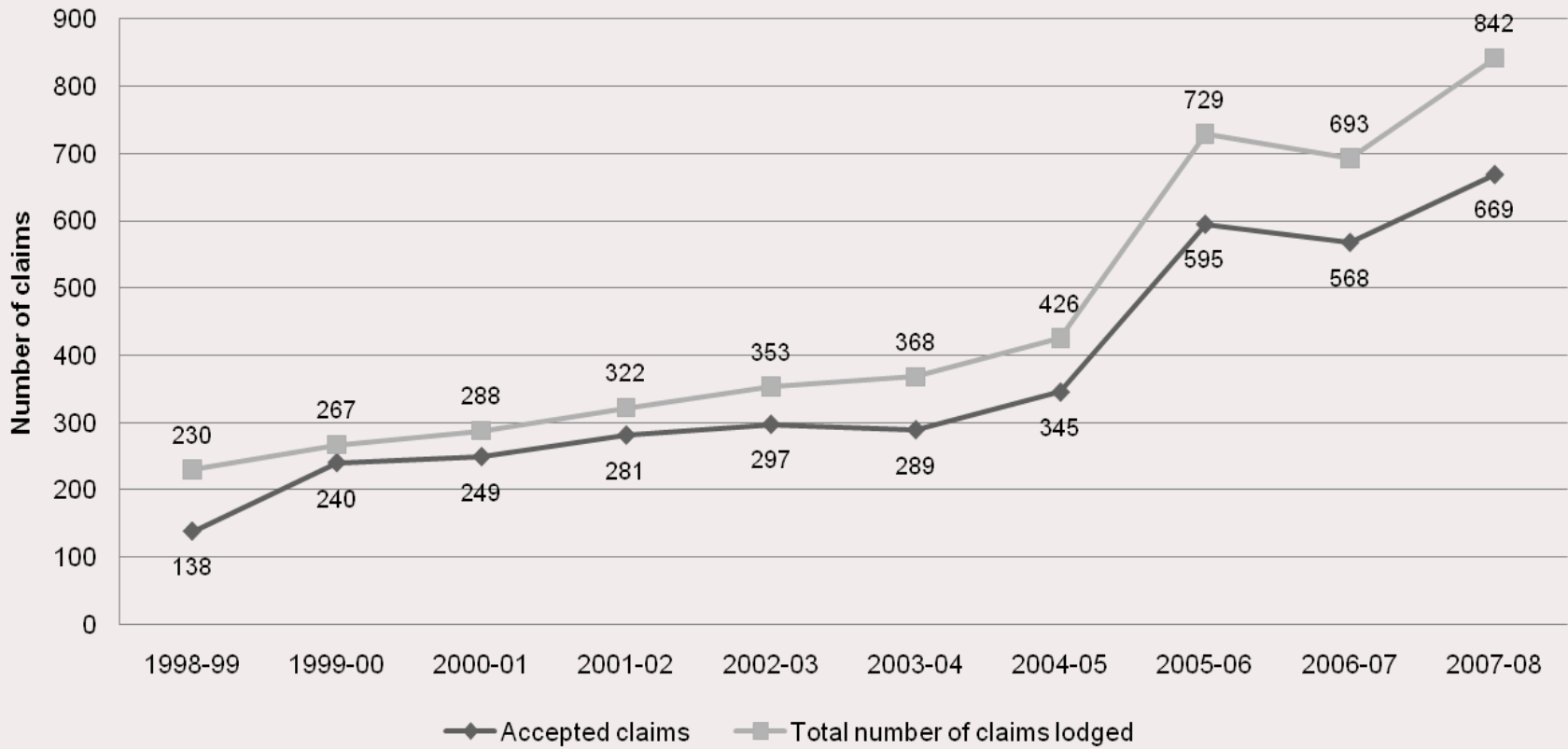
## Methods

- Data based on computerized claims (excludes Commonwealth employees, sole traders and self Insurers, about 8%)
- Covered period for all claims 12 Nov 1997 (when NIHL claim threshold increased from 7% to 10%) to 30 June 2009
- Claims coded by affliction nature code, deafness claims n=5183
- Excluded 772 due to audio shock, 206 not related to hearing, 12 disease of mastoid and 6 due to trauma
- Payroll used to estimate Workplace size: >\$1m, \$1m to \$20 m, >\$20m (not number of employees)
- Crude industry/occupation categories



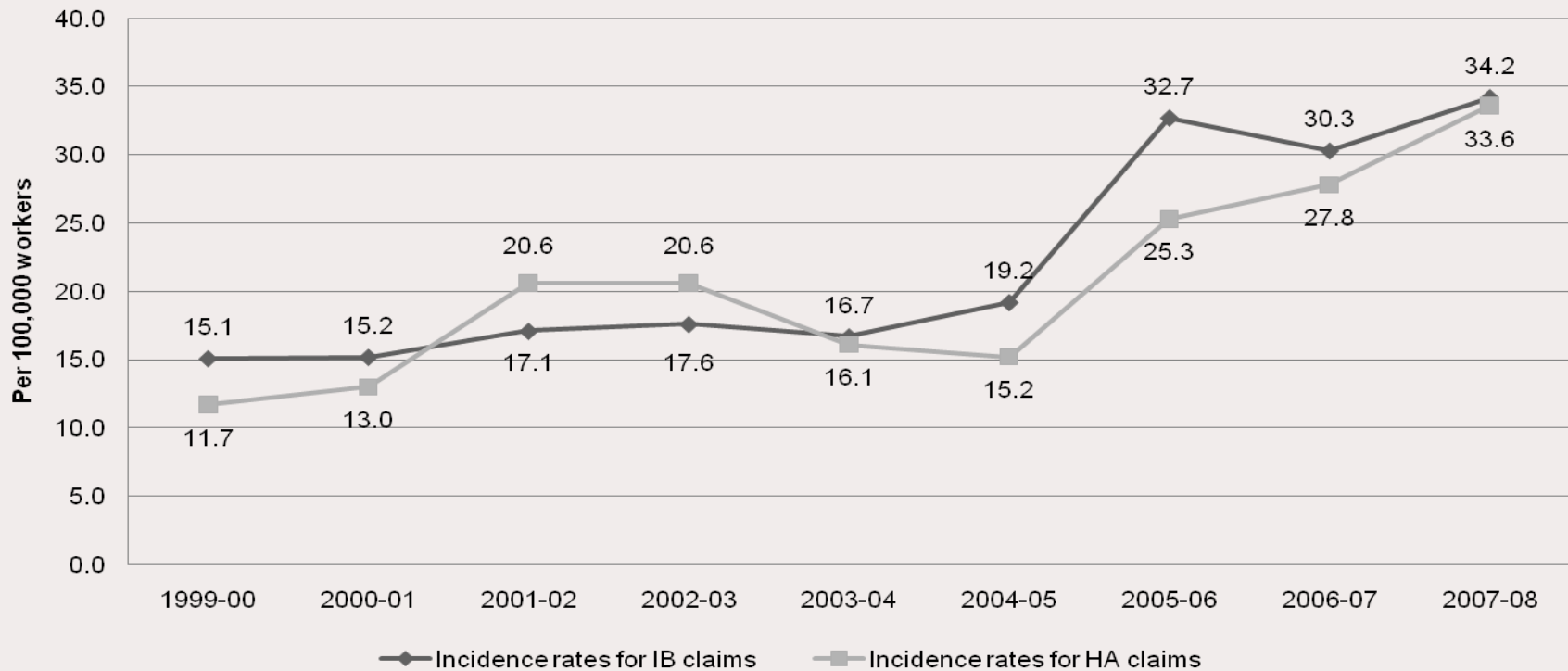


## IB claims outcome



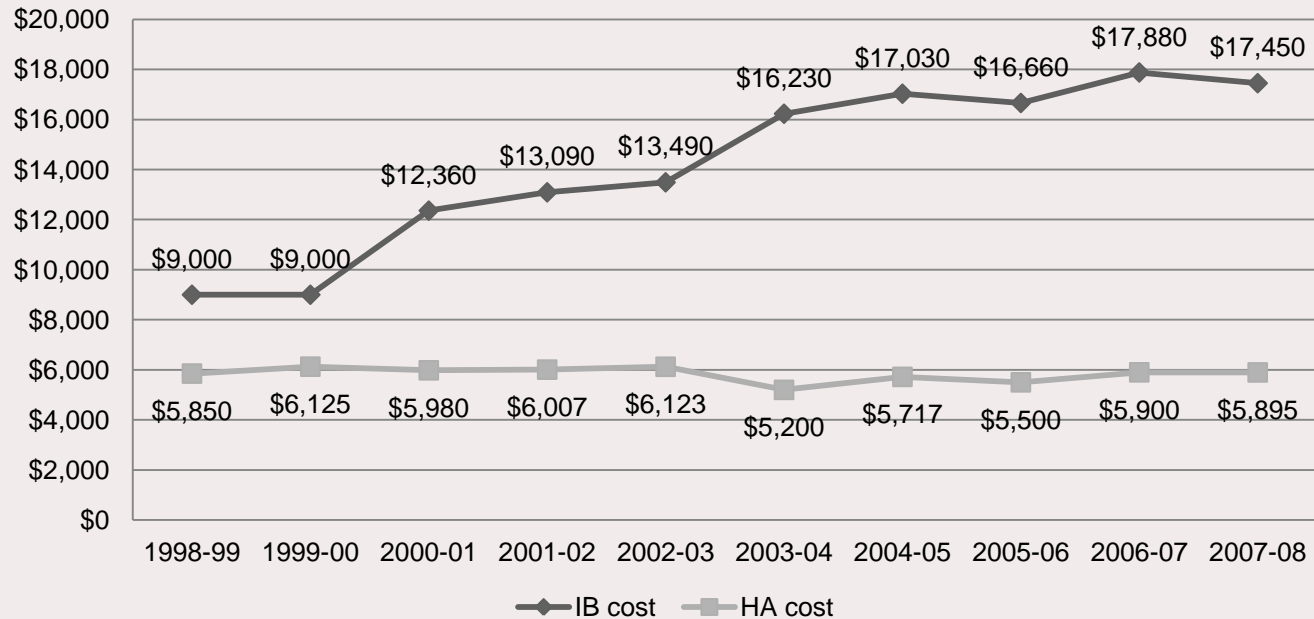


## Incidence rates by type of claim





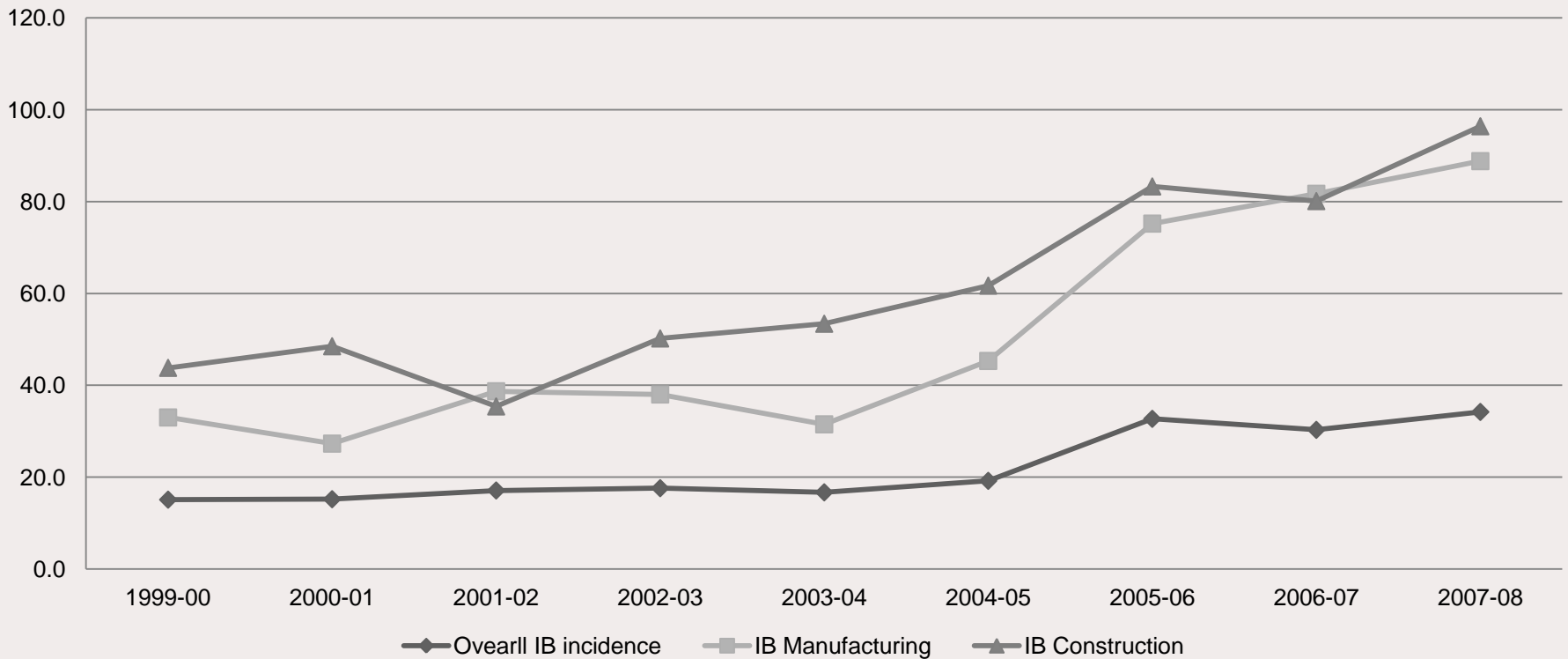
## Median claim cost







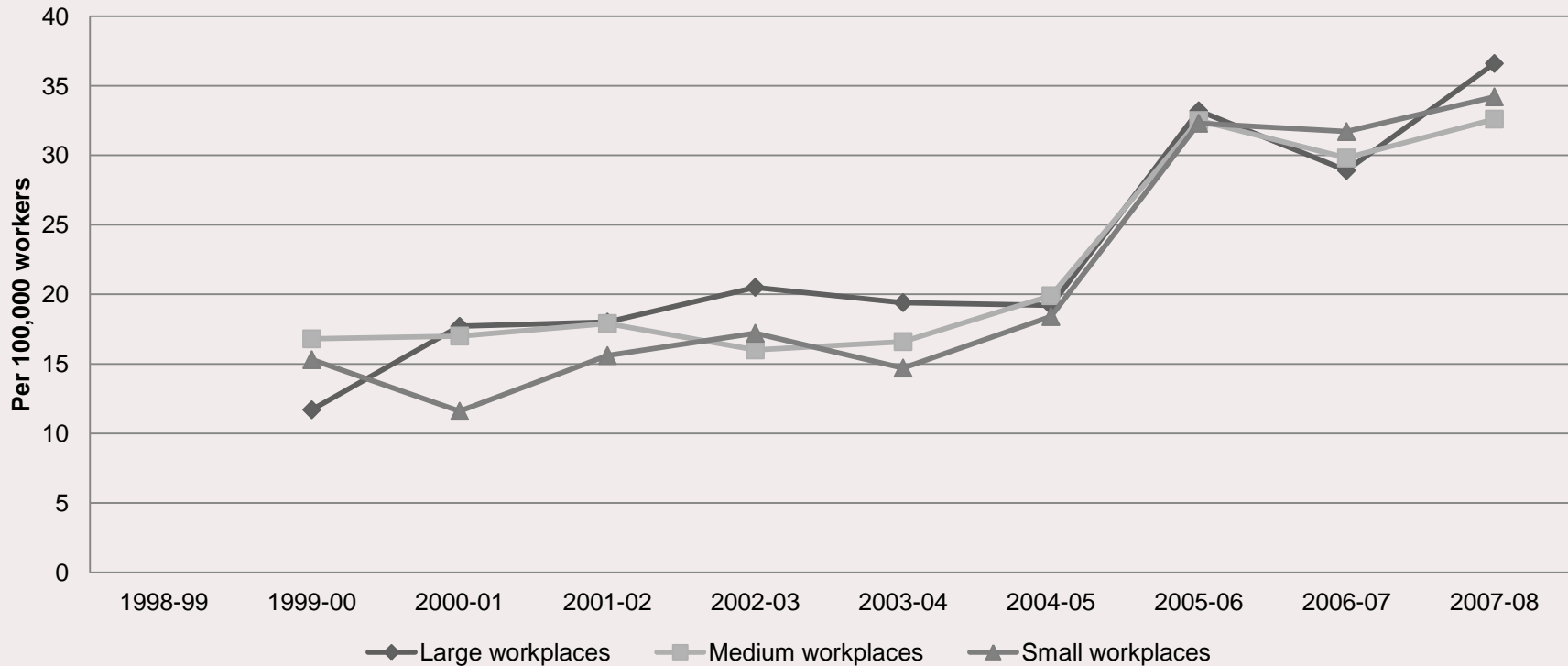
## Industries with the two highest IB incidence rates





## Workplace size

### IB incidence rates by workplace size

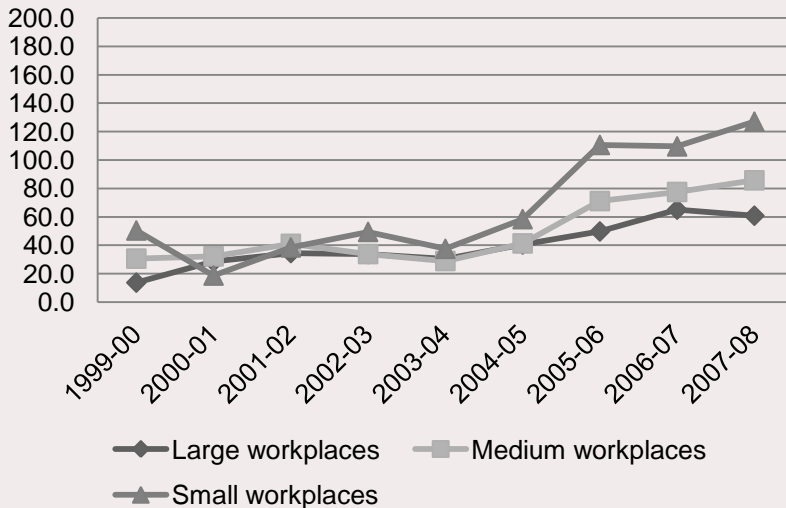




## Incidence of IB claims by workplace size

- Manufacturing: similar incidence rates at the beginning of the period, higher upward trend in small and medium workplaces from 2003-04 onward
- Construction: increase in small workplaces, steady rates in medium workplaces, upward trend in large workplaces

### Manufacturing



### Construction

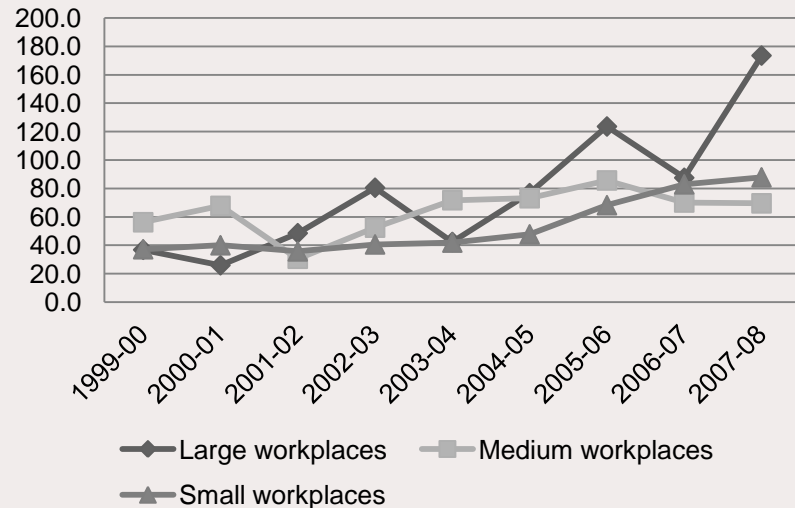
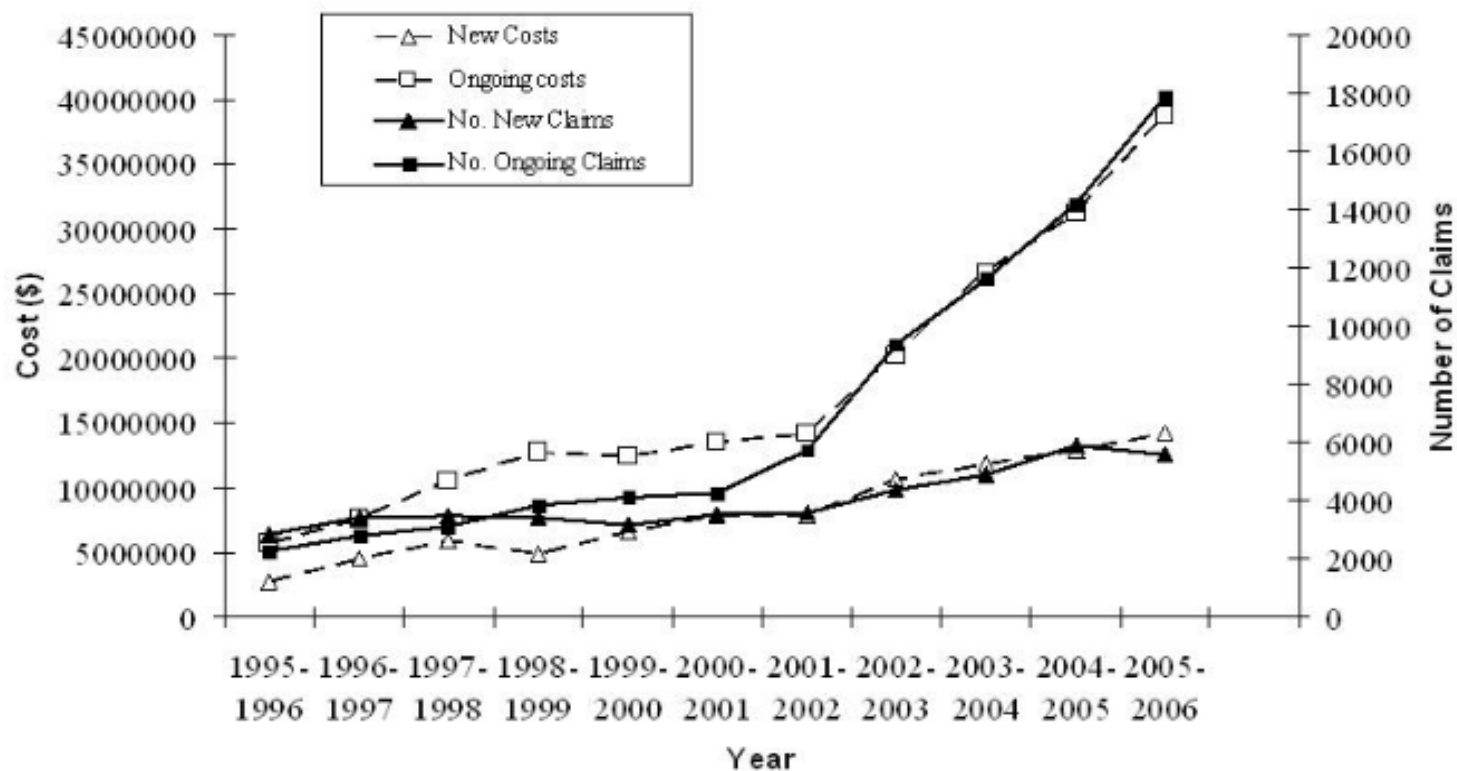


Figure 1. The number and the cost of new and ongoing ACC claims annually between July 1995 and June 2006.



Thorne PR *et al.* Epidemiology of noise-induced hearing loss in New Zealand. *N Z Med J.* 2008 Aug 22;121(1280):33-44.

**Conclusion: “The substantial and increasing societal costs despite decades of NIHL control legislation suggests that current strategies addressing this problem are not effective, inadequately implemented, or both.”**

Thorne et al. 2008

## Prevalence of Hearing Loss in the United States by Industry

Elizabeth A. Masterson, PhD, CPH, COHC, NIOSH,<sup>1\*</sup> SangWoo Tak, ScD, MPH,<sup>1,2</sup>  
 Christa L. Themann, MA, CCC-A, NIOSH,<sup>1</sup> David K. Wall, MAS, NIOSH,<sup>1</sup>  
 Matthew R. Groenewold, PhD, MSPH, NIOSH,<sup>1</sup> James A. Deddens, PhD, NIOSH,<sup>1</sup> and  
 Geoffrey M. Calvert, MD, MPH, NIOSH<sup>1</sup>

**Background** Twenty-two million workers are exposed to hazardous noise in the United States. The purpose of this study is to estimate the prevalence of hearing loss among U.S. industries.

**Methods** We examined 2000–2008 audiograms for male and female workers ages 18–65, who had higher occupational noise exposures than the general population. Prevalence and adjusted prevalence ratios (PRs) for hearing loss were estimated and compared across industries.

**Results** In our sample, 18% of workers had hearing loss. When compared with the Couriers and Messengers industry sub-sector, workers employed in Mining (PR = 1.65, CI = 1.57–1.73), Wood Product Manufacturing (PR = 1.65, CL = 1.61–1.70), Construction of Buildings (PR = 1.52, CI = 1.45–1.59), and Real Estate and Rental and Leasing (PR = 1.59, CL = 1.51–1.68) had higher risks for hearing loss.

**Conclusions** Workers in the Mining, Manufacturing, and Construction industries need better engineering controls for noise and stronger hearing conservation strategies. More hearing loss research is also needed within traditional “low-risk” industries like Real Estate. Am. J. Ind. Med. 56:670–681, 2013. © 2012 Wiley Periodicals, Inc.

**KEY WORDS:** occupational hearing loss; hearing impairment; hazardous noise; noise-induced hearing loss; occupational noise exposure standard

*“Workers in Mining, Construction, and specific Manufacturing industries appear to have a much higher prevalence of hearing loss.....”*

*“Although noise exposure in these industries has been regulated for decades by OSHA and MSHA, these results suggest that the current regulations and their enforcement need to be revisited.”*

# Other recent publications highlighting NIHL

Pawlaczyk-Luszczynska M, Dudarewicz A, Zaborowski K, Zamojska M, Sliwinska-Kowalska M.  
Noise induced hearing loss: research in Central, Eastern and South-Eastern Europe and Newly Independent States.  
*Noise Health*. 2013 Jan-Feb;15(62):55-66.

Fuente A, Hickson L.  
Noise-induced hearing loss in Asia.  
*Int J Audiol*. 2011 Mar; 50 Suppl 1:S3-10.

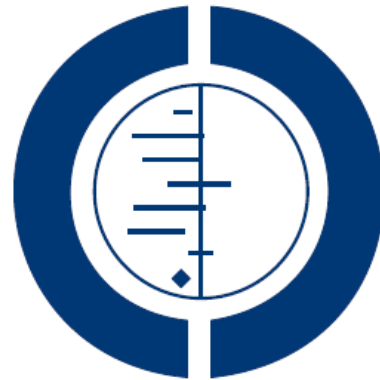
European Commission report on the current situation in relation to occupational diseases' systems in EU Member States and EFTA/EEA countries, 2013 – NIHL a common priority condition

**Why is occupational NIHL not reducing and, in fact, increasing in many countries?**



# Interventions to prevent occupational noise induced hearing loss (Review)

Verbeek JH, Kateman E, Morata TC, Dreschler W, Sorgdrager B



**THE COCHRANE  
COLLABORATION®**

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2009, Issue 3

<http://www.thecochranelibrary.com>

## Review updated in 2012



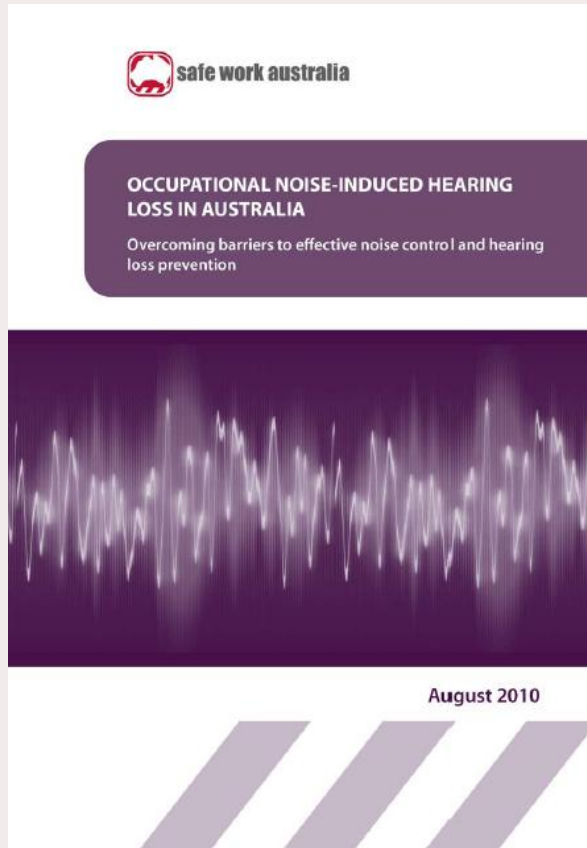
## Cochrane review

- Recent Cochrane systematic review showed a lack of good evidence for effectiveness of interventions to prevent occupational NIHL (Verbeek *et al*, 2009 and 2012)
  - Low quality evidence that implementation of stricter legislation can reduce noise levels in workplaces.
  - Effectiveness of hearing protection devices depends on training and their proper use.
  - very low quality evidence that the better use of hearing protection devices as part of HLPPs reduces the risk of hearing loss.
  - Better implementation and reinforcement of HLPPs is needed.
  - Better evaluations of technical interventions and long-term effects needed.

# Barriers to effective noise control programs

## Focus groups workers/employers:

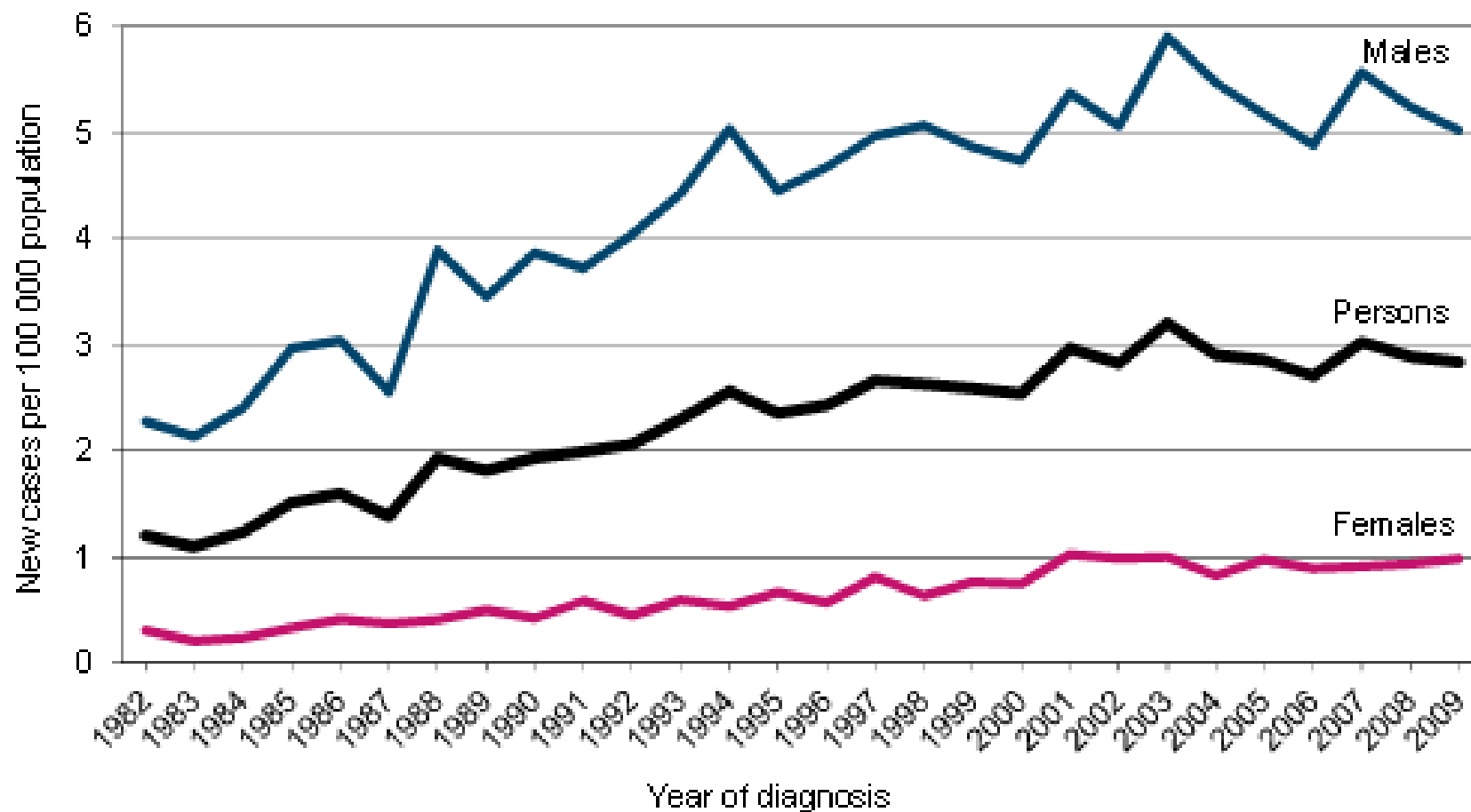
- an over-reliance on personal hearing protectors
- infrequent and improper use of personal hearing protectors,
- lack of prominence of noise as a serious work health and safety issue
- insufficient knowledge of the effects of loud noise on hearing and quality of life
- belief that noise control costs too much
- belief that hearing loss is inevitable
- small or medium-sized businesses



# Another example of an 'older' hazard



**Figure 6** New cases of mesothelioma: age-standardised incidence rate by sex, 1982 to 2009



**Table 4.4: Job-specific module (JSM) exposure assessment results (probability of exposure only) by JSM types (for JSMs used sufficiently often for meaningful interpretation)**

JSM name	No. participants allocated this JSM at least once	Assessed probability of exposure (participants)		
		Probable	Possible	Unlikely
Trades	129	98	8	23
Land Transport	38	9	3	26
Water Transport	25	17	5	3
Asbestos users N.E.C.	13	5	2	6
All other JSMs <sup>(a)</sup>	10	5	1	4

(a) Other JSMs: Furnace industry, insulator, asbestos mine/mill, asbestos removalist, automotive component manufacture, cement factory, tip worker and textile manufacture.

Pattern of affected workers shows major increase is in tradespeople, not primary asbestos workers

# One more example!



## Pneumoconiosis among underground bituminous coal miners in the United States: is silicosis becoming more frequent?

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The findings and conclusions in this report are those of the authors and do not necessarily represent the views of The National Institutes for Occupational Safety and Health.

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22 September 2009

### ABSTRACT

**Objectives** Epidemiological reports since 2000 have documented increased prevalence and rapid progression of pneumoconiosis among underground coal miners in the United States. To investigate a possible role of silica exposure in the increase, we examined chest x-rays (CXRs) for specific abnormalities (r-type small opacities) known to be associated with silicosis lung pathology.

**Methods** Underground coal miners are offered CXRs every 5 years. Abnormalities consistent with pneumoconiosis are recorded by National Institute for Occupational Safety and Health (NIOSH) B Readers using the International Labour Organization Classification of Radiographs of Pneumoconioses. CXRs from 1980 to 2008 of 90 973 participating miners were studied, focussing on reporting of r-type opacities (small rounded opacities 3–10 mm in diameter). Log binomial regression was used to calculate prevalence ratios adjusted for miner age and profusion category.

**Results** Among miners from Kentucky, Virginia and West Virginia, the proportion of radiographs showing r-type opacities increased during the 1990s (prevalence ratio (PR) 2.5; 95% CI 1.7 to 3.7) and after 1999 (PR 4.1; 95% CI 3.0 to 5.6), compared to the 1980s (adjusted for profusion category and miner age). The prevalence of progressive massive fibrosis in 2000–2008 was also elevated compared to the 1980s (PR 4.4; 95% CI 3.1 to 6.3) and 1990s (PR 3.8; 95% CI 2.1 to 6.8) in miners from Kentucky, Virginia and West Virginia.

**Conclusions** The increasing prevalence of pneumoconiosis over the past decade and the change in the epidemiology and disease profile documented in this and other recent studies imply that US coal miners are being exposed to excessive amounts of respirable crystalline silica.

### What this paper adds

- ▶ Epidemiologic reports since 2000 have documented increased prevalence and rapid progression of pneumoconiosis among underground coal miners in the United States.
- ▶ This study found an increase in a specific type of radiographic abnormality that has been shown to be associated with silicosis lung pathology.
- ▶ The increasing prevalence of r-type opacities, and greater number of cases of severe disease found in this study within the Appalachian coal fields point to excessive exposures to crystalline silica, a long recognized cause of rapid disease progression and severe pneumoconiosis in coal miners.
- ▶ These findings stress the need for a timely, comprehensive, accurate, and ongoing evaluation of crystalline silica exposures and control strategies in underground coal mines throughout the United States.

underground coal miners, characterised by an increase in severity, geographical clustering, rapid disease progression and advanced disease in younger miners.<sup>7–9</sup>

Since 1980, national mean exposure levels of respirable mixed coal mine dust reported for enforcement purposes have been consistently below federal permissible exposure limits and relatively unchanged on an annual basis. In the face of the established aetiological association of CWP with coal mine dust, and the reported stability in miners' exposures to respirable mine dust over the



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# Key points



- Despite the emergence of many new hazards, attempts at control should not be at the expense of controlling older hazards
- Re-emergence of health problems is occurring in many countries
- Results of our NIHL study suggest noise management programs over the past 30 years sub-optimal
- Cochrane review shows that increasing regulation unlikely to be effective to control NIHL and the same may apply to other hazards
- 'Burn out' and complacency in workplaces likely to be a problem, especially among younger workers not aware of the impact of these types of hazards
- For NIHL, a need for greater enforcement in noise control and hearing protection programs, not just relying on hearing protectors
- For asbestos, greater control needed for tradespeople working on asbestos products