

# Predicted Levels of Noise and Airborne Contaminants on Enterprise Homes' Sites

**Prepared for Enterprise Homes Limited**

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This report provides Enterprise Homes' contractors with evidence-based information related to levels of noise and airborne contaminants likely to be present on Enterprise Homes sites. The information herein is based on a desktop review of international research and literature.

This report is provided in good faith as a guideline only and is not intended to negate the legal requirement for contractors to monitor exposure and/or individual health under the law.

A reference list of all reviewed literature and further reading is appended.



# Introduction

## What is exposure monitoring?

Exposure monitoring is the measurement and evaluation of a health hazard experienced by a person. E.g. It may include monitoring the conditions of a workplace such as noise levels, or concentrations of airborne contaminants.

## What is health monitoring?

Health monitoring is monitoring a person to identify any changes in their health because of exposure to certain health hazards arising from their work. For example, it may include testing a worker's lung function or hearing.

## Why are exposure and health monitoring important?

It's important to ensure that your business risks are understood and the health of your workers is protected.

Exposure monitoring is important to:

- Find out if workers are potentially exposed to a hazard at harmful levels
- Inform decision making about selection of control measures and PPE
- Find out if the control measures in place to control exposure to that hazard are working

Health monitoring is important to:

- Check if the health of workers is being harmed from exposure to work hazards
- Detect early signs of ill-health or disease to enable early intervention
- Find out if the control measures are working effectively or require improvement

## What are the legal requirements?

Organisations (PCBUs) have specific legal duties to monitor exposure and health under the *Health and Safety at Work (General Risk and Workplace Management) Regulations 2016*.

Additionally, even your business doesn't need to monitor under *these* regulations, you still have a primary duty to monitor worker health as far as is reasonably practicable if exposure to a particular health risk warrants it.

## Exposure Monitoring

Exposure monitoring must be carried out if the you are not certain on reasonable grounds whether the concentration of a substance hazardous to health at the workplace exceeds its relevant prescribed exposure standard.

You may have to seek advice from a competent person – this is a person who has sufficient knowledge, skills and experience in appropriate techniques and procedures including interpreting results (e.g. an occupational hygienist).

## Health Monitoring

Health monitoring must be carried out under the following circumstances:

- If the worker carries out ongoing work using a substance hazardous to health that needs health monitoring and there is a serious risk to the worker's health because of exposure to that substance
- If the worker carries out work in an environment that exceeds safe noise levels
- If the worker carries out work that puts them are risk of exposure to asbestos

You must ensure a competent person determines your health monitoring requirements, and that monitoring is carried out (or directly supervised) by an occupational health practitioner (a medical doctor, registered nurse or nurse practitioner) with knowledge, skills and experience in health monitoring.

## DID YOU KNOW?

**Workers in the construction sector are 20 times more likely to die from workplace airborne exposures than from an accident at work!**

# Noise

## Noise Level Exposure Limits

The occupational exposure limits for noise are stated in Regulation 11 of the *Health and Safety in Employment Regulations 1995*. Your business must take all practicable steps to ensure that no worker is exposed to noise above an eight-hour equivalent continuous exposure of 85dB(A), or a peak sound pressure level of 140dB.

## Noise Levels in Construction

To help you figure out what noise levels your workers could be exposed to on our sites, research and resources related to the noise levels of some common construction tools has been reviewed and collated for you in the following table.

Activity / Tool	Noise Level Range (dB)	
	Low	High/Peak
Having a normal conversation	60	70
Driving a vehicle	70	70
Operating a jigsaw	91	95
Operating cordless screw gun	90	97
Operating a cordless power drill	93	98
Operating a belt sander	87	102
Operating a grinder	86	109
Operating a jack hammer	102	111
Operating a mitre saw	100	113
Operating a circular saw	95	114
Hammer drill	89	116
Hammering nails into timber	87	131
Operating Paslode nail gun	97	138
Operating PATs (into timber)	113	143

Note: Noise level ranges are a guideline only, your tools may vary

## Hearing Protective Equipment

Use of hearing protective equipment (HPE) is only a valid means of control when all reasonably practicable steps have been taken to reduce noise to below the stated levels. HPE should never be the only control measure considered.

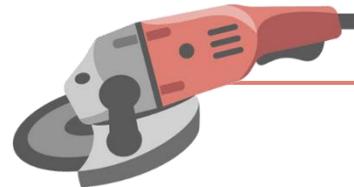
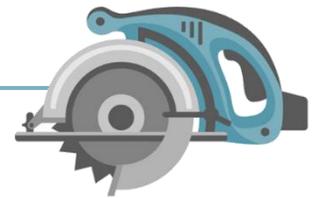
Additionally, HPE is often a misused control option. Its effectiveness depends on:

- Selecting the correct HPE
- Ensuring correct use and fitting of the HPE to the individual
- The amount of time HPE is *actually* worn in practice

## DID YOU KNOW?

- Exposure to noise that exceeds what the ear can tolerate can cause noise induced hearing loss (NIHL): a permanent and incurable deafness
- NIHL can be caused by continuous exposure to lower levels of noise, or a single exposure to an intense sound
- ACC compensation payments for hearing loss for last year were \$53 million

Up to 114 dB



Up to 109 dB

Up to 102 dB



Up to 95 dB

Up to 116 dB



Up to 81 dB

# Airborne Contaminants

## Workplace Exposure Standards

Some legal requirements that relate to airborne contaminants are set out in the *Health and Safety at Work Act 2015*, the *General Risk and Workplace Management Regulations 2016*, and the *Hazardous Substances Regulations 2017* (which will replace the HSN0 Act 1996, on 1 December 2017).

The occupational exposure limits for specific substances are set in the *Workplace Exposure Standards and Biological Exposure Indices (WES)*. The WES are intended to be used as guidelines for people qualified in occupational health practice.

## Airborne Contaminants Levels

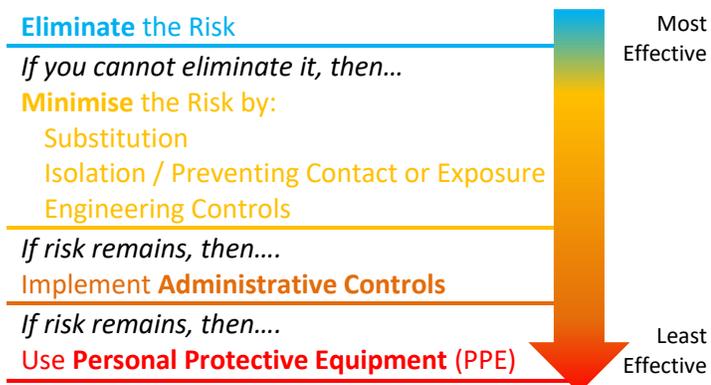
Concentrations of these airborne contaminants can vary significantly depending on many factors. Sufficient information is not available to provide our contractors with estimations of concentrations levels of these harmful contaminants. Specialist advice should be sought if you are not certain on reasonable grounds, that your control measures reduce exposure below the prescribed limits.

## Airborne Contaminants on Our Sites

Construction work can expose workers to a range of harmful airborne contaminants. Airborne contaminants that may be present at harmful levels on Enterprise Homes sites could include silica dust, wood dust, organic solvents and carbon monoxide.

## Control Measures

The most effective controls reasonably practicable must be implemented to manage airborne contaminants. E.g. Extract dust as the source rather than relying on a dust mask.



## Silica Dust

Silica can be found in materials such as concrete, bricks, rocks, stone, sand and clay. Harmful dust can be created by cutting, grinding, sanding drilling or otherwise disturbing them.

Respirable silica dust (not always visible to the naked eye) can be inhaled deep into the lungs and cause damage, which can be fatal. It can cause silicosis, chronic obstructive pulmonary disease, and lung cancer. Lung disease can be caused by both long-term exposure to small or moderate levels of silica dust, and short-term exposure to high levels.

## Wood Dust

Wood dust can be created when timber products are sawed, cut, or sanded, and may contain other harmful products such as glues and treatment chemicals.

When wood dust is inhaled the particles can scar your lungs making it harder to breathe, and can cause allergies, asthma and cancer, which can be fatal.

## Organic Solvents

Organic solvents are in many products, including paints, glues and cleaning products.

When breathed in, they are easily absorbed into the deep tissue of the lungs. From there, they spread into the bloodstream. Once in the bloodstream, solvents can affect various organs, as well as the central nervous system and peripheral nervous system. Repeated exposure can cause irreversible chronic conditions, including brain damage.

## Carbon Monoxide

Carbon monoxide is a poisonous gas that has no smell, taste or colour. Its created by exhaust fumes from small petrol engine plant and can accumulate to dangerous levels in areas without adequate ventilation.

Symptoms of carbon monoxide poisoning are headaches, dizziness, nausea, stomach pain, feeling tired and confused, shortness of breath and difficulty breathing. In serious cases, it can cause brain and heart damage or death.

# References and Further Reading

## Work-Related Health

[WorkSafe Position on Work-Related Health – WorkSafe New Zealand](#)

[Fact Sheet: Exposure Monitoring Under the Health and Safety at Work \(GRWM\) Regulations – WorkSafe New Zealand](#)

[Fact Sheet: Health Monitoring Under the Health and Safety at Work \(GRWM\) Regulations – WorkSafe New Zealand](#)

[The Workplace Exposure Standards \(WES\) and Biological Indices – WorkSafe New Zealand](#)

## Noise

[Fact Sheet: Noise Levels Created by Common Construction Tools – WorkSafe New Zealand](#)

[Head-to-head tool reviews including comparisons of noise levels - Tool Box Buzz](#)

[Carpenters - Noise on the job can damage your hearing - University of Washington](#)

[Power Tool Database \(search for sound power levels\) – Centers for Disease Control and Prevention](#)

[Hearing Protector Device Compendium \(learn about and select HPE\) – Centers for Disease Control and Prevention](#)

[Work-related hearing loss affects thousands of builders in New Zealand – Level.org.nz](#)

[Noise in Construction – EHS Today](#)

## Airborne Contaminants

[Work-Related Health \(information, guidance, tools, resources, case studies etc.\) – WorkSafe New Zealand](#)

[Respiratory Protective Equipment – Advice for PCBU's – WorkSafe New Zealand](#)

[Respiratory Protective Equipment – Advice for Workers – WorkSafe New Zealand](#)

[Quick Guide: Controlling Construction Dust with on Tool Extraction – WorkSafe New Zealand](#)

[Fact Sheet: Silica Dust in the Workplace – WorkSafe New Zealand](#)

[Fact Sheet: Wood Dust – Controlling the Risks – WorkSafe New Zealand](#)

[Toolbox Talk: Wood Dust and Your Health – WorkSafe New Zealand](#)

[Toolbox Talk: Controlling Wood Dust – WorkSafe New Zealand](#)

[Fact Sheet: Reducing Harm when Working with Organic Solvents – WorkSafe New Zealand](#)

[Fact Sheet: Carbon Monoxide: Invisible and Deadly – WorkSafe New Zealand](#)

## Legislation

[The Health and Safety at Work Act 2015](#)

[Health and Safety at Work \(General Risk and Workplace Management\) Regulations 2016](#)

[Health and Safety at Work \(Hazardous Substances\) Regulations 2017](#)

[Health and Safety in Employment Regulations 1995](#)