



10th IOHA International  
Scientific Conference

# Occupational noise sources, exposures and controls in small enterprises in New Zealand

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# Introduction



# Introduction

We DO KNOW that in New Zealand ;

- Workers compensation claims for NIHL have increased exponentially over the last 5 years.
- most noise exposures occur to workers in small/medium sized enterprises (SME's)

We KNOW LITTLE about;

- the number of workers exposed to excessive sound levels
- the incidence and prevalence of NIHL.
- the nature, extent and effectiveness of noise controls currently used in industry



# Introduction

We DO KNOW that in New Zealand ;

- 97% of enterprises in agriculture,
- 92% of enterprises in manufacturing,
- 98% of enterprises in construction,
- 92% of hospitality enterprises and
- 75% of education enterprises

have less than 20 employees (NZ Statistics, 2010).



# Objectives and Methods



**Objectives:** To identify, describe and evaluate noise exposures, sources, paths and control strategies used by small enterprises (SE's - employee count less than 20) in “high”, “moderate” and “low” noise risk industry sectors in New Zealand.

**Methods:** Data collection involved;

- workplace observations,
- noise exposure assessments,
- semi-structured interviews, self-administered questionnaires, and
- reference to archival data.

In addition to sound level measurements in work areas and personal dosimetry, assessments of each SE's conformance to current New Zealand noise management standards were undertaken.



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# Results

Case studies of 33 workplaces, 71 work areas and noise exposure from 98 workers were measured. 30 enterprises had EC's <20.

## Existing noise sources and controls

- Generally noise sources could be readily identified in the workplaces.
- Although many operations were complex, noise control strategies aimed at the noise source and noise paths could have been investigated further,
- The predominant noise control strategy was that of minimisation, specifically the use of personal hearing protection.



# Results

## Existing noise sources and controls

Noise control strategies could have been investigated further, including;

- elimination or replacement of old machinery
- more specific engineering modification at noise source
- more specific and direct enclosure of machinery and equipment,
- use of vibration isolation,
- regular maintenance of machinery and equipment,
- implementation of a “buy quiet” purchasing policy.
- administrative controls (not used in any of the organisations surveyed).



# Results

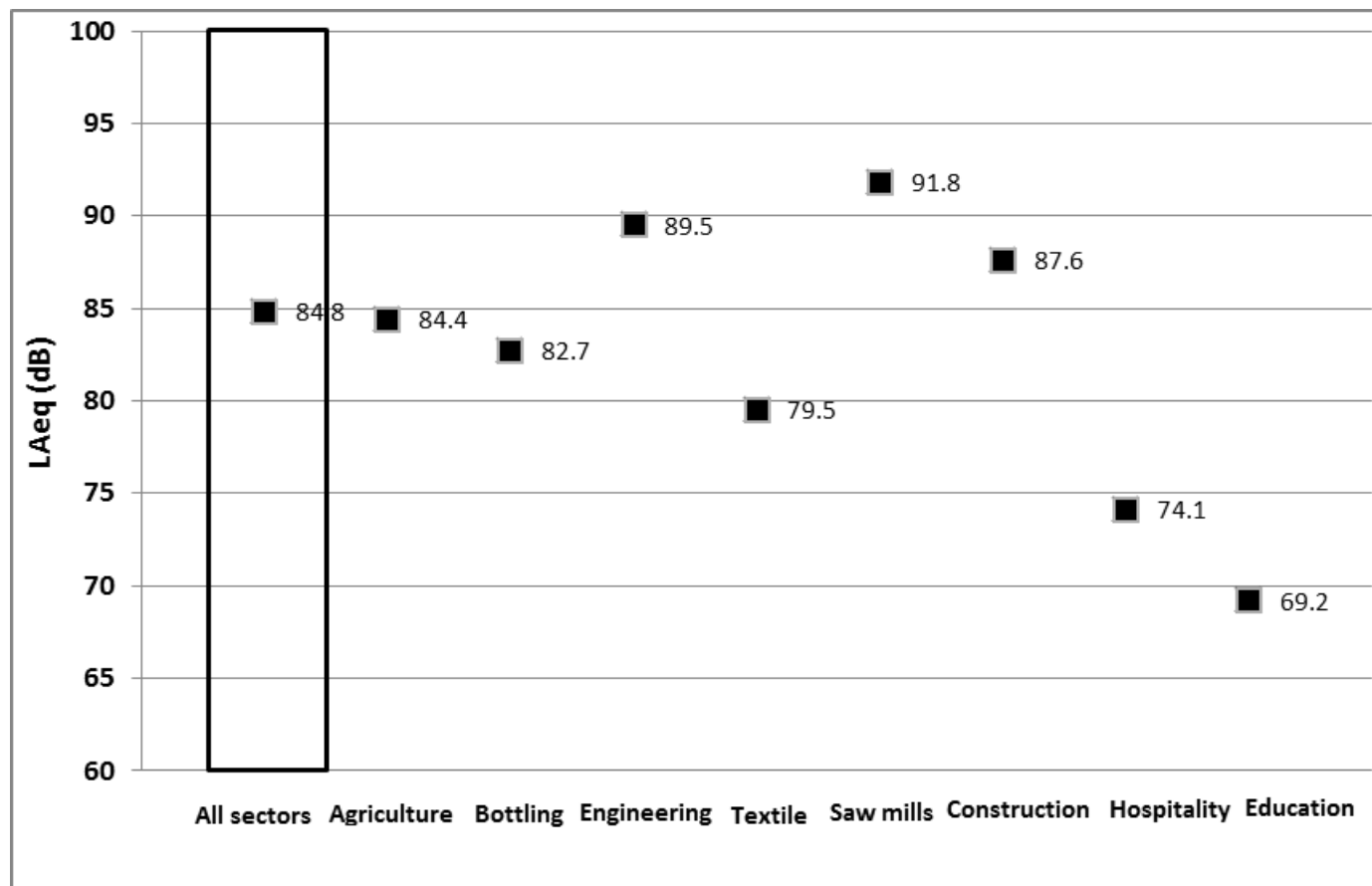


Fig. 1. Mean  $L_{Aeq8hr}$  levels by industry sector.



# Results

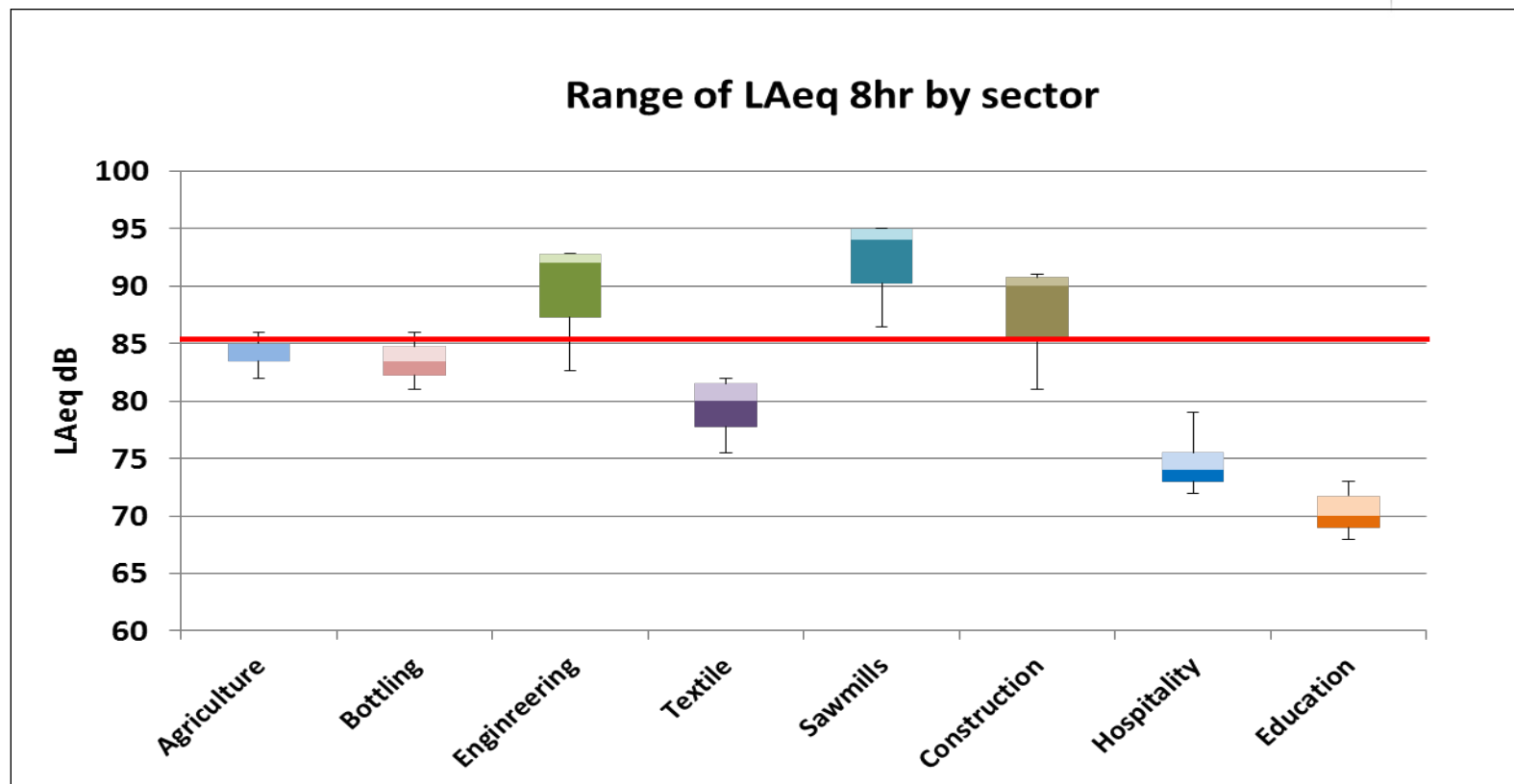


Fig. 2. Median  $L_{Aeq8hr}$  levels by sector. The box boundaries show the 25th percentile and the 75th percentile. Error bars indicate the 90th and 10th percentiles.

# Results

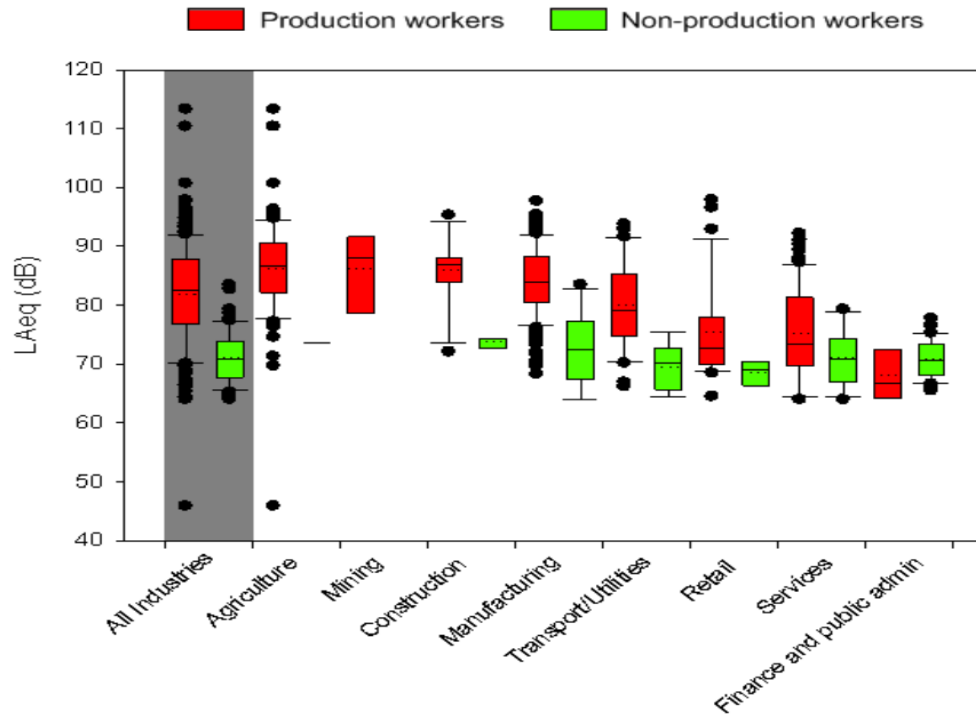


Fig. 3. Median  $L_{Aeq8hr}$  levels by sector. The box boundaries show the 25th percentile and the 75th percentile. Error bars indicate the 90th and 10th percentiles (Thorne et, 2011).

# Results

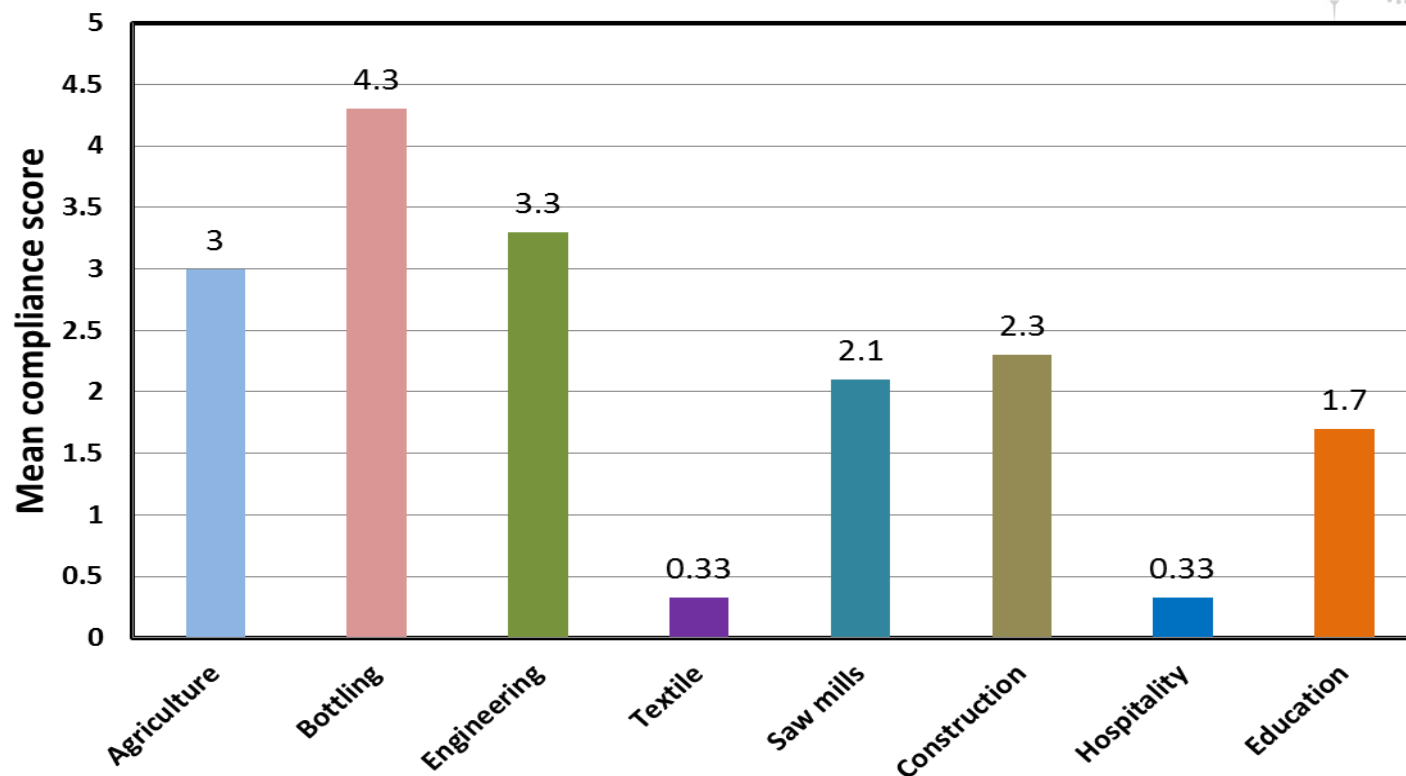


Fig.3. Mean compliance scores for NZ ACoP Management of Noise in the Workplace by sector (max 10/10)



# Results

- Some evidence that noise had been identified as a workplace issue
- Little evidence that noise had been assessed as a significant hazard (either qualitatively or quantitatively).
- Some evidence that elimination and isolation strategies were explored to reduce noise exposure, but were not generally utilised.
- Minimisation (use of hearing protection) tended to be employed as the key control strategy.
- Administrative controls were not used in any of the organisations surveyed.
- Noise monitoring or audiometry was not routinely undertaken.



# Conclusions

- Change our frame of reference – small business approach
- Change in expectations with respect to noise management practices and solutions for small enterprises in particular.
  - Less reliance on PPE is required
  - Much more of a risk based approach is required
  - Expectation to reduce noise by engineering means at source
  - Adoption of Prevention through Design (PtD) principles



# Conclusions

- Less assessment and "process", more Action is expected
- If solutions have been identified "stop assessing and start controlling"
- Health Surveillance is required for exposures above 85dB(A) - which can be considered to be "a tax on failure to control the risks"
- National strategies on the prevention of NIHL need to be designed from a small business perspective
- Noise management interventions are seen as a benefit to the enterprise rather than a cost.







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