HSWA

QUICK GUIDE

Whole body vibration – information for businesses

March 2021

New Zealand Government

WORKSAFE
Mahi Haumaru Aotearoa

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ACKNOWLEDGEMENT

Health and Safety Executive (UK) guidance was used in the development of this quick guide.

1.0 Who is this guide for?

This guide is for persons conducting a business or undertaking (PCBUs)[1] that carry out work involving machines. It explains how to identify and manage the risks from excessive whole body vibration (WBV).

WBV occurs when vibration (including bumps, shocks and jolts) passes through someone's body from the surface they are sitting or standing on.

Workers can be exposed to WBV if they regularly drive, ride in, or operate machines that travel over rough surfaces or have a vibrating function. Examples include tractors and mobile machinery like earth movers and bulldozers.

Long term exposure to excessive WBV could harm workers.

As a PCBU, you must ensure, so far as is reasonably practicable, the health and safety of workers, and that other persons are not put at risk by your work.

You must manage the health and safety risks to workers and others that arise from being exposed to the work carried out by your business.

[1] PCBUs have duties under the Health and Safety at Work Act 2015 (HSWA). For explanations of HSWA and more information about PCBUs, see Appendix 1.

2.0
What are the health risks of excessive WBV?

Long term exposure to excessive WBV could harm workers.

Lower back, neck or shoulder pain or other discomfort could be signs that workers are being exposed to excessive WBV. However, there can be other work and non-work factors that could contribute to these symptoms.

People who are exposed to noise and vibration at the same time are more likely to lose their hearing than people who are exposed to noise alone.

For information about vibration noise control, see our website: worksafe.govt.nz

3.0
How can you work out if exposure to WBV is something you need to deal with?

Workers are commonly exposed to WBV when they regularly drive, ride in, or operate machines:

- off-road (for example, tractors and mobile machinery like earth movers, bulldozers)
- on unsealed or poorly maintained roads
- under conditions the machine is not designed for (for example, driving on-road vehicles off-road).

Workers can be exposed to WBV when using machinery like forklifts, or when riding on machines like trains or on maritime vessels.

Workers can also be exposed by standing on a platform attached to a machine that vibrates (for example, a concrete crushing plant).

Do you need to manage the risks from excessive WBV?

This will depend on how much the machines workers use vibrate, and how long and how often workers are exposed to the vibration.

There is a recommended maximum daily amount of WBV that workers should not exceed.

- We recommend that workers have **a maximum daily exposure limit of 1.15m/s^2 (8 hour average)** or **vibration dose value of 21m/s$^{1.75}$**.
- We expect you to put **control measures in place** if your workers **are exposed to 'the exposure action value' of 0.5m/s^2 (8 hour average) or more,** or **vibration dose value of 9.1m/s$^{1.75}$ or more.**

See Section 4 for information about monitoring the amount of vibration workers are being exposed to.

There are many factors that can influence the effects of exposure to WBV. These include:

- the condition of the machine
- the vibration intensity
- the duration of exposure (time/day, frequency)
- the design of the cab and seat, or the standing surface
- the type of tyres or tyre pressure
- operator skill
- operator health and medical history.

To work out whether your workers are at risk, think about:

- the machine
- how the work is organised
- the task
- your workers.

Figure 1 shows things to consider.

You must engage with workers and their representatives when assessing risks to work health and safety (Appendix 4).

Section 4 describes how monitoring can help to identify or confirm health risks from WBV.

Think about...

The machine

What is the vibration level for the machine?

See the manufacturer's user manual.

Does the machine have suspension systems (for example, for the cab and seat, or standing surface) designed to minimise vibration, shocks and jolts?

Is the machine working optimally?

As a first step, you could seek help from the machine's importer, supplier, designer or service person to check this.

Is the machine regularly maintained (including suspension systems and seat suspension)?

Machines that are older or that are not well-maintained usually vibrate more.

The task

Is the machine the right one for the task? Is it fit-for-purpose?

Using the wrong machine can mean work takes longer, increasing exposure to vibration. Using **over-powered** machines expose workers to higher levels of vibration.

What is the vibration level for the task?

See the manufacturer's user manual for vibration data. The higher the vibration, the greater the risk.

How long does the task take?

Have you taken into account cumulative exposure from use of other machines in the same work shift?

The longer workers are exposed to vibration, the more chance of harm from WBV.

Is the machine being used as designed?

Is the machine to be used off-road, on unsealed or poorly maintained roads or under conditions the machine's not designed for?

The rougher the surface, the more vibration.

Does the machine have suitable tyres for the terrain?

The wrong tyres or the wrong tyre pressure can expose workers to higher levels of vibration.

How hard is the material that machines (such as earth moving vehicles) will work with (for example, is it concrete, is it soft soil)?

The harder the material, the more vibration.

Does the task involve awkward postures or frequent twisting or reaching?

How the work is organised

How long are your workers exposed to the vibration?

- How many hours within the shift involve operating the machine(s)?
- How often do your workers take breaks?
- How long are they exposed to high levels of WBV versus lower levels?
- How often do they operate the machinery? Every day?

The longer workers are exposed to vibration, the more chance of harm from WBV.

Your workers

Do your workers always use the right machine for the job?

Using the wrong machine can mean work takes longer, increasing exposure to vibration.

Have they been trained to properly use the machine including adjusting the seat?

Are they being exposed to WBV above the recommended levels (see page 4 for recommended levels)

Do they feel that WBV is uncomfortable?

If yes, they could be being exposed to too much WBV. See the next section for information about this.

Are they showing signs of potentially being exposed to excessive WBV (for example, lower back, neck or shoulder pain)?

How is their general health?

Pre-existing injuries can increase the chances of harm from WBV.

FIGURE 1: Things to consider when working out if your workers are at risk from WBV

4.0
How can monitoring be used to identify health risks and check control measures?

You must ensure, so far as is reasonably practicable[2], the health and safety of workers, and that other people are not put at risk by your work. In some circumstances, this could mean monitoring worker exposure and/or the health of workers.

Exposure monitoring measures and evaluates what your workers are being exposed to while they are at work.

Health monitoring looks at whether a worker's health is being harmed because of what they are being exposed to while they are at work.

Monitoring should be carried out by a suitably qualified person with sufficient knowledge, skills, training and experience.

Monitoring is not a control measure. It does not replace the need for control measures to eliminate or minimise worker exposure to harm.

For more information about exposure monitoring and health monitoring, read our guidance: Exposure monitoring and health monitoring: Guidance for businesses

Exposure monitoring can be used to:

- identify, assess and confirm health risks
- identify where new control measures are needed
- monitor how well existing control measures are performing, and
- identify when control measures need to be reviewed, updated or removed.

Health monitoring can be used to monitor if workers are experiencing injury or illness from exposure.

As shown in Figure 2, monitoring information – along with verifying that your control measures are working effectively – can be used to continually improve how you are managing health risks.

For more information about managing risk, see Section 5.

[2] See Appendix 2 for an explanation of what 'so far as is reasonably practicable' means.

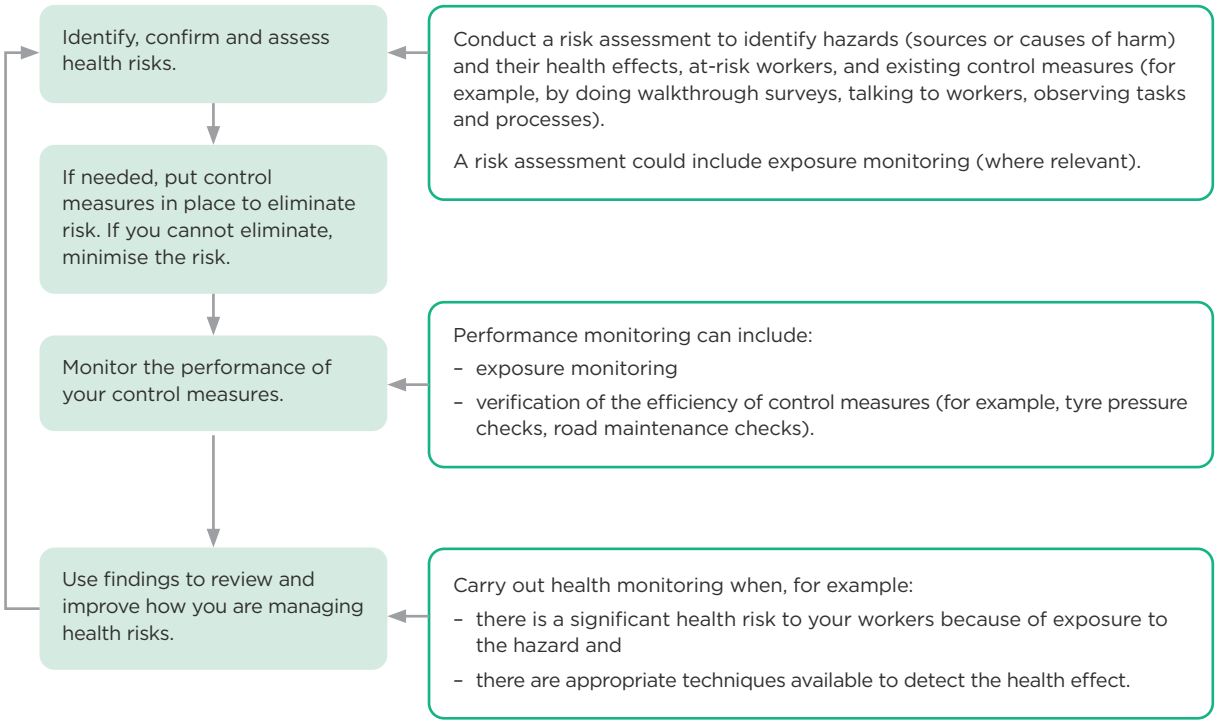


FIGURE 2: Role of monitoring when managing risk

When is it recommended to carry out exposure monitoring?

We recommend bringing in a competent person[3] (such as an Occupational Hygienist) to assess the risk of WBV to your workers:

- if you are concerned that your workers may be at risk from WBV or
- if you are concerned you are exceeding the recommended values (Section 3).

If you exceed the exposure action value, we recommend:

- implementing control measures first to eliminate/minimise exposure levels (see Section 5 for guidance in this), and
- bringing in a competent person to measure the effectiveness of the control measures (see Section 6).

When is it recommended to carry out health monitoring?

We recommend setting up an early warning system to detect worker discomfort. Then if workers are experiencing discomfort, an assessment can be carried out to establish which work factors (including WBV) and/or non-work factors are causing it.

As described in Table 1, health monitoring is recommended:

- at the start of employment (to identify workers at increased risk, and to get baseline information)
- within six months of commencing work (to identify any early onset of symptoms) and then on a regular basis (for example, yearly).

We also recommend having a system so workers can report new or worsening symptoms to you during the time between the regular questionnaires.

[3] A 'competent person' is someone who has sufficient knowledge, skills, training and experience in the appropriate techniques and procedures, including the interpretation of results – such as an Occupational Hygienist for exposure monitoring.

What could exposure monitoring and health monitoring involve?

Table 1 shows examples of exposure monitoring and health monitoring.

	EXPOSURE MONITORING	HEALTH MONITORING
What does it involve?	Exposure monitoring measures the amount of vibration workers are exposed to using measurement equipment in accordance with standards. Measuring devices are placed on the seat pan, seat back or floor of the machine. The readings from these devices are then used to calculate the amount of vibration. Results are measured against the exposure action value and exposure limits value. The risk to worker health is then assessed.	Health monitoring checks for lower back, neck or shoulder pain or other signs of discomfort. Health monitoring could involve the following: – At the start of employment, workers fill out an initial discomfort questionnaire, and then after six months. – Workers then fill out a discomfort questionnaire on a regular basis (for example, yearly). – Workers should also be able to report new or worsening symptoms during the time between the regular questionnaires. – If the questionnaire results indicate concerns, the worker undergoes a health assessment. – When required, the worker is sent for a full medical assessment/formal diagnosis. **Note**: Workers must give their informed consent for health monitoring. You must keep any personal information collected during monitoring secure and confidential, and use it for the purposes it has been collected for. For more information: Privacy Act 2020 principles
Who carries it out?	Exposure monitoring should be carried out by a competent person (or person under the supervision of a competent person), such as an Occupational Hygienist. This person should have sufficient knowledge, skills, and experience in appropriate techniques and procedures, including the interpretation of results.	Health monitoring should be carried out by occupational health practitioners with relevant training, skills and experience in health monitoring. For example: – An Occupational Health Nurse reviews the initial and regular questionnaires, and carries out health assessments (where needed). – When required, workers will be referred to an Occupational Physician for a full medical assessment/ formal diagnosis. From the assessments, a competent person can establish which work factors (including WBV) and/or non-work factor(s) are causing the discomfort. As a result of this assessment, you will receive a recommendation as to whether the worker should continue to work with machines. You should follow this recommendation.

TABLE 1: Examples of WBV exposure monitoring and health monitoring

You should talk to a suitably qualified person with sufficient knowledge, skills, training and experience to confirm if monitoring is appropriate for you (and if so, what type and how often).

You must engage with workers and their representatives when making decisions about monitoring procedures (Appendix 4). Discuss with workers how exposure to excessive WBV can harm them, and how monitoring can be used to manage health risks.

For more information on monitoring, including setting up monitoring programmes and what to do if monitoring results show workers are being harmed or at risk, read our guidance: Exposure monitoring and health monitoring: Guidance for businesses

5.0 How can you manage the health and safety risks from excessive WBV?

If you need to manage the risks from excessive WBV, you could:

- reduce the amount of vibration workers are exposed to
- reduce the time workers are exposed to vibration (over each shift, over the time they work for you)

or ideally both.

You must work with other businesses you share monitoring duties with

You must work together with other PCBUs if you share health and safety duties (this could happen when you share a workplace or you are in a contracting chain). A shared duty could include managing shared risks (including those from WBV) or carrying out monitoring of the same worker. For more information about working with other businesses, see Appendix 3.

You must engage with your workers about health and safety matters

Seek the views of your workers and their representatives when identifying and assessing the risks from exposure to WBV, and when making decisions about the ways to eliminate or minimise those risks. For more information about engaging with workers, see Appendix 4.

What control measures could you consider?

You must first try to **eliminate** a risk so far as is reasonably practicable.

If it is not reasonably practicable to eliminate the risk, it must be **minimised** so far as is reasonably practicable.

You can use the hierarchy of control measures to help you to work out the most effective control measures to use.

Figure 3 describes control measures you could use to eliminate or minimise the risks arising from WBV. Multiple control measures may be needed to deal with a given risk. Give preference to control measures that protect many workers at the same time.

Put the control measures in place

As soon as possible after a decision is made about the control measures:

- put the control measures in place
- instruct and train workers (including new workers) about the control measures, including why it is important to use them and how to apply them.

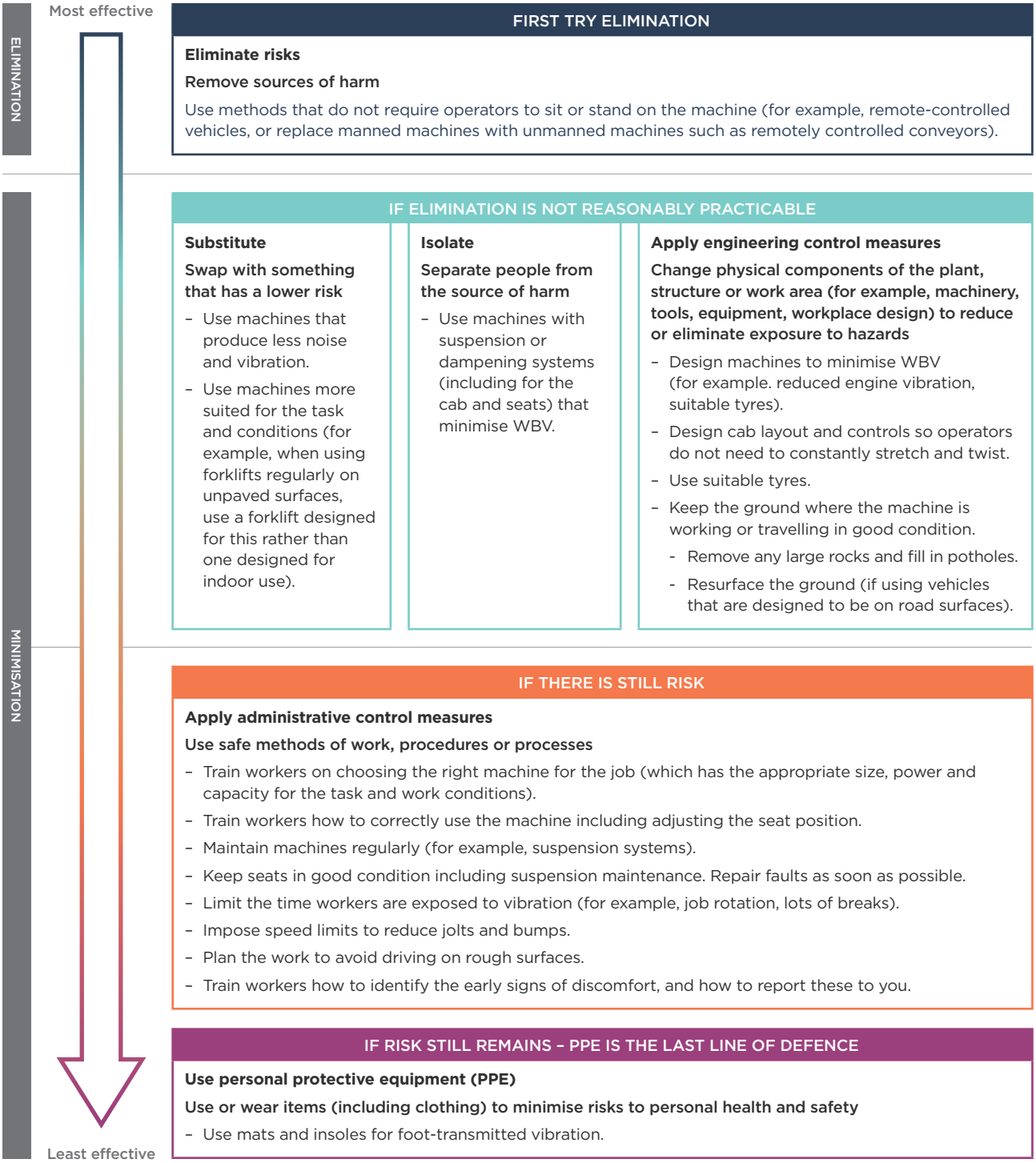


FIGURE 3: Possible control measures

6.0 When should you review and improve your WBV control measures?

Control measures should remain effective, and be fit-for-purpose, suitable for the nature and duration of the work, and used correctly.

With your workers, regularly monitor and review control measures to confirm that the measures are effective.

As discussed in Section 4, exposure monitoring can be used to monitor how well control measures are performing, and to identify when control measures need to be reviewed, updated or removed.

Get advice from a competent person on how often to monitor the effectiveness of control measures.

However you should immediately investigate, and review your WBV control measures when:

- the control measure does not control the risk, or
- a new hazard or risk is identified, or
- workers report potential early signs of harm from excessive WBV to you, or
- you receive exposure monitoring or health monitoring results that show your workers are being harmed or at risk from WBV (Section 4), or
- there will be a change in the workplace or work (for example, new equipment, new or changed work processes, increased workload, extended hours or additional/changed shifts), or
- your workers or their representatives indicate a review is necessary or request it.

Use the results of these reviews to continually improve how you manage health risks.

Appendix 1: Health and Safety at Work Act duties

The Health and Safety at Work Act 2015 (HSWA) is New Zealand's key work health and safety law.

All work and workplaces are covered by HSWA unless they have been specifically excluded. For example, HSWA does not apply to the armed forces in certain situations.

HSWA sets out the work health and safety duties that duty holders must comply with.

There are four types of duty holder under HSWA:

- a person conducting a business or understanding (PCBU)
- an officer
- a worker
- an 'other person' at the workplace.

Most duties under HSWA relate to **how** work is carried out. However some duties are linked to **where** work is carried out: the workplace.

A **workplace** is a place where work is being carried out or usually carried out for a business or undertaking. It includes any place where a worker goes or is likely to be while at work section 20 of HSWA

DUTY HOLDER	WHO THEY ARE?	EXAMPLES	WHAT ARE THEIR DUTIES?	FOR MORE INFORMATION
Person Conducting a Business or Undertaking (PCBU)	A person conducting a business or undertaking (PCBU) may be an individual person or an organisation	– a business – a self-employed person – partners in a partnership – a government agency – a local council – a school or university.	A PCBU has many duties. Key duties are summarised below. **Primary duty of care** section 36 of HSWA A PCBU must ensure, so far as is reasonably practicable, the health and safety of workers, and that other persons are not put at risk by its work.	Introduction to the Health and Safety at Work Act 2015 Appendix 2 of this guidance for an explanation of 'so far as is reasonably practicable'
	The following **are not** PCBUs: – officers – workers – other persons at a workplace – volunteer associations that do not have employees – home occupiers (such as home owners or tenants) who pay someone to do work around the home section 17 of HSWA		**Managing risks** section 30 of HSWA Risks to health and safety arise from people being exposed to hazards (anything that can cause harm). A PCBU must manage work health and safety risks. – A PCBU must first try to **eliminate** a risk so far as is reasonably practicable. This can be done by removing the source of harm – for example, removing faulty equipment or a trip hazard. – If it is not reasonably practicable to eliminate the risk, it must be **minimised** so far as is reasonably practicable.	Identifying, assessing and managing work risks
			Overlapping duties: working with other PCBUs section 34 of HSWA A PCBU with overlapping duties must, so far as is reasonably practicable, consult, cooperate and coordinate activities with other PCBUs they share duties with.	Appendix 3 of this guidance

DUTY HOLDER	WHO THEY ARE?	EXAMPLES	WHAT ARE THEIR DUTIES?	FOR MORE INFORMATION
			Involving workers: worker engagement, participation and representation Part 3 of HSWA A PCBU must, so far as is reasonably practicable, engage with their workers (or their workers' representatives) about health and safety matters that will directly affect the workers. A PCBU must have worker participation practices that give their workers reasonable opportunities to participate in improving health and safety on an ongoing basis.	Appendix 4 of this guidance
Upstream PCBU	A PCBU in the supply chain	– a designer – a manufacturer – a supplier – an importer – an installer, constructor, or commissioner.	**Upstream PCBU** sections 39–43 of HSWA An upstream PCBU must ensure, so far as is reasonably practicable, that the work they do or the things they provide to other workplaces do not create health and safety risks.	Introduction to the Health and Safety at Work Act 2015
Officer	A specified person or a person who exercises significant influence over the management of the business or undertaking section 18 of HSWA	– a company director – a partner or general partner – a chief executive.	**Officer** section 44 of HSWA An officer must exercise due diligence that includes taking reasonable steps to ensure that the PCBU meets their health and safety duties.	Introduction to the Health and Safety at Work Act 2015
Worker	An individual who carries out work for a PCBU section 19 of HSWA	– an employee – a contractor or sub-contractor – an employee of a contractor or sub-contractor – an employee of a labour hire company – an outworker (including homeworker) – an apprentice or trainee – a person gaining work experience or on work trials – a volunteer worker.	**Worker** section 45 of HSWA A worker must take reasonable care of their own health and safety, and take reasonable care that they do not harm others at work. A worker must cooperate with reasonable policies and procedures the PCBU has in place that the worker has been told about. A worker must comply, as far as they are reasonably able, with any reasonable instruction given by the PCBU so the PCBU can meet their legal duties.	Introduction to the Health and Safety at Work Act 2015
Other person at the workplace	An individual present at a workplace (not a worker)	– a workplace visitor – a casual volunteer (not a volunteer worker) – a customer.	**Other person at the workplace** section 46 of HSWA An 'other person' has a duty to take reasonable care of their own health and safety, and not adversely affect the health and safety of anyone else. They must comply with reasonable instructions relating to health and safety at the workplace.	Introduction to the Health and Safety at Work Act 2015

Appendix 2: So far as is reasonably practicable

section 22 of HSWA

Certain PCBU duties (the section 36–43 duties including the primary duty of care) must be carried out 'so far as is reasonably practicable'.

What to consider when deciding what is 'reasonably practicable'

Just because something is possible to do, does not mean it is reasonably practicable in the circumstances.

Consider:

- What possible actions can be taken to ensure health and safety?
- Of these possible actions, at a particular time, what is reasonable to do?

Think about the following questions.

WHAT IS KNOWN ABOUT THE RISK?

- How likely is the risk to occur?
- How severe is the illness or injury that might occur if something goes wrong?
- What is known, or should reasonably be known, about the risk?

WHAT IS KNOWN ABOUT POSSIBLE CONTROL MEASURES?

- What is known, or should reasonably be known, about the ways (control measures) to eliminate or minimise the risk?
- What control measures are available?
- How appropriate (suitable) are the control measures to manage the risk?
- What are the costs of these control measures?
- Are the costs grossly disproportionate to the risk? Cost must only be used as a reason to not do something when that cost is grossly out of proportion to the risk.

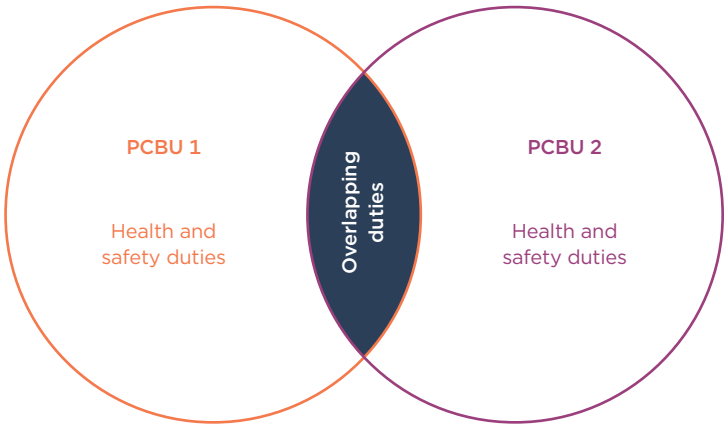
> While PCBUs should check if there are widely used control measures for that risk (such as industry standards), they should always keep their specific circumstances in mind. A common industry practice might not be the most effective or appropriate control measure to use.
>
> If PCBUs are not sure what control measures are appropriate, WorkSafe recommends getting advice from a suitably qualified and experienced health and safety professional.

For more information, see our guidance: Reasonably practicable

Appendix 3: Working with other PCBUs – overlapping duties

section 34 of HSWA

More than one PCBU can have a duty in relation to the same matter. These PCBUs have overlapping duties – this means that the duties are shared between them.



Duties regularly overlap:

- in a shared workplace (for example, a building site or a port) where more than one business has control and influence over the work on site.
- in a contracting chain, where contractors and subcontractors provide services to a head contractor or client and do not necessarily share the same workplace.

A PCBU must, so far as is reasonably practicable, consult, cooperate and coordinate activities with all other PCBUs they share duties with so that all PCBUs can meet their joint responsibilities.

A PCBU cannot transfer or contract out of their duties, or pass liability to another person.

However a PCBU can make an agreement with another PCBU to fulfil specific duties. Even if this occurs, all PCBUs are still responsible for meeting their legal duties.

Example

A local hotel contracts out housekeeping services to an agency. The hotel and agency both have a duty to ensure the health and safety of the housekeeping workers, so far as is reasonably practicable. This includes the duty to provide first aid facilities.

The agency reaches an agreement with the hotel – if their workers need first aid while working at the hotel they can use the hotel's first aid facilities.

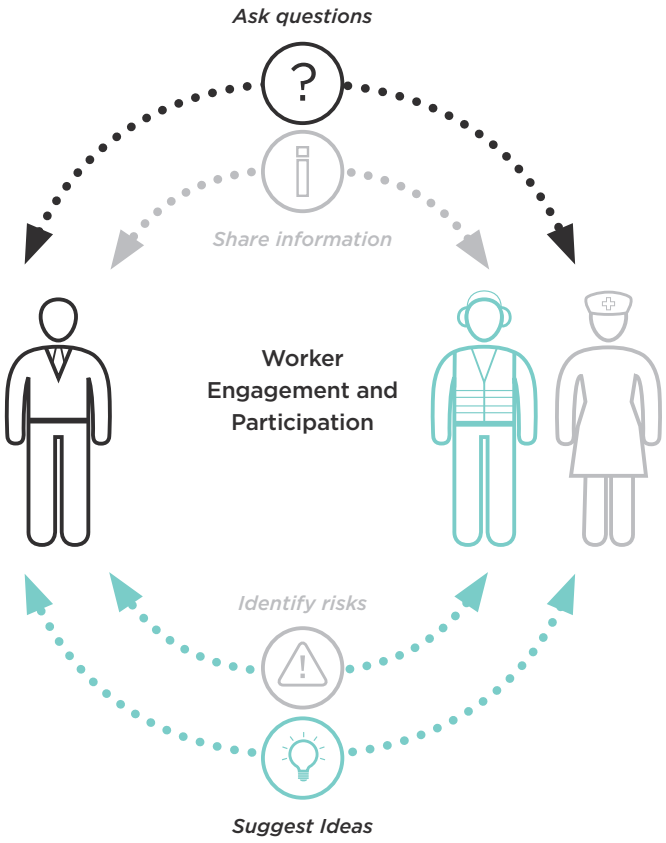
For more information, see our guidance: Overlapping duties

Appendix 4: Worker engagement, participation and representation Part 3 of HSWA

Engage with workers and enable their participation

A PCBU has two main duties related to worker engagement and participation:

- to engage with workers on health and safety matters that affect or are likely to affect workers, so far as is reasonably practicable, and
- to have practices that give workers reasonable opportunities to participate effectively in the ongoing improvement of work health and safety.



A PCBU can engage with workers by:

- sharing information about health and safety matters so that workers are well-informed, know what is going on and can contribute to decision-making
- giving workers reasonable opportunities to have a say about health and safety matters
- listening to and considering what workers have to say at each step of the risk management process
- considering workers' views when health and safety decisions are being made
- updating workers about what decisions have been made.

A PCBU must engage with workers during specified times, including when identifying hazards and assessing risks.

A PCBU must have clear, effective, and ongoing ways for workers to suggest improvements or raise concerns.

Worker representation

Workers can be represented by a Health and Safety Representative (HSR), a union representing workers, or a person that workers authorise to represent them (for example, a community or church leader, or another trusted member of the community).

HSRs and Health and Safety Committees (HSCs) are two well-established methods of participation and representation. If workers are represented by an HSR, worker engagement must also involve that representative.

For more information

WORKSAFE GUIDANCE

Good practice guidelines

Worker engagement, participation and representation

Interpretive guidelines

Worker representation through Health and Safety Representatives and Health and Safety Committees

Pamphlets

Worker representation

Health and Safety Committees

Health and Safety Representatives

Acknowledgements

WorkSafe would like to acknowledge and thank the stakeholders who have contributed to the development of this guidance.

Disclaimer

This publication provides general guidance. It is not possible for WorkSafe to address every situation that could occur in every workplace. This means that you will need to think about this guidance and how to apply it to your particular circumstances.

WorkSafe regularly reviews and revises guidance to ensure that it is up-to-date. If you are reading a printed copy of this guidance, please check worksafe.govt.nz to confirm that your copy is the current version.

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