

Decision regulation impact statement:

*Workplace exposure standards
framework under the model Work Health
and Safety laws*



safe work australia

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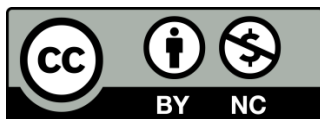
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Executive summary

Key points

This decision regulation impact statement (decision RIS) is about the framework for workplace exposure standards under the model Work Health and Safety (WHS) laws and how it should be kept up to date. Three options were analysed:

- Option 1: Maintain the status quo.
- Option 2: Maintain mandatory workplace exposure standards and update the workplace exposure standards using a streamlined methodology.
- Option 3: Make the workplace exposure standards advisory and update the workplace exposure standards using a streamlined methodology.

Stakeholder feedback indicated a preference for option 2 with a three year transitional period. Stakeholders supported changing the name of workplace exposure standards to workplace exposure limits.

The cost benefit analysis concluded that option 2 provides the greatest net benefit to business and the community.

Option 2 is:

- estimated to incur an additional cost to:
 - duty holders in the range of \$90 million to \$323 million per year over 10 years shared over 185,000 businesses, and
 - Government of \$205,000 per year over 10 years, and
- expected to:
 - reduce the estimated burden of disease from occupational hazards in Australia
 - reduce the average hospital treatment costs for workplace incidents and the number and cost of workers' compensation claims resulting from workplace exposure to hazardous chemicals, and
 - improve the quality of life of workers in Australia through improved workplace productivity and confidence in healthier workplaces

Option 2 requires an additional 18 to 63 per cent of workers to not experience adverse health effects to break even with the estimated additional incurred costs.

Safe Work Australia recommends:

- changing the name of workplace exposure standards to workplace exposure limits, and
- option 2 as the preferred option to be implemented over three years and supported by guidance and education to assist implementation and compliance.

Background

This decision RIS is the final stage of a consultation process undertaken by Safe Work Australia to review Australia's workplace exposure standards framework.

Under the model WHS laws, duty holders¹ must ensure a workplace exposure standard is not exceeded. The Commonwealth, states and territories are responsible for implementing, regulating and enforcing WHS laws in their jurisdictions.

Statement of the problem

The *Workplace exposure standards for airborne contaminants* (WES list) is outdated resulting workers potentially facing an increased risk of illness and disease from exposure to workplace hazardous chemicals.

Safe Work Australia considered what factors contribute to the workplace exposure standard values (WES values) being outdated and found that the process for reviewing the workplace exposure standard framework is both costly and time consuming to apply. The process is not efficient because it:

- does not enable workplace exposure standards to be effectively added to or removed from the WES list, and
- is largely non-standardised, with no consistent approach to evaluating WES values and identifying those that need updating.

These factors have resulted in WES values that do not reflect current scientific evidence and a WES list that is not reflective of the use, handling, storage, generation or disposal of hazardous chemicals in contemporary Australian workplaces.

Objective of government action

The objective of the proposed government action is to reduce the risk of harm to workers and protect them from exposure to potentially harmful airborne hazardous chemicals. The level of protection should align with current scientific knowledge and community expectations.

Options

The options examined in this decision RIS were proposed in the consultation regulation impact statement (consultation RIS). The options are:

- **Option 1:** Maintain the status quo and continue to update the (mandatory) workplace exposure standards individually on an ad hoc basis.
- **Option 2:** Maintain mandatory workplace exposure standards and implement a streamlined methodology to review and update the workplace exposure standards, and add or remove hazardous chemicals to the WES list as required.
- **Option 3:** Make the workplace exposure standards advisory and implement a streamlined methodology to review and update the workplace exposure standards, and add or remove hazardous chemicals to the WES list as required.

The streamlined methodology under options 2 and 3 provides a formal process to review and update WES values and the WES list in a sustainable and transparent way. The methodology involves the collection and analysis of several trusted sources and results in recommendations that are protective of health. Using the standing governance processes

¹ A person conducting a business or undertaking (PCBU) is the primary duty holder under the WHS Act. They are usually the employer and may be a partnership, company, unincorporated body or association, a sole trader, a government department or statutory authority.

of Safe Work Australia any proposal to update the workplace exposure standards will require all the same checks and balances as any other amendment to the WHS laws.

The timeframes under the streamlined methodology allow for a cycle of reviews to maintain the WES list and values including a capacity for priority reviews as necessary. Options 2 and 3 would also include an appropriate transitional period to ensure duty holders have sufficient time to comply with any agreed amendments.

Consultation RIS feedback

Safe Work Australia received 31 submissions from a wide range of stakeholders. Targeted consultation was conducted with a select number of these stakeholders to gain further insight on submissions.

The consultation RIS feedback:

- confirmed that the workplace exposure standards needed updating in line with current scientific knowledge and community expectations
- showed that the majority of stakeholders supported option 2 as their preferred option and favoured changing the name of workplace exposure standards to workplace exposure limits
- recognised the long-term benefits for Australian workers, duty holders and the community in applying the streamlined methodology and maintaining the mandatory status of the workplace exposure standards within the WHS laws
- showed the concern that if workplace exposure standards were advisory, it would lessen their significance and use within industry including a drop in compliance levels and placing workers at increased risk of exposure
- noted that adequate consultation time for stakeholders must be available to enable review of any proposed changes to the WES values, and
- strongly emphasised the importance of an appropriate transitional period for industry to achieve compliance and manage these changes both practically and financially. Limited feedback was provided about a preferred transitional period; what was provided indicated that three years was both practical and achievable by large businesses.

Impact analysis

Changes to the workplace exposure standards resulting from options 2 and 3 are expected to affect stakeholder groups including workers, duty holders (i.e. employers), government (i.e. regulators) and the broader community.

The expected impacts of each option were based on a quantitative and qualitative analysis informed by engagement with stakeholders.

Option 1 was not considered to meet the objective of government action and formed the baseline for modelling options 2 and 3. The baseline imposes:

- a combined regulatory burden on businesses of \$402 million per annum
- approximately \$3.2 million in workers' compensation claims each year²

² Based on the attribution of 865 serious workers' compensation claims to the mechanism of injury or disease for "chemicals and other substances" in 2014-15, and applying the median compensation paid to this category in 2014-15, as reported in the *Australian worker's compensation statistics 2015-16*, Safe Work Australia (2018).

- an estimated burden of disease of \$16.4 billion to workers, businesses and the Australian community in 2017³, and
- approximately \$825,000 and 2.5 years for government to update a single workplace exposure standard.

Option 2 is expected to improve the health and safety of workers by reducing their exposure to hazardous chemicals at the workplace. Over time, having up-to-date WES values is expected to:

- reduce the estimated burden of disease from occupational hazards in Australia
- reduce average hospital treatment costs for work-related incidents
- reduce the number and cost of workers' compensation claims resulting from workplace exposure to hazardous chemicals, and
- improve the quality of life of workers in Australia due to improved workplace productivity and confidence in healthier workplaces.

Option 2 is expected to increase the annual compliance costs for some duty holders. This increase will particularly be seen where:

- there is a significant change to a WES value; for example, it is significantly reduced, and
- a hazardous chemical (and accompanying WES value) is added to the WES list.

These changes may require duty holders to undertake administrative tasks and implement additional or higher level controls, thus increasing costs.

The indicative analysis used two hypothetical scenarios:

1. low case scenario – the changes to the WES values are less significant (i.e. the new values are not significantly different to the current values), and
2. high case scenario – the changes to the WES values are more significant (i.e. the new values are significantly different to the current values).

Using these scenarios and applying the assumptions outlined in Appendix E, the estimated cost impact on duty holders (approximately 185,000 businesses) ranges from \$900 million to \$3,231 million over 10 years⁴. This estimated cost is expected to vary based on business size (Table 1 below).

Table 1. Average annual cost increase to duty holders based on business size using high and low scenario estimates

| Business size | Average annual cost impact estimate per business | |
|---------------|--|--------------------|
| | Low case scenario | High case scenario |
| Small | \$208 | \$532 |
| Medium | \$466 | \$2,674 |
| Large | \$81,041 | \$329,688 |

³ Using the value of a statistical life year in Australia in 2017 of \$190,750 to estimate the impact of YLL, and including direct health treatment costs of asbestos related diseases as sourced from *The economic burden of asbestos-related disease*, Asbestos Safety and Eradication Agency (2018).

⁴ The high and low case are costed in AUD\$2017 based on the business survey data, with nominal figures provided. The analysis considered the impact of significantly reduced WES values and new workplace exposure standards only. The wide range of costs between the low and high scenarios reflects the uncertainty of the estimates, given that the specific changes to the WES values have not been finalised.

Government is expected to face increased regulatory and operational costs of approximately \$205,000 per year over 10 years, reflective of the increased number of workplace exposure standards that would be regularly updated.

To offset the estimated indicative cost of option 2, it is estimated that an additional 18 to 63 per cent of workers would need to not experience adverse health effects from workplace exposure to airborne hazardous chemicals^{5,6}.

Option 3 is expected to incur less regulatory burden on duty holders than option 2. However, it is also likely to increase the risk of workers being exposed to hazardous chemicals, leading to:

- an increase in reported cases of work-related illness and disease and workers' compensation claims and payments
- increased health costs to the community, and
- a reduction in quality of life for affected workers, reduced business productivity and relatively lower economic output.

Government is expected to experience an increase in operational costs of approximately \$61,500 per year over 10 years.

Qualitatively, the breakeven level for option 3 will be lower than for option 2. However, option 3 will likely result in significantly lower benefits as it is expected that more workers will experience adverse health outcomes. As such, this option is not considered to sufficiently address the underlying government objective of reducing the risk of harm to workers.

Recommendations

Safe Work Australia recommends adoption and implementation of option 2. This option allows updates to the *Workplace exposure standards for airborne contaminants* using a streamlined methodology and maintains the mandatory status of the workplace exposure standards under the model WHS laws.

The majority of consultation RIS respondents and the breakeven analysis of costs and benefits supports this recommendation. The analysis indicates that if an additional 18 to 63 per cent of workers do not experience adverse health outcomes as a result of updating the WES values, then the benefits of option 2 would offset its indicative costs.

In accordance with the Council of Australian Government (COAG) Best Practice Guidelines, option 2 provides the greatest net benefit to business and the community.

Safe Work Australia recommends a nationally harmonised transitional period of three years. This transitional period will allow the time to develop and deliver appropriate guidance and education to duty holders and enable industry compliance in response to changes to the workplace exposure standards.

Safe Work Australia recommends that all reference to the workplace exposure standards be amended to *workplace exposure limits*. This change in phrasing will allow for improved understanding that the limits are mandatory values and will be supported by an appropriate education and awareness campaign.

⁵ As measured by YLL attributable to neoplasms and chronic respiratory diseases caused by occupational hazards in Australia.

Approximately 1.34 per 1,000 people in Australia based on figures sourced from the *Global Burden of Disease Study 2017*, Institute of Health Metrics and Evaluation (2017). The average rate is based on YLL rates per 1,000 people for all neoplasms and chronic respiratory disease caused by occupational carcinogens, asthmagens, and respirable dusts and fumes in Australia in 2017.

⁶ Based on data sourced from Australian Bureau of Statistics (2016). Findings based on use of ABS TableBuilder data.

Implementation and review

Subject to a majority of WHS Ministers agreeing to option 2 as the preferred option, the *Workplace exposure standards for airborne contaminants* referred to in the model WHS Regulations will be amended to reflect the actions within the preferred option.

Safe Work Australia will work with the Commonwealth, state and territory WHS regulators to implement a nationally harmonised transitional period and develop and deliver guidance for industry.

Maintenance of the workplace exposure standards will be conducted as part of a review cycle in line with the five yearly scheduled reviews of the model WHS Regulations.

Introduction

Purpose of this document

This decision RIS has been prepared to provide a recommendation to WHS Ministers on the preferred option for implementing an update to Australia's workplace exposure standards and the status of the workplace exposure standards under the model WHS laws.

To inform this decision RIS and the preferred option, an extensive public consultation process was undertaken in December 2015, October 2017 and between August – November 2018 with a variety of stakeholders. The consultation process included:

- discussion paper - [The role of chemical exposure standards in work health and safety laws \(2015\)](#)
- duty holder business survey (business survey)
- [consultation regulation impact statement](#), and
- targeted consultation.

The decision RIS was prepared in accordance with COAG best practice regulation requirements.

About Safe Work Australia

Safe Work Australia is an independent Australian Government statutory agency, jointly funded by the Commonwealth and state and territory governments through an Intergovernmental Agreement.

Safe Work Australia was established by the *Safe Work Australia Act 2008* (Cth) with primary responsibility to develop, maintain and revise national policy relating to work health and safety (WHS) and workers' compensation across Australia. It performs its functions in accordance with corporate and operational plans agreed annually by WHS Ministers.

Safe Work Australia is not a regulator and is not responsible for matters of compliance or enforcement in relation to the model WHS laws. The Commonwealth, states and territories retain responsibility for regulating and enforcing WHS laws in their jurisdiction.

Safe Work Australia is governed by a tripartite body comprising 15 Members, including:

- an independent Chair
- nine Members representing the Commonwealth and each state and territory
- two Members representing the interests of workers
- two Members representing the interests of employers, and
- the Chief Executive Officer of Safe Work Australia, who is responsible for managing Safe Work Australia's administration and leading the performance of its statutory functions.

Background

Managing risks to health and safety

Australia's model WHS laws are designed to provide the framework for protecting the health, safety and wellbeing of workers and others, that may be negatively affected by work activities conducted by a business or undertaking. The model WHS Regulations provide the framework to identify hazards and eliminate and minimise risks to health and safety at the workplace.

The model WHS Act (section 17) requires duty holders to eliminate risks to health and safety, so far as is reasonably practicable; and if it is not reasonably practicable to do so, to minimise those risks so far as is reasonably practicable.

Under the model WHS Regulations (regulation 36), duty holders must minimise risks to health and safety using the hierarchy of controls. These requirements contribute to reducing work-related illness and disease and the corresponding impact on individuals, families, community and economy.

Deciding what is 'reasonably practicable' to protect workers requires consideration of all relevant matters, including:

- the likelihood of the hazard or risk concerned occurring
- the degree of harm that might result from the hazard or risk
- knowledge about the hazard or risk, and ways of eliminating or minimising the risk
- the availability and suitability of ways to eliminate or minimise the risk, and
- after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk⁷.

The model WHS Regulations further specify that persons conducting a business or undertaking (PCBUs) must ensure that no person at the workplace is exposed to a substance or mixture in an airborne concentration that exceeds the workplace exposure standard (regulation 49). The regulations specify air monitoring is to be carried out where there is uncertainty as to whether the workplace exposure standard has been exceeded or to determine if there is a risk to health (regulation 50).

Unlike the duty to eliminate or minimise risks, the duty to ensure the workplace exposure standard is not exceeded is absolute and not qualified by '*so far as is reasonably practicable*'.

The workplace exposure standards

A workplace exposure standard represents a concentration of an airborne hazardous chemical within a workers breathing zone that should not cause adverse health effects or undue harm.

The full list of hazardous chemicals and their associated workplace exposure standard, formally referred to as the [Workplace exposure standards for airborne contaminants](#), is called up by the model WHS Regulations via the definition of a workplace exposure standard.

Workplace exposure standards play a key role in helping to minimise the risks of workplace illness and disease by:

⁷ Safe Work Australia (2013c)

- providing information to businesses, unions and workers about the health risks of workplace exposures to chemicals
- providing benchmarks for WHS professionals, and
- assisting in selecting effective control measures or checking the effectiveness of controls.

How are workplace exposure standards regulated?

In Australia, workplace exposure standards are mandatory under the model WHS laws and are implemented through the model WHS Regulations that reference the [Workplace exposure standards for airborne contaminants](#). Although the model WHS laws have not been adopted in Victoria and Western Australia, mandatory workplace exposure standards exist under their respective WHS laws.

The Commonwealth, state and territory WHS regulators play a crucial role in encouraging and assisting compliance with the WHS Regulations by providing information, guidance, education and advice to duty holders and workers. WHS regulators can also take enforcement action where duty holders fail to meet their regulatory obligations.

Who uses workplace exposure standards?

All duty holders with workers that are at risk of exposure to hazardous chemicals, be it through their use, handling, storage, generation or disposal, are required to comply with the relevant workplace exposure standards.

Submissions to the business survey indicated that most industries in Australia regularly use chemicals that have a workplace exposure standard. Given the nature of their business practices, duty holders operating in the agricultural, mining, manufacturing, construction, professional services, health care and social assistance, and education and training industries regularly use the workplace exposure standards.

Evidence also indicates that some duty holders engage the services of specialists or occupational hygienists to measure and assess worker exposure to airborne hazardous chemicals on either an ad hoc or a regular basis. Occupational hygienists can also assist duty holders to develop effective practice and policy on preventing and controlling exposures and educate workers on how and why workplace exposure standards are used.

Occupational hygienists may use workplace exposure standards as benchmark levels to assess risk and provide advice to duty holders on the effectiveness of control measures. Occupational hygienists may also use workplace exposure standards to develop action strategies to assist duty holders to maintain compliance with the relevant WHS laws.

WHS regulators use the workplace exposure standards to assist in their education, monitoring, compliance and enforcement activities. Other industry specific WHS regulatory bodies (e.g. mining and natural resources sector) also use and reference the workplace exposure standards.

Achieving compliance with workplace exposure standards

Compliance with a workplace exposure standard can be demonstrated only when the exposure of individual or groups of workers is known, with an accepted degree of certainty, to be below the WES value.

The most effective means of complying with a WES value is through eliminating the hazardous chemical from the workplace in the first instance.

It may not be practical to eliminate the hazardous chemical if doing so means a duty holder cannot produce a good or service. If this is the case, a duty holder must seek to minimise the risks associated with the hazardous chemical through implementation of the hierarchy of controls.

The hierarchy of controls is a list of measures implemented to control risks in the workplace. The control measures are ranked from the highest level of protection and reliability to the lowest.

Duty holders are required to apply the hierarchy when considering control measures such that the highest order control practicable is implemented. Often two or more control measures are implemented to provide a robust system of control.

A description of the controls included in the hierarchy is as follows:

Substitute the hazard with something safer – This involves the substitution of a hazardous substance for a less hazardous alternative. For example, replacing solvent-based paints with water-based ones.

Isolate the hazard from people – Physically separating the hazardous chemical from people by distance or by using barriers. For example, storing chemicals in a fume cabinet.

Use engineering controls – An engineering control is a control measure that is physical in nature, including a mechanical device or process. For example, using local exhaust ventilation to capture and remove airborne contaminants before they have a chance to be inhaled.

Should a risk remain:

Use administrative controls – Administrative controls are work methods or procedures designed to minimise exposure to the hazardous chemical. For example, limiting exposure time to a hazardous chemical.

Should there still be residual risk:

Use personal protective equipment (PPE) – Examples of PPE include, respirators, face masks, gloves, aprons and protective eyewear. PPE limits exposure to the harmful effects of a hazardous chemical but only if it is suitable, maintained in good condition and workers are trained to wear and use the PPE correctly.

Administrative control measures and PPE do not control the risk at the source and rely on worker behaviour, training and supervision to manage the risks of exposure. When used independently, they tend to be the least effective in minimising risks and should only be used:

- when there are no other practical control measures available (as a last resort)
- as an interim measure until a more effective way of controlling the risk can be used, or
- to supplement higher level control measures (as a back-up).

After implementing controls, duty holders may need to monitor workers' exposure to an airborne hazardous chemical (air monitoring) if:

- there is uncertainty whether or not the workplace exposure standard has been or may be exceeded, and
- it is necessary to assess whether there is a risk to health.

An effective air monitoring program requires training, specialist knowledge and a high level of competency and experience. Engaging the services of an expert in air monitoring, such as an occupational hygienist, to design, perform and interpret the results of an air monitoring program may be needed to determine compliance with the workplace exposure standards.

Under the model WHS laws, records of air monitoring must be kept for a minimum of 30 years and must be made available to workers who may be exposed.

Compliance issues can generally be addressed supported by an education strategy aimed at duty holders, workers or WHS regulators. However, in the case of workplace exposure

standards, an education strategy would not be effective at protecting workers unless the workplace exposure standards were up to date.

How are the workplace exposure standards established, reviewed and updated?

Before Safe Work Australia was established, the National Occupational Health and Safety Commission managed a formal function and process to establish and update the workplace exposure standards.

In 2008, Safe Work Australia assumed responsibility of the workplace exposure standards framework.

In order to update a workplace exposure standard, Safe Work Australia undertakes a review process that is dependent on the hazardous chemical it is examining. The review process can take between two and 10 years, depending on the workplace exposure standard being reviewed.

To date, Safe Work Australia has not had a systematic process for adding or removing hazardous chemicals and their corresponding WES value from the WES list.

Statement of the problem

Exposure to hazardous chemicals via any route (inhalation, skin absorption or ingestion) can lead to death, disease and illness, poisoning symptoms, irritation or sensitisation (allergies). In particular, contaminated air that workers breathe may lead to:

- respiratory diseases like asthma, pneumoconiosis and silicosis
- cardiovascular diseases, and
- cancers like mesothelioma, leukaemia and lymphoma.

In some cases these diseases are terminal.

The workplace exposure standards are designed to protect workers from these adverse health effects.

As new toxicological and epidemiological evidence becomes available, the foundation upon which a WES value has been determined can change. For example, chemicals that were initially thought to have predominantly irritant effects can later be found to cause chronic disease.

In addition to this, contemporary Australian workplaces have evolved and older chemicals are being replaced with newer ones. The use, handling, storage, generation and disposal of chemicals in Australian workplaces is also subject to change over time.

What is the problem?

Without an adaptable workplace exposure standard framework and a consistent process for reviewing and updating the WES values and the WES list, Safe Work Australia is unable to routinely incorporate the most up-to-date scientific data and information. This has resulted in outdated workplace exposure standards, in the sense that the most up-to-date data and information may indicate a different WES value.

The current framework is not considered fit-for-purpose and prevents the workplace exposure standards from remaining up-to-date and relevant to Australian workplaces. This results in a number of significant costs to workers, businesses and the broader community.

Workplace exposure standards that are outdated or not reflective of contemporary Australian workplaces can have implications for the health and safety of Australian workers. In addition, businesses can be subjected to unnecessary regulatory burden, resulting in significant health and economic costs.

Based on a preliminary review of the workplace exposure standards in 2016 and feedback from stakeholders, many of Australia's workplace exposure standards are outdated. This has resulted in some WES values being:

- under-protective, where the WES value is too lenient, or
- over-protective, where the WES value is too stringent.

In addition, the review found some chemicals on the WES list were:

- no longer relevant to the WES list, where the hazardous chemical is no longer used in Australian workplaces, and
- absent from the WES list, where newer chemicals have been introduced into the Australian workplace.

Workplace exposure standards that are under-protective

If a WES value is not sufficiently protective, adverse health effects can become evident at airborne concentrations below the published WES value.

The costs associated with suffering from an illness or disease due to under-protective workplace exposure standards can be significant for an individual and for the community as a whole:

- workers that spend time away from work in recovery, or are less efficient at work because of the illness or disease, can have a negative impact on the economy's productivity, and
- there are costs on the healthcare system because of an increased number of patients seeking treatment for adverse health effects from exposure to a hazardous chemical in the workplace.

Ultimately, the burden of disease in Australia can increase resulting in larger health costs and a lower quality of life for the broader community.

Workplace exposure standards that are over-protective

An over-protective WES value can place an unnecessary cost burden on a duty holder in terms of the additional costs incurred to comply with the workplace exposure standard, without necessarily providing any additional health benefits.

Additional costs may relate to implementing expensive control measures, such as isolation booths or automated processes, or carrying out air monitoring more regularly to ensure compliance. While this may be considered a best practice approach, it increases the compliance costs where simpler control measures such as local exhaust ventilation may be just as effective.

The costs associated with implementing control measures varies based on the profile of the hazardous chemicals used in the workplace and the control measures implemented. Information provided by duty holders in the business survey indicated that implementing isolation measures costs approximately twice that of engineering measures such as ventilation.

The current list of hazardous chemicals does not reflect contemporary Australian workplaces

There are hazardous chemicals used in Australian workplaces that have established international exposure standards, but are not included in the WES list.

Having workplace exposure standards available for these hazardous chemicals in Australia would eliminate confusion for duty holders, provide clarity for regulators and enable the consistent protection of workers exposed to hazardous chemicals.

The current review process is not standardised and is costly

Since the adoption of workplace exposure standards in Australia, Safe Work Australia and its predecessor, the National Occupational Health and Safety Commission, have updated a limited number of workplace exposure standards. This ad hoc approach to update workplace exposure standards is not proactive in protecting worker health and safety, and relies on stakeholders including unions, WHS regulators and industry groups to alert Safe Work Australia of any potential issues.

This approach is largely non-standardised with no consistent approach to the number of sources investigated.

The costs incurred by Safe Work Australia and the jurisdictional WHS regulators in undertaking the current review process can exceed \$3 million over a 10 year period⁸.

Confirmation of the problem

The feedback provided by stakeholders has confirmed that the current workplace exposure standards are not fit for purpose or reflective of contemporary Australian workplaces.

Most stakeholders want a modern framework that provides an easily accessible Australian list of workplace exposure standards that are supported by up-to-date scientific knowledge.

Stakeholders noted that practical and achievable WES values that are regularly reviewed and updated will result in improved health outcomes for workers and reduced financial burden on the community.

Stakeholders indicated they are currently needing to refer to international standard setting bodies to source exposure standards that are currently not on the WES list; confirming that Australia's workplace exposure standards are not reflective of contemporary Australian workplaces. The process of individually sourcing exposure standards is time intensive and costly for stakeholders, particularly when several WES values can exist for one hazardous chemical.

Objectives of government action

Safe Work Australia's role is to provide the regulatory framework to protect workers from the risks of work. Under this framework, the workplace exposure standards assist in enabling duty holders to discharge their health and safety duties effectively.

Therefore, the objective of government action is to reduce the risk of harm to workers in the workplace and protect them from exposure to potentially harmful hazardous chemicals in line with current scientific knowledge and community expectations.

Options

The options considered to address the identified problems with the workplace exposure standards framework are:

1. Maintain the status quo and continue to update the workplace exposure standards individually on an ad hoc basis.

⁸ See Appendix F.

2. Maintain mandatory workplace exposure standards and implement a streamlined methodology to review and update the workplace exposure standards, and add or remove hazardous chemicals to the WES list as required.
3. Make the workplace exposure standards advisory and implement a streamlined methodology to review and update the workplace exposure standards and add or remove hazardous chemicals to the WES list as required.

The options focus on addressing the issues with the non-standard nature of the current review process and the status of the workplace exposure standards under the model WHS laws.

Option 1: Maintain the status quo

The status quo is the continuation of the current review process and arrangements to manage the review and update of a WES value currently included in the WES list. Specifically, the status quo entails:

- ad hoc updates to individual WES values as evidence indicates
- no bulk change to the WES list, and
- maintain the current regulatory requirements outlined under regulations 49 and 50 of the model WHS Regulations.

Under this option, duty holders would continue to incur the current estimated annual regulatory burden cost of over \$402 million per annum. The broader Australian community would also continue to incur an estimated \$16.4 billion in health-related costs as a result of exposure to occupational carcinogens, asthmagens, and respirable fumes and dusts⁹.

Option 2: Maintain mandatory workplace exposure standards and implement a streamlined methodology

Option 2 has been developed to specifically address the adverse health outcomes to workers due to the inefficiencies present in the status quo.

Under this option, a standardised, streamlined methodology to review and update WES values will be implemented. This streamlined methodology will also allow for the addition and removal of hazardous chemicals from the WES list.

This option represents a practical, cost-effective approach with a streamlined evaluation process. It uses relevant exposure standards and supporting assessments that are publicly available and derived using a systematic, scientific evaluation.

The key features of option 2 are:

- workplace exposure standards remain mandatory under the model WHS laws, and
- implementation of a streamlined methodology to update the WES values and the WES list aligning with the Australian Government's principle of adopting trusted international risk assessment and standards.

Streamlined methodology to review, update and maintain the workplace exposure standards

The streamlined methodology would enable maintenance of individual WES values on a regular rather than ad hoc basis. The streamlined methodology would use available risk assessments, exposure standards and data from trusted domestic and international

⁹ Estimate calculated using the value of a statistical life year in Australia in 2017 of \$190,750 to estimate the impact of YLL, and including direct health treatment costs of asbestos related diseases as sourced in *The economic burden of asbestos-related disease*, Asbestos Safety and Eradication Agency (2018).

bodies. This new process will reduce workplace exposure standard review and update times by up to 50 per cent.

The streamlined methodology provides a standardised process for collecting information rather than the non-standardised approach currently used, whereby information is gathered sporadically.

Sources will be categorised as either 'primary' or 'secondary' according to the streamlined methodology. To evaluate a WES value, the relevant primary sources are considered followed by the secondary sources, if necessary.

The following bodies have met the criteria for trusted primary sources of data:

- American Conference of Governmental Industrial Hygienists (ACGIH®) – Threshold Limit Values (TLV)
- Deutsche Forschungsgemeinschaft (DFG) – [Maximum workplace values](#) (MAK values)
- EU Scientific Committee on Occupational Exposure Limits (SCOEL) – [Occupational exposure limits](#) (OEL)
- American Industrial Hygiene Association/[Occupational Alliance for Risk Science](#) (AIHA/OARS), and
- [Health Council of the Netherlands](#) (Dutch Expert Committee on Occupational Safety)

The following bodies have met the criteria for trusted secondary sources of data:

- UK Health and Safety Executive
- Australian Institute of Occupational Hygienists (AIOH) [position papers – recommendations for WES](#)
- Nordic Council: [The Nordic Expert Group for Criteria Documentation of Health Risks of Chemicals](#)
- [National Industrial Chemicals Notification and Assessment Scheme](#) (NICNAS)
- [Australian Pesticides and Veterinary Medicines Authority](#) (APVMA)
- [The European Chemicals Agency](#) (ECHA)
- [The International Agency for Research on Cancer](#) (IARC)
- [National Toxicology Program](#) (NTP)
- [US Environmental Protection Agency](#) (US EPA)
- [Organisation for Economic Cooperation and Development](#) (OECD), and
- US [National Institute for Occupational Safety and Health](#) (NIOSH)

The following bodies will be used to inform carcinogenicity and sensitiser notations for the workplace exposure standards in this review:

- [National Industrial Chemicals Notification and Assessment Scheme](#) (NICNAS)
- [Australian Pesticides and Veterinary Medicines Authority](#) (APVMA)
- [The European Chemicals Agency](#) (ECHA), and
- [European Union's Annex VI to CLP](#).

The adoption of the streamlined methodology retains all checks and balances currently used by Safe Work Australia in updating a WES value but in a shorter period.

Compared with the status quo, where only one workplace exposure standard is updated per review, the streamlined methodology will allow multiple workplace exposure standards to be updated at the same time.

Figure 1 summarises, the key differences between the current review process and the streamlined methodology¹⁰.

Scheduled review program

The streamlined methodology will also allow Safe Work Australia to implement a program for scheduled updates to maintain the workplace exposure standards in the future. This program will allow for the continuation of health benefits to be realised in Australian workers from updated workplace exposure standards.

Under this option, Safe Work Australia would initially undertake a full review and update of the current workplace exposure standards in 2019 and 2020. Safe Work Australia currently estimates that up to 60 per cent of the WES values could be updated. This initial review is likely to result in the addition or removal of a number of hazardous chemicals in the current WES list¹¹.

Interim review

Following the initial review, Safe Work Australia will monitor the changes trusted sources make to their exposure standards. This will be known as the interim review and will occur at years two and four of a five year cycle moving forward. An expert working group may be formed to assist with this process.

The interim reviews will enable Safe Work Australia to identify and shortlist hazardous chemicals recommended for update at a five-yearly comprehensive review.

Comprehensive review

The comprehensive review will use evaluation and peer review consultancies to assist in updating the workplace exposure standards identified in the interim reviews. Safe Work Australia will also undertake stakeholder engagement and regulatory impact analysis, as required.

Figure 2 compares the process for the two-yearly interim review and five-yearly comprehensive review with the process for the status quo.

Priority review

In addition to the scheduled review program, Safe Work Australia expects to undertake priority reviews using the methodology as needed. Priority reviews have been included to allow flexibility so should an emerging issue for a particular chemical arise, it can be addressed at any time during the five year review cycle. A priority review will only be conducted if directed by Safe Work Australia Members.

¹⁰ Currently there is no single standardised approach to update a WES value, so the steps outlined for the current review process are generalised and may not apply to every hazardous chemical.

¹¹ The hazardous chemicals that have been proposed for addition or removal from the current WES list are published on the [Safe Work Australia website](#).

Figure 1: Current review process compared to streamlined methodology

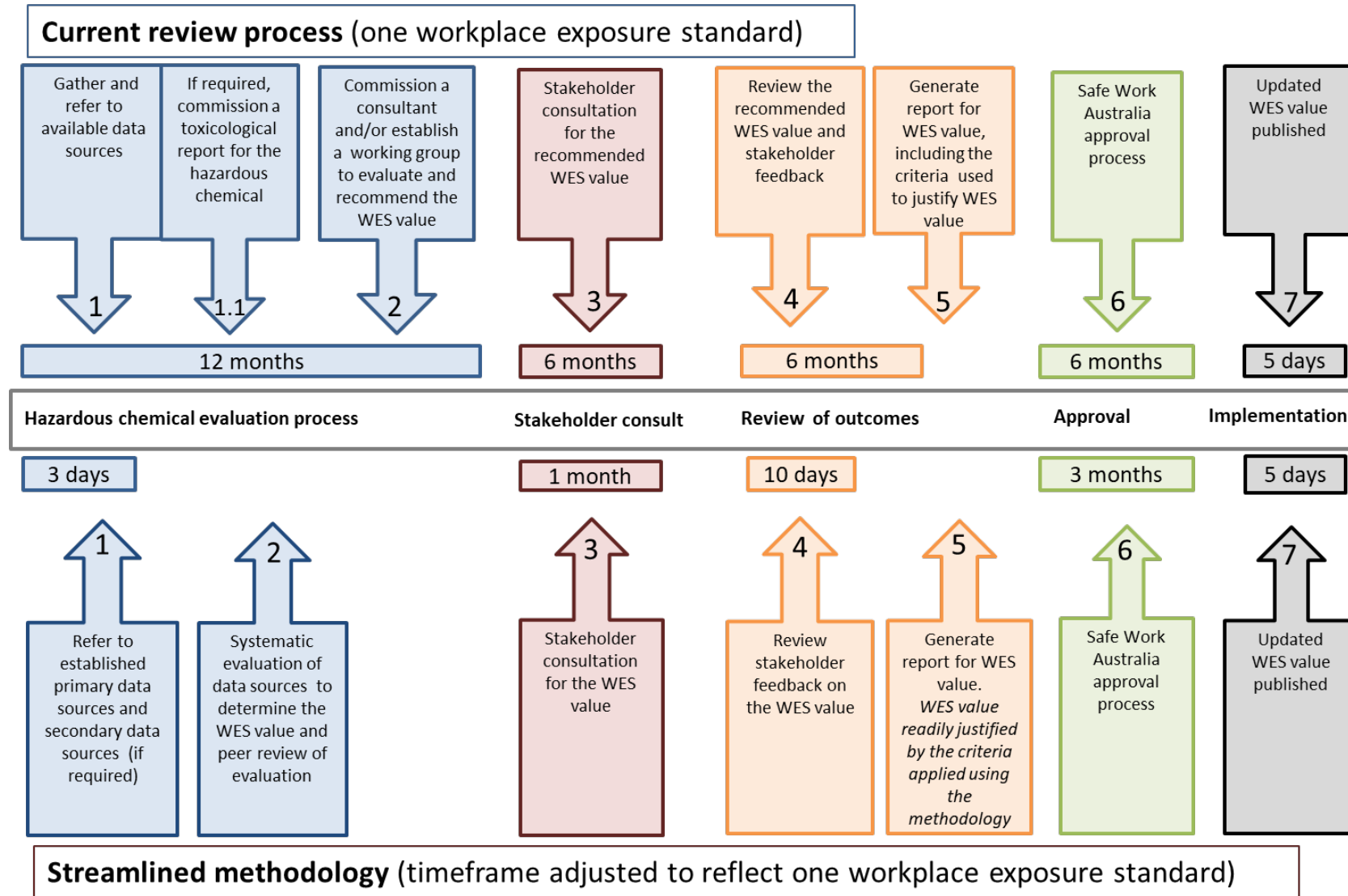
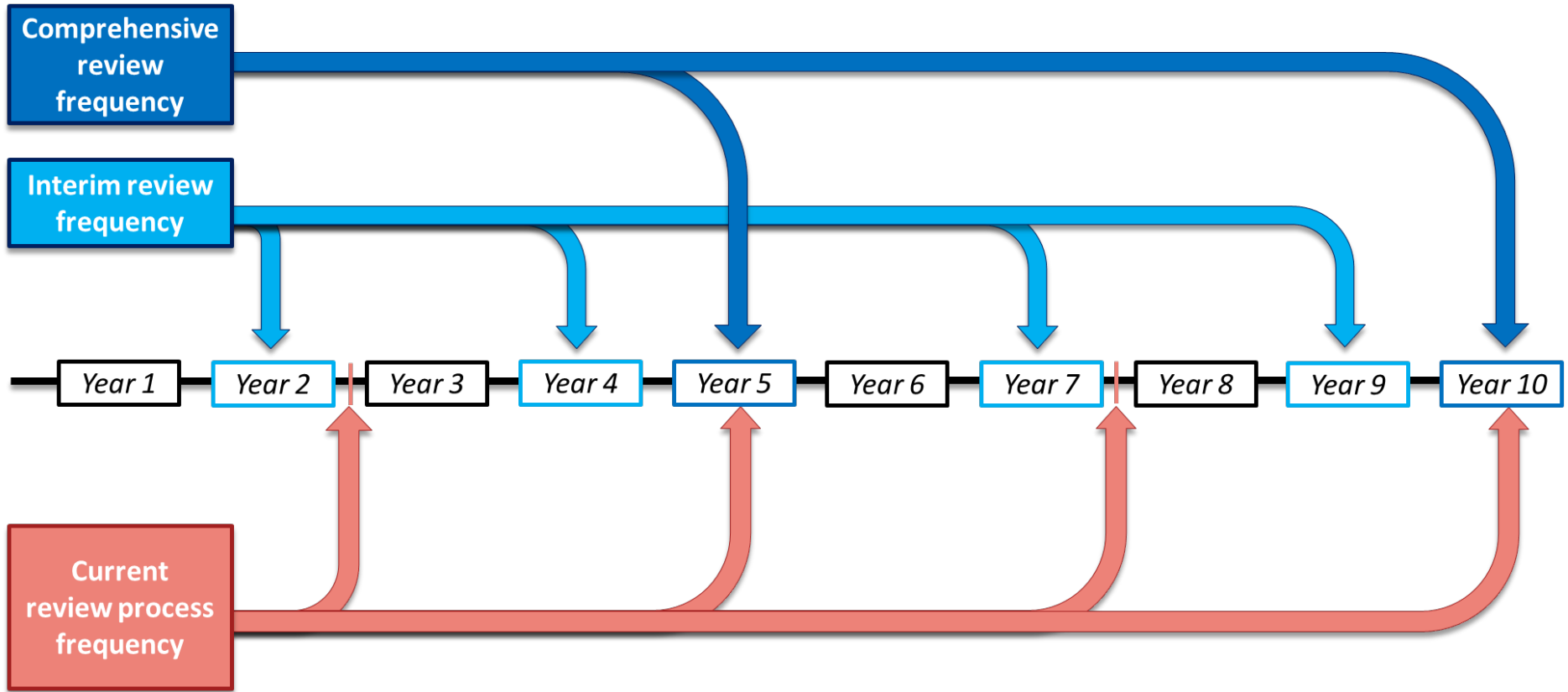


Figure 2: Frequency of the two-yearly interim review and five-yearly comprehensive review in comparison to the frequency of the status quo



Option 3: Make the workplace exposure standards advisory and implement a streamlined methodology

Option 3 has been developed as a possible non-regulatory policy solution. The key features of this option are:

- all workplace exposure standards would become advisory
- implementation of the streamlined methodology to update the WES values and the WES list (as per option 2), and
- the provision of guidance material to support duty holders in reducing hazardous chemical exposure risks.

The streamlined methodology as outlined in option 2 would be used to update the WES values and WES list under this non-regulatory option.

The model WHS Regulations would be amended so that duty holders would no longer need to comply with the requirement to not exceed the workplace exposure standards (model regulation 49).

This option would retain the requirement for air monitoring to determine whether there is a risk to the health of workers (model regulation 50) and duty holders would still be required to retain and have readily accessible air monitoring records.

There would be no limitation to how many hazardous chemicals could be added to an advisory list. Chemicals without evidence of use, handling, storage, generation or disposal would be retained as there is no regulatory burden associated with the listing.

Scheduled reviews and evaluations would still occur and they could be conducted with a frequency based upon availability of information from trusted sources.

This option would result in the workplace exposure standards reflecting best practice. It is expected there would be reduced regulatory burden for duty holders to comply with the workplace exposure standards, given there would be no legal obligation to do so.

This option would be supported by overarching guidance material developed for duty holders to assist in understanding and characterising best practice when minimising exposure to hazardous chemicals.

Proposed name change - workplace exposure limits

For each option, it is proposed that the term *workplace exposure standard* be renamed *workplace exposure limit* to more accurately reflect that the values published are limits not to be exceeded, as opposed to standards which are generally something a duty holder should aim for as best practice.

Workplace exposure standards were originally named *national exposure standards* under the NOHSC, which had a function to develop the standards. When Safe Work Australia was established, these standards were adopted under the model WHS framework and were subsequently renamed workplace exposure standards. The proposed name change to *workplace exposure limits* will align with the function of Safe Work Australia under the *Safe Work Australia Act (2008)* to develop, monitor and revise the model WHS legislative framework and related materials.

Internationally, the equivalent of a workplace exposure standard is almost universally described as a 'limit'. The proposed change will bring Australia in line with terminology used internationally for equivalent and interchangeable parameters. This may help clarify any potential confusion that may arise when comparing Australian workplace exposure standards with workplace exposure limits published by trusted international agencies.

Stakeholders were consulted on this proposal in addition to the streamlined methodology. An appropriate education strategy will follow to ensure duty holders understand that there

are no changes to their duties for this minor change to terminology. As such, the term *workplace exposure standard* will be used throughout this statement until the final transition to the new terminology becomes effective.

Consultation

Objectives of the consultation

Safe Work Australia conducted a full public consultation, reaching a wide range of stakeholders. The objectives of this consultation process were to:

- inform the content of the workplace exposure standard framework review
- collect data and costings to inform the cost-benefit analysis, and
- gauge stakeholder responses to the proposed options.

Consultation method

A comprehensive stakeholder engagement plan informed the consultation with relevant stakeholders about the proposed regulatory options to update Australia's workplace exposure standards. Stakeholders also considered if the workplace exposure standards should remain mandatory under the model WHS laws.

The stakeholder engagement plan included the release of a consultation RIS and targeted stakeholder consultation.

The consultation RIS integrated the outcomes from the public discussion paper [The role of chemical exposure standards in work health and safety laws \(2015\)](#) and the [Business survey on workplace exposure standards \(2017\)](#). The survey was aimed at duty holders and designed to collect data on the use and understanding of workplace exposure standards in Australian workplaces.

The consultation RIS was published on the Safe Work Australia website and the online consultation platform, Engage. Notification of the six week public comment period and the invitation to submit was promoted through website announcements, social media channels including 2,425 LinkedIn networkers, and via an alert to 10,354 Safe Work Australia email subscribers.

Safe Work Australia worked with WHS regulators, national organisations, businesses and associations to promote the consultation process on their respective websites and through their contact lists. Safe Work Australia Members and the Strategic Issues Group for WHS also encouraged jurisdictions to publish links to the consultation RIS.

To enable adequate opportunity and support for stakeholders in providing a submission, Safe Work Australia also undertook the following activities:

- maintained a dedicated email inbox for stakeholders to submit any questions or concerns regarding the consultation
- sent a reminder email to subscribers and a post on LinkedIn two weeks prior to the close date of the consultation RIS public comment period, and
- granted an extension to the close date for several stakeholders at their request.

Additional targeted consultation through telephone and face-to-face interviews was conducted with specific stakeholders, including a WHS regulator and union body. The purpose of the interviews was to gather further information on their submission and the costs and benefits of the proposed options.

Overall, the consultation process sought detailed feedback on the baseline assumptions and the proposed options to test the identified impacts of changing the framework and to collect further information on the expected costs and benefits of the proposed options.

Submissions

The public comment period for the consultation RIS closed on 13 September 2018. Over the six week public comment period, 31 submissions were received from a wide range of stakeholders including:

- occupational hygienists
- WHS regulators, including mining
- unions
- industry groups
- large business
- small and medium enterprise (SME)
- government, and
- other interested or affected people.

There were seven stakeholders that requested their submission not be published and six requested anonymity.

Public submissions were made available on [Engage](#) and referred on our website. Stakeholders were notified of the availability via email subscriber lists and LinkedIn.

A summary of the consultation feedback and the key issues identified are provided below.

Streamlined methodology

The streamlined methodology in option 2 and 3 offers a standardised and sustainable process to review and update the WES list and WES values in-line with the most current scientific evidence available.

Stakeholders recognised the long-term benefits for Australian workers, duty holders and the community in applying the streamlined methodology. As a result, support for the streamlined methodology was high.

Concern was expressed about the failure of the current system in keeping up with changing scientific knowledge. Stakeholders noted that technical advancements and on-going research are important elements to consider and WES values supported with evidence could improve confidence in regulation.

Feedback noted that in addition to the health benefits, an update to the workplace exposure standards would have other positive impacts such as:

- a flow on effect of reduced workers compensation premiums
- potential alignment with international best practice
- reduced costs to the community through reduced illness and disease
- potential for increased awareness of workplace exposure standards if an efficient communication strategy is implemented, and
- efficiencies for organisations in communicating updates.

A minority of stakeholders indicated that the streamlined methodology seems predicated on workplace exposure standards being reviewed as quickly as possible and may not be practical to achieve the required outcome or allow opportunity for sufficient stakeholder engagement.

Additionally, it was suggested that the review process (two and five yearly reviews) be conducted as often as practicable and based on capacity of the organisation, not an artificial timeframe.

Status of workplace exposure standards under the model WHS laws

Stakeholders strongly favoured maintaining the mandatory status of workplace exposure standards. Generally, there is concern that if workplace exposure standards are advisory, it will lessen their significance and use within industry.

Most anticipated that compliance levels will drop; placing workers at increased risk of exposure. The responsibility of minimising exposure to airborne hazardous chemicals is also likely to fall directly on the worker.

Workplace exposure standards were viewed by many stakeholders as being critical for the effective control of exposures, regardless of business size and industry. There was some concern that advisory exposure standards would lead to SME not recognising or appreciating the potential health risks from airborne hazardous chemicals. It was implied that SME in particular already have a lack of understanding on the potential health risks as opposed to the safety risks within their business.

Irrespective of business size or industry, one stakeholder stated that, “advisory workplace exposure standards make the cost justification for compliance to exposure more challenging for businesses internally; reducing the likelihood they will be implemented”.

Support for advisory workplace exposure standards was low. The opposition to mandatory workplace exposure standards was centred on having a WES value that is absolute and must not be exceeded, and also having the overarching obligation in the WHS laws for duty holders to eliminate or minimise risks to health and safety so far as is reasonably practicable. This includes reducing the airborne concentration of a hazardous chemical to as low as reasonably practicable. Other reasons included that mandatory status gives the perception that the level is safe and no further action is required.

Comparatively, consultation feedback indicated that the workplace exposure standards framework with mandatory status can provide an equitable and transparent way to assist duty holders to continue to discharge their WHS duties effectively.

Other options to address the objective of government action

Stakeholders proposed other options to achieve the government objectives including:

- mandatory workplace exposure standards only applying to priority health hazard substances, defined as those with a health effect, other than irritation alone; irritants could have an advisory workplace exposure standard
- a combination of mandatory and advisory workplace exposure standards; the status would be differentiated by using a clearly defined criteria based on the nature of the hazard and the type of risk, and
- independent auditing.

A consistent concern raised by stakeholders throughout the public consultation process was that advisory standards might result in duty holders completely ignoring or applying less focus on workplace exposure standards that are advisory. Most stakeholders consider that mandatory workplace exposure standards provide clarity and certainty, particularly for SME.

A mix of mandatory and advisory workplace exposure standards, regardless of the criteria or priorities applied is expected to cause confusion and administrative burden for duty holders. This is predicted to lead to a reduction in worker protection and therefore will not meet the objective of government action.

There was little context provided around the suggestion of independent auditing. Generally, the process of independent auditing requires a significant investment in resources including staff time and this may not be viable for all duty holders, particularly SME that often have less resources compared to large business. This option was not considered viable to further investigate in this decision RIS.

Stakeholder preferred option

The majority of stakeholders supported option 2 as their preferred option.

Stakeholder feedback confirmed that to reduce the risk of harm to workers and protect them from potentially harmful airborne hazardous chemicals, Australia's workplace exposure standards need updating in-line with current scientific knowledge and community expectations.

Proposed name change

The majority of stakeholders supported changing the name of *workplace exposure standards* to *workplace exposure limits*. Stakeholders considered that using the word 'limit' will promote consistency with current international terminology and could provide clarity that workplace exposure standards should not be exceeded.

Two stakeholders were unsupportive of the name change. Reasoning included that the term 'limit' will likely result in workplace exposure standards being perceived as even more prescriptive in nature.

Stakeholders considered the impact expected on them in changing the name of workplace exposure standards to be minimal. The only material impact identified was administrative costs such as updating corporate documents.

Key issues raised during consultation

Compliance and costs

Exposure standards appear to be a valuable tool for stakeholders to assist in achieving compliance. When an Australian standard is not available, most stakeholders indicated that they refer to international standards, or seek guidance from national and international professional bodies on a suitable value.

However, for a small number of stakeholders there were reservations, particularly regarding the eight-hour time weighted average (TWA). The TWA is the average airborne concentration of a particular chemical over a normal eight-hour working day for a five day working week. The TWA (or equivalent) is internationally recognised and the most common exposure standard parameter, except where a peak limitation has been assigned. Nearly all chemicals with a workplace exposure standard have a TWA.

Stakeholders noted that the nature of a TWA makes measuring and determining compliance difficult, costly and requires specialist knowledge to interpret results. Additionally, as the traditional workday of eight hours is no longer standard across the workforce, the TWA is not necessarily applicable in some settings.

Large business was recognised as having higher rates of compliance with the workplace exposure standards compared to SME. This is attributed to large business generally having more awareness, financial capacity and resources compared to SME.

It was suggested that more corrective action is required at the regulator level to increase compliance with workplace exposure standards. Despite any perceived lack of enforcement by the regulator, duty holders are still obligated to comply with the model WHS laws and eliminate or minimise the airborne concentration of a hazardous chemical to as low as reasonably practicable.

Some stakeholders considered that compliance with WES values that may increase will not lead to a reduction in the use of the applicable controls by duty holders. This is because of the overarching duty in the model WHS laws to reduce the risk to as low as reasonably practicable, irrespective of a mandatory limit.

If workplace exposure standards were updated, stakeholders identified similar costs that are likely to be incurred and these included:

- time needed to understand the change and practical implications
- purchase and implementation of new controls
- training the organisation on the changes
- administrative updates
- increased monitoring requirements (if the WES value was lowered), and
- safety data sheet updates.

Further information on compliance costs is available in the Cost Benefit Analysis chapter.

Implementation and transitional periods

Many stakeholders expressed that in applying the streamlined methodology, adequate consultation time for stakeholders must be available to enable review of any proposed change to a WES value. They also emphasised the importance of a transitional period for industry to achieve compliance and manage these changes both practically and financially.

Whilst many stakeholders raised concern regarding a sufficient transitional period, few put forward a preference. From the feedback, it appears that a transitional period of three years would be optimal in achieving compliance with a change to a workplace exposure standard. This would allow duty holders reasonable time to:

- undertake exposure monitoring to identify work groups at risk of exceeding a more stringent exposure standard
- identify new controls required
- implement the controls and review, and
- demonstrate compliance with new controls.

A five year transitional period was also suggested to align with the minimum five year requirement of updating Safety Data Sheets (SDS), plus additional time to ensure risks are assessed and new controls implemented. Stakeholders indicated that the alignment with SDS could potentially result in fewer additional costs for industry. However, this approach would likely result in overlap with the planned scheduled review program and negatively impact on implementation.

Provision of guidance and education

Feedback indicated that regardless of the option implemented, more education, guidance and supporting material would be welcomed by industry. This was particularly true for SMEs to understand workplace exposure standards and the compliance expectations with WHS laws. Alternative ways to present this material included training workshops and online sessions.

Stakeholders also requested access to more resources from regulatory authorities, particularly on occupational hygiene.

A valid concern was raised regarding the nature of protection discussed in the consultation RIS; namely under-protective and over-protective workplace exposure standards. The use of the term over-protective in particular, was not intended to suggest that risks of exposure

are being over-managed and exposure levels not minimised to as low as is reasonably practicable. Information on this will be provided in guidance that will accompany any changes to the WES values.

Cost Benefit Analysis (CBA)

This chapter outlines the expected impacts of each option. The benefits and costs of each option are assessed, where relevant, in relation to duty holders, workers, government and the broader community.

Option 1: Maintain the status quo

Maintaining the status quo is not considered to address the government objective to:

- reduce the risk of harm to workers at the workplace, and
- protect workers from exposure to potentially harmful hazardous chemicals.

Feedback provided by stakeholders has instead been used to inform the costs and benefits incurred under the status quo. These costs and benefits will be considered as the baseline against which the incremental impacts of options 2 and 3 will be assessed.

Baseline costs of the status quo

Duty holders incur an estimated \$402 million per annum in costs attributable to the workplace exposure standards each year including:

- isolation controls
- engineering controls
- administrative controls
- personal protective equipment
- conducting air monitoring, and
- engaging an occupational hygienist¹².

When there is an update to a WES value, duty holders incur additional or reduced costs, depending on the nature of the change.

The current cost of workers' compensation payouts attributed to the mechanism of chemicals and substances is estimated at \$3.2 million¹³ for 2014-15.

Respiratory diseases caused approximately six per cent of deaths attributable to disease or injury in 2011¹⁴. Approximately 81 per cent of mesothelioma cases and 10 per cent of lung cancers are attributable to workplace exposures, of which each have a fatality rate of over 97 per cent¹⁵. The baseline burden of illness, disease and death attributed to exposure to occupational carcinogens, asthmagens, and respirable fumes and dusts is approximately 84,400 years of life lost (YLL)¹⁶. The resulting estimated cost to workers,

¹² Refer to Appendix D for details.

¹³ Based on the attribution of 865 serious worker's compensation claims to the mechanism of injury or disease for "Chemicals and other substances" in 2014-15, and applying the median compensation paid to this category in 2014-15, as reported in *Australian worker's compensation statistics 2015-16*, Safe Work Australia (2018).

¹⁴ Australian Institute of Health and Welfare (2016).

¹⁵ Ibid.

¹⁶ Estimates of total YLL are related to occupational particulate matter, gases and fumes, and asthmagens; and occupational exposure to airborne hazards of asbestos, silica, arsenic, polycyclic aromatic hydrocarbons, cadmium, beryllium and trichloroethylene. These make up a sub-set of to the workplace

business and the broader Australian community from neoplasms and chronic respiratory illnesses caused by these workplace hazards is approximately \$16.4 billion¹⁷.

Government is indicatively estimated to incur a total 10 year cost of approximately \$3.3 million, or \$824,705 per workplace exposure standard.

Option 2: Maintain mandatory workplace exposure standards and implement a streamlined methodology

In comparison to the status quo, option 2 proposes the following changes:

- introduction of a standardised, documented process to review a WES value
- introduction of a standardised, documented process to add or remove a hazardous chemical from the WES list
- a scheduled review program to maintain the workplace exposure standards in the future.

Relative to the status quo, option 2 is expected to:

- reduce the burden of disease in Australia (as measured by the value of YLL) by reducing the incidence of work-related illness and disease caused by exposure to hazardous chemicals at the workplace
- improve workplace productivity and confidence in what is perceived as a healthier workplace
- increase administrative and compliance costs for some duty holders in the event a WES value is significantly reduced or a new workplace exposure standard is introduced, and
- improve the efficiency of reviewing workplace exposure standards through the use of the streamlined methodology.

Benefit impacts of option 2

There are three predicted benefits identified for option 2:

- decreased likelihood of work-related illness and disease
- reduced compliance costs for certain duty holders (where a WES value is increased), and
- benefits for the community.

Decreased likelihood of work-related illness and disease

Option 2 is expected to reduce the estimated cost burden of disease in Australia¹⁸. This is expected to be a result of WES values reflecting the most relevant scientific evidence and thus better protecting workers. Up to date workplace exposure standards arguably better protect workers from workplace exposure to hazardous chemicals through of the use of more effective control measures.

Reducing worker exposure to hazardous chemicals can reduce the incidence of work-related illness and disease, particularly severe diseases such as respiratory disease,

exposure standards. The data is sourced from the Institute of Health Metrics and Evaluation (an independent population health research centre at the University of Washington) data on disability-adjusted life years (DALY) due to occupational diseases in Australia.

¹⁷ Using the value of a statistical life year in Australia in 2017 of \$190,750 to estimate the impact of YLL, and including direct health treatment costs of asbestos related diseases as sourced in *The economic burden of asbestos-related disease*, Asbestos Safety and Eradication Agency (2018).

¹⁸ See the discussion on health costs in the section Option 1 – Baseline costs.

mesothelioma and cancers, and ultimately reduce the number of deaths and years of life lost. This reduction is expected to result in:

- lower overall health costs, and
- a reduction in the frequency and total cost of workers' compensation claims for exposure to hazardous chemicals.

Occupational disease often requires expensive medical treatment. Hospital and primary healthcare costs are estimated at \$192 million for 2015 for asbestos-related diseases, with the average treatment (separation) cost for patients with asbestosis estimated at \$20,562¹⁹. This is significantly larger than the average hospitalisation cost of \$5,078²⁰. This example is illustrative only, but indicates the potential impact of exposure to certain hazardous chemicals. Therefore, reducing the number of workers that suffer from a work-related illness or disease can lead to a lower number of hospitalisations, and thus lower total treatment costs and hospital wait-times.

An increased protection of workers from exposure to hazardous chemicals at the workplace can also lead to improvements in quality of life for workers, thereby reducing the YLL attributed to exposure.

Reduced compliance costs for certain duty holders

A desktop analysis estimated that approximately four per cent of the workplace exposure standards are likely to increase (i.e. become less stringent) when reviewed and updated.

This change could result in duty holders spending less on purchasing or maintaining control equipment or procedures to protect workers from hazardous chemical exposure.

For every one control no longer used there is potential for an estimated average cost saving of:

- \$1,434 per annum for small business
- \$4,983 per annum for medium business, and
- \$144,823 per annum for large business.

These estimates are indicative only, but provide a broad sense of the possible cost savings²¹.

If a WES value is increased, a duty holder may still need to use higher level control measures and procedures to control exposure to other hazardous chemicals in that workplace. In addition to this, the model WHS laws still require duty holders to comply with the primary duty of care. Irrespective of an increase of a WES value, the level of protection of workers provided by control measures and management practices for the lower WES value can be considered to represent what is reasonably practicable to achieve. Therefore, a lessening of the level of protection would likely represent a breach by the duty holder. As such, the number of businesses that would no longer implement particular control measures or procedures is considered not relevant and no cost saving has been estimated.

Benefits for the community

Exposure to a hazardous chemical can have a significant adverse impact on the affected worker, their family, the community in general, and the business involved due to reduced productivity.

¹⁹ Asbestos Safety and Eradication Agency (2018).

²⁰ Australian Institute of Health and Welfare (2012). Value has been converted to 2017 dollars using the RBA Inflation Calculator.

²¹ Estimates are based on the business survey results in Appendix D.

Exposure to a hazardous chemical is stressful for the worker and their family. In addition to regaining the level of health and functioning a worker had prior to a work-related incident, the financial impact could also be significant, especially if the worker's income supports the household and they are required to cease working temporarily or permanently. They may be unable to return to work, need a change of occupation or a change of responsibilities to accommodate any restrictions in continuing with their current role.

A lower incidence of work-related illness and disease will likely reduce workers' reliance on the tax and transfer system because they are able to participate in employment and earn a living. In contrast, a worker exposed to hazardous chemicals may require income support and other Australian government benefits, depending on the severity of their illness.

Option 2 is expected to result in better protection for workers, with their families and the broader community less likely to experience the associated impacts.

Qualitatively, the broader community is expected to have increased confidence that workplaces are safer by observing a lower number of work-related illness and disease. Improved confidence can encourage greater productivity at the workplace, boosting economic activity.

Cost impacts of option 2

There are three cost impacts identified for option 2:

- administrative costs for duty holders
- compliance costs for duty holders, and
- costs to government.

Increased administrative costs for duty holders

Under this option, updates to the workplace exposure standards would occur more frequently relative to the status quo. This is expected to impact duty holders through additional administrative costs. These costs relate to time spent:

- understanding the changes
- preparing any internal documentation and policies
- organising and conducting worker training, and
- updating any compliance tasks.

For example, a business is estimated to spend approximately \$500 to update an SDS when a WES value for a chemical used by the business is updated²².

Based on the desktop analysis, approximately 40 per cent²³ of the WES values will change using the streamlined methodology.

Under this option, a nationally harmonised transitional period of three years to meet compliance with changes to the workplace exposure standards is recommended. This allows:

- government to develop and deliver guidance material to support any changes to the WES list and values, and
- businesses suitable time to update any required internal documentation, training programmes and SDS's before the new WES value becomes enforceable.

As such, the increased administrative costs of this option may be spread over the length of the transitional period.

²² Office of the Australian Safety and Compensation Council (2009).

²³ This estimate includes new workplace exposure standards added to the WES list.

The total administrative cost burden incurred by duty holders under option 2 will be greater than the status quo, increasing the current regulatory burden incurred by duty holders. The cost is dependent on which WES values change and the number of duty holders bound by that standard.

Increased compliance costs for duty holders – discussion of cost drivers

The desktop analysis commissioned by Safe Work Australia estimates that approximately 35 per cent of the WES are likely to be significantly reduced as a result of applying the streamlined methodology.

As a result, duty holders are expected to incur additional costs to ensure they comply with the updated WES value. These substantive compliance costs primarily relate to the purchase and maintenance of additional control measures required to not exceed the updated WES value.

The duty holder must apply the hierarchy of controls (elimination, substitution, isolation, engineering, administrative and PPE) to determine the appropriate combination of control measures for their workplace.

Duty holders also apply the management practice of air monitoring and use occupational hygienists to assess the effectiveness of the control measures selected and their compliance with a workplace exposure standard.

In the event that a WES value is reduced, the change in total compliance costs incurred will depend on the:

- magnitude of the change for the WES value
- number of businesses affected
- size of businesses affected, and
- types of controls and management practices adopted.

A reduced WES value is expected to result in duty holders purchasing more sophisticated control equipment, therefore increasing the cost burden. The size and extent of compliance costs will depend on which WES values are updated and the relative change in the level of the WES value.

Using the data compiled from the business survey and tested in the consultation RIS, Table 2 summarises the average estimated costs incurred for each control measure and management practice, ranging from small to large business²⁴.

Table 2. Range of average estimated costs of control measures and management practices based on the business survey

| Control measure or management practice | Average estimated cost range | |
|--|------------------------------|-----------|
| | Minimum | Maximum |
| Isolation controls | \$2,446 | \$584,626 |
| Engineering controls | \$2,688 | \$613,837 |
| Administrative controls | \$11,612 | \$344,059 |
| PPE | \$697 | \$148,715 |
| Air monitoring | \$1,000 | \$228,224 |
| Occupational hygienists | \$2,250 | \$272,225 |

²⁴ Due to a lack of available quantifiable information for substitution controls, costs have not been estimated.

Compliance costs for duty holders – estimating potential cost impacts

The administrative cost and control cost impact analyses demonstrate the nature and magnitude of individual cost categories. An indicative analysis has been undertaken to assess the potential compliance cost impacts on duty holders. Two hypothetical scenarios have been considered to illustrate the range of potential impacts:

1. Low case scenario – the changes to the WES values are less significant (i.e. the new values are not significantly different to the current values), resulting in a small proportion of duty holders needing to change procedures in order to comply with an updated WES value or a new workplace exposure standard added to the WES list.
2. High case scenario – the changes to the WES values are more significant (i.e. the new values are significantly different to the current values), resulting in most duty holders needing to change procedures in order to comply with an updated WES value or a new workplace exposure standard added to the WES list.

With option 2, duty holders could incur a broad range of costs. Accordingly, to develop the scenarios and estimate the indicative compliance costs, a series of assumptions have been applied about how duty holders may respond to a significantly reduced WES values or new workplace exposure standards.

These assumptions were developed by considering how the hierarchy of controls²⁵ and business size influence the response to significantly reduced WES values or new workplace exposure standards. The assumptions are:

- The *hierarchy of controls* represents how duty holders must control risks of exposure to hazardous chemicals under the model WHS laws. Should a WES value be significantly reduced or a new workplace exposure standard is introduced, it is likely that higher order controls are needed to meet compliance requirements. Management practices such as air monitoring and the use of an occupational hygienist is likely to increase as duty holders check the effectiveness of new or modified control measures.
- *Business size* has influence on the complexity of WHS operations and the ability to invest in different approaches to comply with workplace exposure standards. For example, the business survey indicated that large business tend to use more complex, expensive or resource intensive controls.

When considering how different businesses may respond to the compliance requirements associated with a significantly reduced WES value or a new workplace exposure standard, the following hypotheses were developed from stakeholder feedback and the business survey:

- **Small business:**
 - likely to be more reluctant to invest in expensive, higher level controls such as isolation controls
 - likely to increase their use of lower order controls such as PPE, and
 - likely to support changes to control measures with management practices such as air monitoring and the use of occupational hygienists.
- **Medium sized businesses:**
 - likely to strike a balance between investment in control measures and management practices.

²⁵ See the Background section for an explanation of the hierarchy of control.

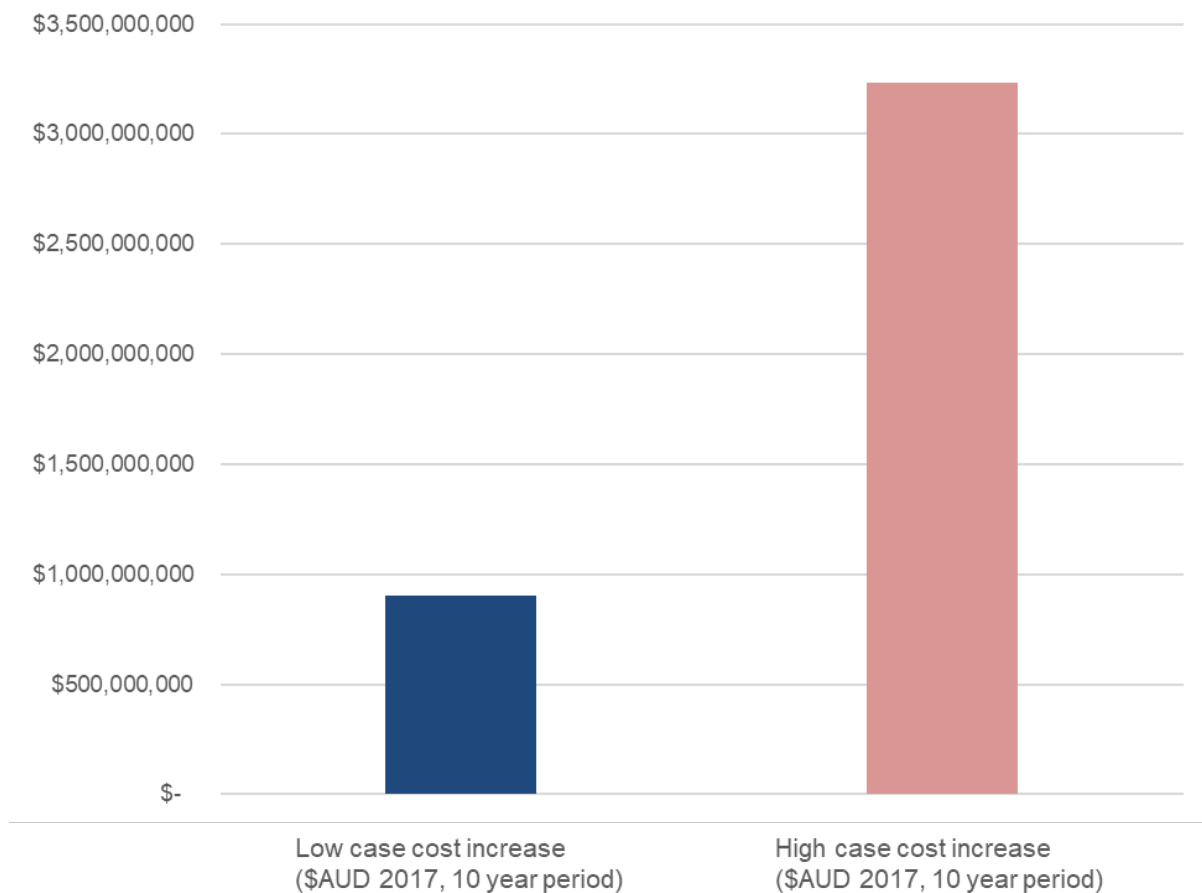
- **Large businesses:**

- likely to invest in higher order controls, as their scale enables them to do so in a more cost effective way, and
- likely to have management practices already in place and therefore will not need to expand their efforts in this area.

These hypotheses were applied to develop the low and high case scenarios in conjunction with information from the business survey about annual costs to business²⁶. The details of the assumptions used are outlined in Appendix E, including the application of cost and timing assumptions.

Figure 3 illustrates the low and high case scenario cost range, following on from the hypotheses of how businesses of different sizes could potentially draw on the hierarchy of controls to respond.

Figure 3. Modelled impact to business over 10 years, low and high scenario cost estimates



In the low case scenario, cost increases are indicatively estimated at around \$900 million over 10 years. In the high case scenario, costs are indicatively estimated to be around \$3,231 million over 10 years. This cost range of almost \$2.5 billion over 10 years between the low and high scenario illustrates the sensitivity of the analysis to various assumptions.

Table 3 extends the analysis to consider the average annual cost impact on business by size, drawing on the detailed analysis outlined in Appendix E.

The estimated burden of cost falls most strongly on large business, who are hypothesised to upgrade to more expensive and complex controls. As with the aggregate figures, Table 3 illustrates a wide range of cost impacts between the low and high scenarios.

²⁶ As detailed in Table 3 and further developed in Appendix D.

Table 3. Average annual cost increase to duty holders based on business size using high and low scenario estimates

| Business size | Average annual cost impact estimate | |
|---------------|-------------------------------------|--------------------|
| | Low case scenario | High case scenario |
| Small | \$208 | \$532 |
| Medium | \$466 | \$2,674 |
| Large | \$81,041 | \$329,688 |

These indicative cost estimates are just part of a range of potential outcomes. The actual impacts will depend on the nature of the changes to the WES values and number of businesses affected.

Increased cost to government – Safe Work Australia

In comparison to the estimated cost of the status quo of \$3.3 million, the streamlined methodology is estimated to cost a total of \$5.35 million over 10 years, or approximately \$534,595 per year.

This results in an approximate additional cost incurred by Safe Work Australia and the WHS regulators over a 10 year period of \$2.05 million²⁷. The increased cost is due to a larger number of workplace exposure standards being reviewed and increased resourcing, evaluation and consultation requirements:

- Safe Work Australia is expected to incur increased operational costs in applying the streamlined methodology. The indicative costs are expected to be driven by the increased stakeholder consultation required when changes are recommended.
- WHS regulators are likely to incur additional costs in developing and revising their procedures and in training staff to understand the changes.

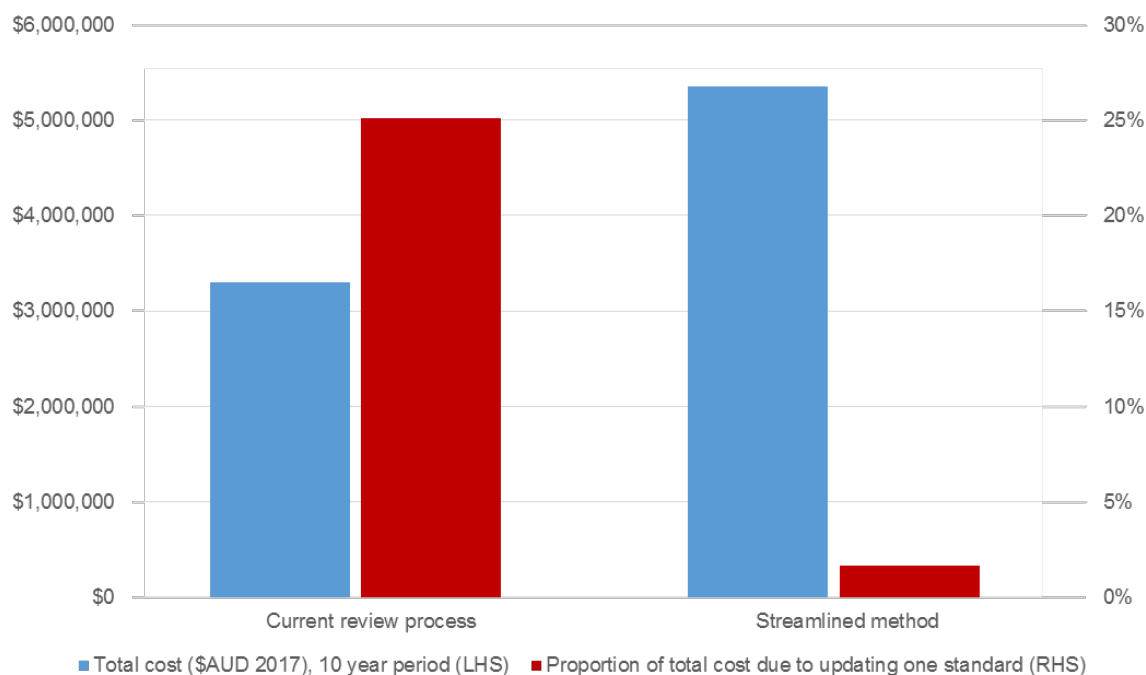
There are expected to be efficiency gains as more workplace exposure standards are maintained using the streamlined methodology.

Once the initial review is complete, between 60 and 120 workplace exposure standards are expected to be updated over 10 years using the streamlined methodology. Therefore, the cost over this period is, on average, between \$44,500 and \$89,000 per workplace exposure standard.

The differences in total and per workplace exposure standard costs between the status quo and option 2 (assuming 30 workplace exposure standards updated per five yearly comprehensive review) is highlighted in Figure 4.

²⁷ See Appendix F.

Figure 4. Comparison of estimated costs for current review process and streamlined methodology, total costs and per workplace exposure standard updated



While the figure shows the total estimated cost over 10 years is higher than the status quo, the cost to review each workplace exposure standard is significantly reduced. If the status quo remains, the cost of reviewing individual workplace exposure standards is likely to become greater due to values becoming more outdated overtime and therefore requiring more resources to review.

Breakeven analysis on cost increases indicated by option 2

Based on an illustrative breakeven analysis, to offset the cost of option 2, it is estimated that an additional 18 to 63 per cent of workers in the key workforces would need to not experience adverse health effects from occupational exposure to airborne hazardous chemicals.

The breakeven analysis compares the costs incurred by government and duty holders under option 2, to the impact required to reduce the burden of disease on Australian society as measured by YLL:

- cost impact estimates have been developed for government and duty holders as outlined in appendices D, E and F
- these cost impacts are translated to a YLL measure, using the value of a statistical life year determined by the Office of Best Practice Regulation (OBPR)²⁸
- the YLL measure is converted into an estimate of the number of additional workers not experiencing adverse health effects, using estimates of YLL attributable to neoplasms and chronic respiratory diseases caused by occupational hazards in Australia²⁹, in order for the benefits to breakeven with the costs, and

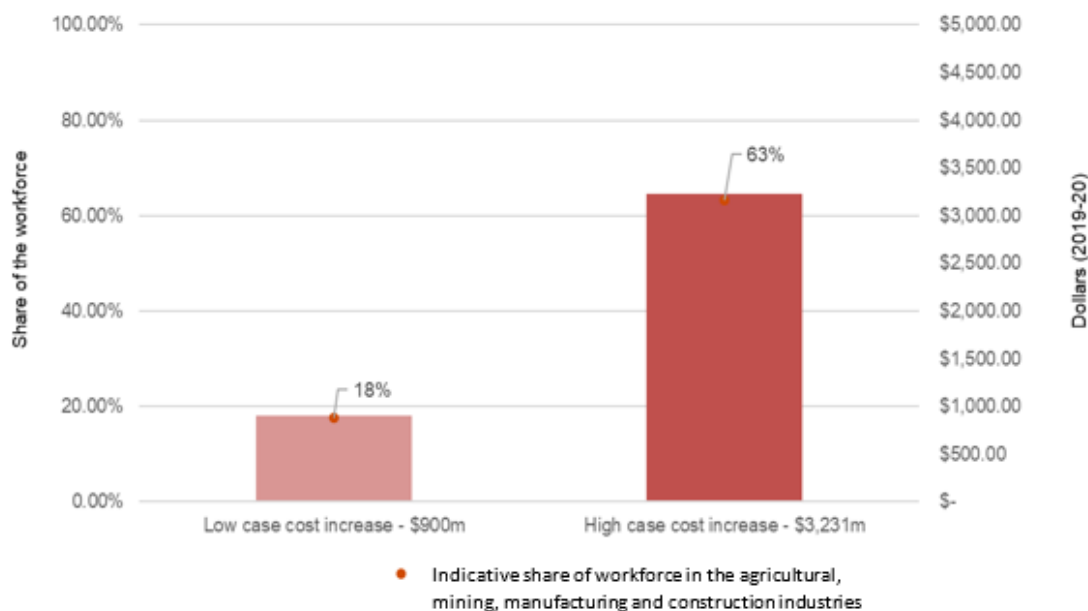
²⁸ This is based on the value of life quality lost that occurs when an individual is exposed to hazardous chemicals. This health cost is estimated at approximately \$3,090 and is based on the value of a statistical life year of \$190,750 and a disability-weight of 0,225 for moderate respiratory disease.

²⁹ Approximately 1.34 per 1,000 people in Australia based on figures sourced from the *Global Burden of Disease Study 2017*, Institute of Health Metrics and Evaluation (2017). The average rate is based on years of life lost rates per 1,000 people for all neoplasms and chronic respiratory disease caused by occupational carcinogens, asthmagens, and respirable dusts and fumes in Australia in 2017.

- the number of workers not experiencing adverse health outcomes is compared to the size of the estimated workforce in the agricultural, mining, manufacturing and construction industries³⁰.

The breakeven analysis is illustrated in Figure 5, with the percentage of the relevant workforce on the left hand axis, and the estimated indicative cost impacts of the two scenarios on the right hand axis.

Figure 5. Breakeven analysis - streamlined model estimated cost impacts to duty holders, based on 10 year costings in \$2017 AUD



Option 2 summary

While option 2 is expected to cost more over 10 years to both duty holders and government, it is expected to deliver significant health benefits to the community.

The expected outcomes of option 2 also address the objective of government action to reduce the risk of harm to workers at the workplace.

Option 3: Make the workplace exposure standards advisory and implement a streamlined review methodology

In comparison to the status quo, option 3 proposes the following changes:

- all workplace exposure standards become advisory
- introduction of a standardised, documented process to update a WES value
- introduction of a standardised, documented process to add or remove a hazardous chemical from the WES list
- a scheduled review program to maintain the workplace exposure standards in the future.

Relative to the status quo, option 3 is expected to:

- reduce regulatory and enforcement costs for WHS regulators

³⁰ Based on data sourced from Australian Bureau of Statistics (2016). Findings based on use of ABS TableBuilder data.

- increase the burden of disease in Australia due to increased incidence of exposure at the workplace to occupational carcinogens, asthmagens, and respirable dusts and fumes, and
- improve the efficiency of workplace exposure standard reviews through the use of the streamlined methodology, saving government between \$759,000 and \$792,000 per WES value over 10 years, despite the total cost of these reviews increasing by \$615,000 over a 10 year period.

Benefit impacts of option 3

There are two benefit impacts identified for option 3:

- reduced compliance costs for some duty holders, and
- some reduced costs for WHS regulators.

Reduced compliance costs for duty holders

For the purposes of this decision RIS, estimated cost savings to duty holders have not been applied. As noted by some stakeholders, the model WHS laws still require duty holders to comply with the primary duty of care. Irrespective of the status of the workplace exposure standards under the model WHS laws, the current level of protection of workers provided by control measures and management practices can be considered to represent what is reasonably practicable to achieve. Therefore, a lessening of the current levels of protection would likely represent a breach by the duty holder.

Hypothetically, there could be cost savings to some duty holders in the case where new businesses establish, or existing businesses expand their operations into new areas. Under Option 3, these duty holders may choose to adopt lower level controls than existing businesses, reflecting the advisory status of the workplace exposure standards. Alternatively, they could match or exceed the controls used by existing businesses to meet their primary duty of care and protect workers to a level considered reasonably practicable.

It is unclear what the net impact would be on compliance costs. It is possible that if the workplace exposure standards were to become advisory, some businesses will decide to reduce their use of controls over time. According to the business survey, approximately 30 per cent of respondents currently using workplace exposure standards indicated they may consider reducing their compliance costs by up to half if the workplace exposure standards are advisory³¹.

Reduced costs for government – WHS regulators

If the workplace exposure standards are advisory under the model WHS laws, WHS regulators may experience cost savings from reduced enforcement and compliance activities.

As duty holders would not legally be required to comply with the workplace exposure standards, WHS regulators may cease conducting some enforcement activities or compliance checks on duty holders in relation to the workplace exposure standards. The WHS regulators may consequentially incur lower costs in relation to these activities.

WHS regulators would still enforce the other requirements of duty holders under the model WHS laws, including the general duties, so there would be no cost saving in regards to these activities under this option.

³¹ This estimate is based on the business survey, suggesting 31 per cent of small businesses, 28 per cent of medium businesses and 26 per cent of large businesses would reduce their control costs by at least 50 per cent if the workplace exposure standards were made advisory. Refer to Appendix D for details on the estimated average compliance costs for businesses in Australia.

Safe Work Australia may spend less on communicating changes to the workplace exposure standards to duty holders. Therefore, there may be less cost incurred in preparing and conducting stakeholder engagement when a WES value is updated.

Cost impacts of option 3

There are three key cost impacts for option 3:

- increased likelihood of work-related illness and disease
- lower community confidence, and
- increased costs to government.

Increased likelihood of work-related illness and disease

Some stakeholders noted that advisory workplace exposure standards “will deliver comparable worker health outcomes, with option 3 being advantageous in reducing the cost”. However, as noted above, 30 per cent of business survey respondents stated that they would reduce their compliance costs by up to 50 per cent should the workplace exposure standards become advisory.

For the purposes of this decision RIS, this reduction in costs has been interpreted to be a reduction in the implementation of control measures and management practices. As noted above, while this reduction may constitute a breach under the WHS laws, the outcomes of this breach can result in illness or disease for those workers exposed. Therefore, an indicative outline of the likelihood of increased work-related illness and disease has been investigated.

Less prevalent use of control measures and management practices at the workplace may lead to an increased risk of harm to workers, and consequently an increase in health costs.

A change to the status of the workplace exposure standards is expected to result in a lessening of their use and perception of importance. As a consequence, this is expected to lead to a reduction in duty holder’s application of the most effective combination of control measures and management practices that would protect workers from exposure to hazardous chemicals.

Stakeholders noted that advisory workplace exposure standards would “not improve occupational health performance at the workplace” and would “increase[s] the risks faced by workers” at the workplace.

Less protective controls are expected to increase the incidence of illness and disease from exposure to occupational carcinogens, asthmagens, and respirable fumes and dusts. Consequently, this may increase the number of disability-adjusted life years (DALY) and/or YLL accrued by workers thus increasing the burden of disease on the community. The extent of this increase depends on the severity of the illness or disease.

Workers may also be at greater risk of premature death from a work-related illness or disease in the event that inadequate control measures are used. Many work-related illness and disease have long latency periods and will not be obvious until many years after a worker was exposed to the hazardous chemical.

The cost to the community of a premature death can be measured using the value of a statistical life. The value of a statistical life is an estimate of the value that the community places on reducing the risk of premature death. OBPR estimates the value of a statistical life at approximately \$4.4 million³².

³² Office of Best Practice Regulation (2014a). Figure quoted in 2017 dollars and adjusted for inflation using the RBA Inflation Calculator.

Developing a severe illness or disease can decrease the number of years of life for an individual. In 2017, a total of 84,400 YLL were accumulated because of exposure to occupational carcinogens, asthmagens, and respirable dusts and fumes³³.

Current estimates suggest a person that develops lung cancer, mesothelioma, sinonasal carcinoma or non-Hodgkin lymphoma can expect to lose an average of 15.1 years of life³⁴.

Applying the value of a statistical life year of \$190,750 in 2017, the equivalent cost to the community of one person developing any of these diseases because of workplace exposure is approximately \$2.88 million.

An increase in work-related illness and disease is assumed to have a corresponding increase in the total number and value of workers' compensation claims for exposure to hazardous chemicals.

Furthermore, a higher incidence of work-related illness or disease is expected to lead to greater hospital admissions and an increase in average hospitalisation costs. The average cost of hospitalisation is \$5,078³⁵ and may increase under this option if inadequate controls are used at the workplace. This may result in more frequent and severe illness or disease that requires complex treatment.

Lower community confidence

Option 3 is expected to lead to a lower degree of confidence that Australian workplaces are safe environments.

A greater number of work-related illness, disease or deaths is expected to leave workers and their families concerned for their health and safety at the workplace, particularly in industries that use, handle, store, dispose or generate hazardous chemicals.

Workers may be discouraged from remaining in a job where they feel concerned for their own health and safety. In addition, workers may become more risk averse at the workplace, resulting in a reduction in workplace productivity as they may refuse to undertake certain tasks when there is uncertainty regarding exposure.

Increased costs to government – Safe Work Australia

As with option 2, government is indicatively estimated to incur increased operational costs in relation to the use of the streamlined methodology under option 3.

Over a 10 year period, the estimated additional cost (relative to the status quo) of using the streamlined methodology for option 3 is approximately \$615,000; based on a total estimated cost of \$3.91 million.

Stakeholder engagement costs for this option are lower in comparison to option 2. Each WHS regulator is anticipated to spend half the time involved in stakeholder engagement because many duty holders (as indicated by stakeholder feedback), are less likely to seek workplace exposure standard information from WHS regulators.

As with option 2, government is expected to experience efficiency gains from using the streamlined methodology. By updating between 60 and 120 workplace exposure standards every 10 years (estimated by Safe Work Australia) using the streamlined methodology, government is expected to experience a cost saving of around \$760,000 to \$792,000 per workplace exposure standard updated.

³³ Institute of Health Metrics and Evaluation, University of Washington (2017).

³⁴ Rushton et al. (2010).

³⁵ Australian Institute of Health and Welfare (2012). Value has been converted to 2017 dollars using the RBA Inflation Calculator.

Breakeven analysis of cost impacts

There is large uncertainty relating to the expected net costs and benefits that would be incurred under option 3. Therefore a breakeven analysis has not been undertaken for this option.

Option 3 summary

Qualitatively, the breakeven level for option 3 will be lower than for option 2. However, option 3 would also likely result in significantly lower benefits than option 2. As such, this option is not expected to sufficiently address the underlying government objective of reducing the risk of harm to workers.

Summary of preferred option

Based on the analysis for each of the options and stakeholder submissions to the consultation RIS, option 2 is the preferred option.

Option 2 is expected to provide the greatest net benefit by ensuring the mandatory workplace exposure standards are kept up to date with the most relevant scientific evidence.

For workers, option 2 is expected to provide improved protection from exposure to airborne hazardous chemicals at the workplace. This will help improve health outcomes and reduce the burden of disease in Australia.

Additionally, productivity in the workplace is expected to increase as confidence builds when workers and the community observe a lower number of work-related illness and disease.

Duty holders are expected to experience an increase in administrative and substantive compliance costs under option 2. The streamlined methodology will increase the rate at which workplace exposure standards are reviewed and changed. Therefore, when a WES value is changed there will be flow on costs relating to administration, training, changes to control measures and management practices.

The potential cost impact on all duty holders from option 2 will indicatively range from \$900 million to \$3,231 million for all businesses using workplace exposure standards over 10 years³⁶. The wide range of costs between the low and high scenarios reflects the uncertainty of the estimates³⁷. This indicative cost range averages to between:

- \$9.0 million and \$ 3.231 million per year over 10 years, and
- \$4,870 and \$17,480 per business³⁸, per year over 10 years.

The streamlined methodology will increase the costs to government from reviewing and updating the workplace exposure standards. Although the total cost of the streamlined methodology is estimated to be \$5.3 million over 10 years (an additional \$2 million relative to the current process), government is expected to experience efficiency gains.

Relative to the status quo, the review and update costs per workplace exposure standard are estimated to decrease by at least \$735,000 over the 10 year period.

The breakeven analysis of costs and benefits for option 2 found that if an additional 18 to 63 per cent of workers do not experience adverse health effects from occupational

³⁶ The high and low case scenarios are costed in AUD\$ 2017 based on the survey data, with nominal figures provided. The analysis considered the impact of significantly reduced WES values and new workplace exposure standards only, and not the potential cost reductions associated with those WES values that may increase.

³⁷ The analysis considered the impact of significantly reduced WES values only.

³⁸ Assuming 185,000 businesses in Australia that use workplace exposure standards.

exposure to airborne hazardous chemicals, then the benefits of option 2 would exceed its indicative costs.

Stakeholder consultation on the revised workplace exposure standard values

Safe Work Australia will implement a comprehensive stakeholder consultation strategy to obtain stakeholder feedback on the WES values recommended through the streamlined methodology. Specifically, stakeholders will have the opportunity to provide feedback on:

- technical aspects of the recommendation and basis for the workplace exposure standard, and
- measurement and analysis information provided in the draft evaluation report.

The individual draft evaluation reports and recommendations detailing a proposed WES value will be released via Engage. Each release will comprise of approximately 50 chemicals every two weeks.

A schedule of the specific WES values available for feedback will be published on the Safe Work Australia website and Engage. Stakeholders will also be notified of the approximate dates for each release via an Engage news feed and email subscriber contact list.

The stakeholder consultation period for each release will remain open for four weeks. Late responses will be accepted up until the completion of the review in 2020.

Implementation and review

Implementation

Should WHS ministers agree to the preferred option in the decision RIS, the workplace exposure standards will be evaluated using the streamlined methodology. As each WES is reviewed, the draft recommendations will be made available to stakeholders for feedback.

Following the completion of stakeholder consultation, the *Workplace exposure standards for airborne contaminants* referred in the model WHS Regulations will be amended to the *Workplace exposure limits for hazardous chemicals* and will be updated to reflect the outcomes of the evaluations and consultations.

Transitional period

A transitional period for stakeholders to meet compliance with the updated or additional chemicals added to the WES list as outlined above is at the discretion of the WHS regulator in the Commonwealth, states and territories.

A nationally harmonised approach for the transitional period is preferred. Based on feedback received throughout the consultation process, Safe Work Australia recommends a transitional period of three years from the date of adoption. Safe Work Australia will work with the Commonwealth, state and territory WHS regulators to agree this approach.

Having an effective nationally harmonised approach can provide significant operational benefits to industry and improved health and safety outcomes for workers. This is evident through the successful implementation of the Globally Harmonized System for Classification and Labelling of Chemicals (GHS).

A range of education and awareness materials to be developed and disseminated by Safe Work Australia will be made available through the transitional period.

Review

Review of the WES values and WES list will be conducted as per the scheduled review process noted in the [streamlined methodology](#) and broadly captured by scheduled reviews of the WHS regulations.

Following the initial full review and update of the current workplace exposure standards, Safe Work Australia will conduct an interim review that involves reviewing the changes trusted sources have made to their exposure standards. This will occur at years two and four of a five-year cycle. An expert working group may be formed to assist in recommending outcomes for these reviews.

The interim reviews will enable Safe Work Australia to identify and shortlist hazardous chemicals for update in a five-yearly comprehensive review of the workplace exposure standards. The comprehensive review will use evaluation and peer review consultancies to assist in updating the relevant workplace exposure standards and will include a public consultation process and regulatory impact statements for those with significant changes.

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Appendices

Appendix A: Abbreviations, acronyms and definitions

AIHA – American Industrial Hygiene Association (United States)

ACGIH – American Conference of Governmental Industrial Hygienists (United States)

APVMA – Australian Pesticides and Veterinary Medicines Authority (Australia)

Business survey – Duty holder survey to investigate the impacts of the current regulatory framework on business (2017; Appendix D)

Chemical – for the purposes of this statement is equivalent to the definition of a hazardous chemical under the model Work Health and Safety laws; these encompass chemicals, substances, compounds, dusts, fibres and biological substances present in the workplace

Consultation RIS – Consultation regulation impact statement

DALY – Disability-adjusted life years

Decision RIS – Decision regulation impact statement

DECOS – Dutch Expert Committee on Occupational Safety (Netherlands)

DFG – German Research Foundation (Deutsche Forschungsgemeinschaft; Germany)

Discussion paper – [*The role of chemical exposure standards in work health and safety laws*](#) (2015)

GHS – The Globally Harmonisation System of Classification and Labelling of Chemicals (United Nations)

HSE – Health and Safety Executive (United Kingdom)

NICNAS – National Industrial Chemicals Notification and Assessment Scheme (Australia)

NOAEL – No observed adverse effect level

NOHSC – National Occupational Health and Safety Commission (Australia)

OARS – Occupational Alliance for Risk Science (United States)

OBPR – Office of Best Practice Regulation

OSHA – Occupational Safety and Health Administration (United States)

PCBU – Person conducting a business or undertaking

Peak limitation – a maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period that does not exceed 15 minutes

PPE – Personal protective equipment

ppm – Parts per million

PwC – PricewaterhouseCoopers Consulting (Australia) Pty Limited

Regulator – for the purpose of this statement is equivalent to a work health and safety authority

SCOEL – Scientific Committee on Occupational Exposure Limits (European Union)

SME – Small and medium enterprise

STEL – Short term exposure limit

SWA – Safe Work Australia

TWA – eight-hour time-weighted average

WES – Workplace exposure standard

WES list – the list of hazardous chemicals and values within the [Workplace exposure standards for airborne contaminants](#)

WES values – the corresponding value (airborne concentration) listed with a hazardous chemical in the [Workplace exposure standards for airborne contaminants](#)

WHS – Work Health and Safety

WHS ministers – Commonwealth, state and territory ministers responsible for work health and safety

YLL – years of life lost

Appendix B: Stakeholder questions in the consultation RIS

1. Do the estimated rates of compliance with the workplace exposure standards align with your experience? Please explain.
2. Are there any particular issues that make it difficult for you to comply with the workplace exposure standards? Please provide examples.
3. Are there any other costs to your organisation relating to the workplace exposure standards framework not discussed here?
4. If there is not an Australian workplace exposure standard available for a particular chemical, how do you manage the risk of exposure? Please describe.
5. Are there other options that could be considered to achieve the government's objectives? Please provide details.
6. Are there any practical issues to consider in relation to any of the proposed options? Please provide examples.
7. Would making the workplace exposure standards advisory (rather than mandatory) lead to changes in the level of compliance in your industry? Please explain.
8. Beyond these options, what else could be done to help your business understand and comply with the workplace exposure standards?
9. What impact, if any, would the proposed name change from 'workplace exposure standard' to 'workplace exposure limit' have on your organisation?
10. Please provide details of the types of costs that are incurred by your organisation when a WES value is updated. For example, do you update any policies or procedures to reflect changes in the WES value?
11. Survey respondents indicated that, on average, a quarter of their control costs are directly attributable to the current workplace exposure standards framework. Is this consistent with your experience? Please provide details.
12. Are there any other significant regulatory costs that you incur because of the workplace exposure standards that have not been included in the Consultation RIS?
13. Do you think awareness of the workplace exposure standards will improve if they are updated more frequently? Please explain.
14. What impact would more frequent updating of the workplace exposure standards have on your organisation? In your response, please consider the possible addition of the chemicals listed in Appendix C.
15. To understand and implement option 2, what would this cost your business or organisation?
16. What benefits would option 2 provide for your business or organisation, and community?
17. To understand and implement option 3, what would this cost your business or organisation?
18. What benefits would option 3 provide for your business or organisation, and community?
19. If workplace exposure standards were advisory (rather than mandatory), would your business continue to seek information or guidance from a WHS regulator?
20. For each option are there any other costs, benefits and/or unintended impacts which have not been considered in this Consultation RIS? Please provide details.

21. Do you have anything further you would like to add as part of this process?

Demographic questions

22. Are you a:

- a. Business
- b. Individual
- c. WHS Regulator
- d. Other (please specify)

23. In which states or territories do you or this business reside? (select all that are relevant)

- a. NSW
- b. VIC
- c. QLD
- d. WA
- e. SA
- f. TAS
- g. NT
- h. ACT

24. If you identify as a business, in what industry sector³⁹ does this business operate?

- a. Agriculture, forestry & fishing
- b. Mining
- c. Manufacturing
- d. Electricity, gas, water and waste services
- e. Construction
- f. Wholesale trade
- g. Retail trade
- h. Accommodation and food services;
- i. Transport, postal and warehousing
- j. Information media and telecommunications
- k. Finance and insurance services
- l. Rental, hiring and real estate services
- m. Professional, scientific and technical services
- n. Administrative and support services
- o. Public administration and safety
- p. Education and training
- q. Health care and social assistance

³⁹ These classifications are derived from the Australian Bureau of Statistics. For more information about the meaning and coverage of each of the classifications, click on the following link:
<http://www.abs.gov.au/ausstats/abs@.nsf/0/20C5B5A4F46DF95BCA25711F00146D75?opendocument>

- r. Arts and recreation services
- s. Other services (please specify)
- t. Unsure

25. If you identify as a business, how many people are currently:

- a. employed by this business (include anyone paid a wage, salary or retainer), and
- b. do work for this business (include other workers such as contractors or sub-contractors, volunteers or non-salaried directors).

Publishing your submission

26. Do you agree for your submission to this consultation RIS to be published on the Safe Work Australia website?

- a. Yes
- b. Yes, but wish to remain anonymous
- c. No

Further consultation

27. Would you like to participate in a targeted interview and further discuss your submission or the proposed changes to the regulatory framework?

- a. Yes, please provide your preferred contact email
- b. No

Appendix C: Summary of key points from stakeholder submissions to the consultation RIS, by state and territory representation

| Jurisdiction | Key points |
|---------------------------------|---|
| NSW | <ul style="list-style-type: none"> • Large organisations have more awareness and compliance with workplace exposure standards. • Provision of guidance material. • Adequate stakeholder consultation required. • Transitional time important to manage any practical and financial impacts. • Support an update to workplace exposure standards and mandatory status. |
| QLD | <ul style="list-style-type: none"> • Support an update to workplace exposure standards and mandatory status. • Support from one stakeholder to maintain the status quo. • Name change to Limit supported to follow internationally and industry used terminology and more compatibility to their meaning • Compliance can be driven by budget capabilities. • Any information needs to be user friendly for SME. • Adequate stakeholder consultation required. • Detailed guidance and education material required. • Transitional time important to manage any practical and financial impacts. |
| VIC | <ul style="list-style-type: none"> • Concern regarding the status quo in keeping up with change scientific knowledge. • Support mandatory status and updating WES values. |
| SA | <ul style="list-style-type: none"> • Small business sector often operate in isolation and have limited internal capability or awareness of managing hazardous chemicals. • Advisory likely to result in reduced compliance, with cost being a significant deterrent. • Greater access to resources from regulators is required. |
| WA | <ul style="list-style-type: none"> • WES values need updating regularly to keep in line with current scientific knowledge. • Communication and provision of information on workplace exposure standards to regulators and business, particularly SME. • Realistic transitional time important. • Support mandatory workplace exposure standards. |
| All jurisdiction representative | <ul style="list-style-type: none"> • Specific and targeted communication strategy to ensure risks can be managed and compliance achieved. • Option 2 will result in decreased exposure related disease and was supported by the majority. • Most indicated that advisory standards would result in reduced compliance. • Using the word 'limit' is a clearer representation of workplace exposure standards, with the majority supporting the name change. • Majority supported mandatory status. • Comprehensive stakeholder engagement required. • Better guidance, education and supporting material is required. • Transitional time important to manage any practical and financial impacts. |

Appendix D: Methodology for estimating the baseline regulatory burden

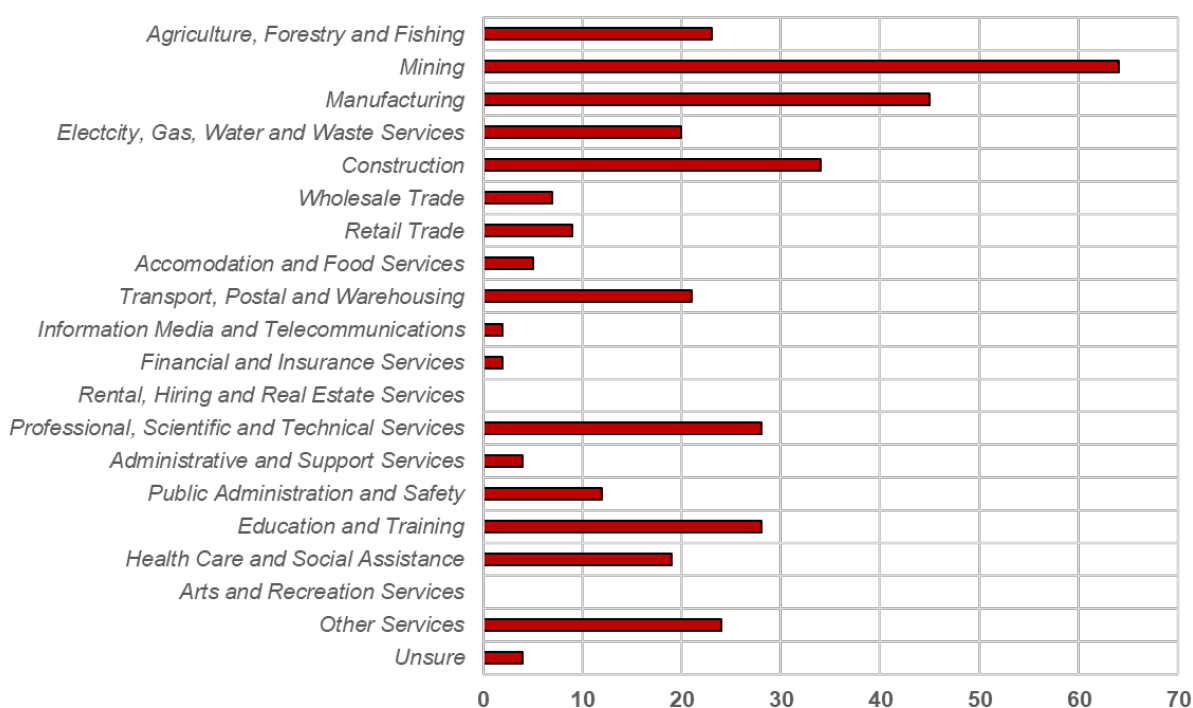
The results of the business survey to duty holders on their use of the current workplace exposure standards have been used as the main source of data for this analysis.

The business survey was delivered to approximately 12,000 businesses across Australia included in Safe Work Australia's relevant subscriber mailing lists. The survey was also circulated on Safe Work Australia's social media networks including, LinkedIn and Facebook.

There were 240 completed responses recorded, with 32 of the responses from small business, 73 from medium business and 135 from large business. This sample may not be representative of the general business landscape in Australia given small and medium sized enterprises (SME's) account for approximately 50 per cent of the total business counts in Australia.

Based on the results of the business survey, the majority of survey respondents operate in the mining, construction and manufacturing industries, as illustrated in Figure 6. Several respondents also operate in the professional, technical and scientific services, agricultural, and education and training industries.

Figure 6: Summary of survey response counts by industry



The business survey sought information on the types of controls each duty holder uses to protect workers from exposure to hazardous chemicals. Specifically in relation to controls, the survey sought data on:

- purchase costs of controls
- expected life of controls, and
- annual operating cost of controls.

In the case of administrative controls, the survey sought information on how many staff at the business were responsible for the development of workplace policy for managing exposure to hazardous chemicals, as well as the annual per hour commitment each staff member dedicated to the development of such policy.

Furthermore, the business survey sought information on whether the duty holder utilised air monitoring or occupational hygienists, how frequently these services were used in a year, and the annual cost incurred by the duty holder in using each of these services.

In addition to the data provided by the business survey, information from the Australian Bureau of Statistics (ABS) has also been utilised in order to estimate the total count of businesses in Australia that use the workplace exposure standards. These business counts are segmented by business size, which was defined according to ABS definitions:

- small business is a business with less than or equal to 20 employees
- medium business is a business with between 20 and 200 employees, and
- large business is a business with 200 or more employees.

Affected parties

For the purpose of assessing the baseline regulatory burden of the current workplace exposure standards framework, the only parties identified as incurring any significant cost in complying with the workplace exposure standards are duty holders.

The impact on duty holders in complying with the current standards has been assessed generally across all industries. Where the general scenario is not applicable, the impact has been assessed by specific industry.

Average annual cost per control and management practice

In order to determine the Australia-wide impact of the current workplace exposure standards framework on duty holders, the average annual spend on each control and management practice per business, by business size, has been determined.

The type of controls and management practices, and the corresponding cost data collected are summarised below.

Isolation controls

Isolation controls are used to separate people from the chemicals or hazards via the use of barriers or other separation equipment. Four types of isolation controls have been considered in estimating the regulatory burden of the workplace exposure standards and include:

- enclosed systems
- placing part or all of a process within an enclosure which may also be fitted with exhaust extraction to remove contaminants
- isolating processes in one room with access restricted to properly protected personnel, and
- other isolation controls.

For each of these controls, survey respondents were asked to provide information on the purchase cost of the control equipment, the expected life of the equipment and the annual operating cost of the equipment.

The results of the business survey indicate that of the different types of isolation controls, exhaust extraction equipment places the largest cost on businesses of all size. Survey respondents from large business indicate that they spend on average over \$1 million each year on the use of extraction equipment to manage exposure to hazardous chemicals in the workplace. Survey respondents from small or medium business indicated that they spend on average approximately \$5,600 and \$26,600 per annum on the use of extraction equipment, respectively.

Table 4 summarises the costing data for isolation controls received from respondents to the Business Survey.

Table 4: Summary of costs for isolation controls

| | Business Size | Survey count of businesses using control | Average purchase cost | Average life of equipment | Average annual operating cost |
|----------------------------|----------------------|---|------------------------------|----------------------------------|--------------------------------------|
| Enclosed systems | Small | 7 | \$1,833 | 7 | \$767 |
| | Medium | 10 | \$44,020 | 11 | \$25,000 |
| | Large | 41 | \$1,213,150 | 16 | \$138,300 |
| Exhaust extraction | Small | 6 | \$13,875 | 10 | \$4,300 |
| | Medium | 21 | \$67,778 | 17 | \$22,500 |
| | Large | 70 | \$1,516,867 | 9 | \$889,503 |
| Isolating processes | Small | 7 | N/A | N/A | \$2,383 |
| | Medium | 23 | N/A | N/A | \$12,673 |
| | Large | 60 | N/A | N/A | \$515,615 |
| Other | Small | 4 | \$1,667 | 10 | * |
| | Medium | 3 | * | 10 | \$1,667 |
| | Large | 17 | \$21,500 | 15 | \$30,111 |

*Data absent due to no responses.

Note that survey respondents were not asked to provide any information relating to the purchase cost or expected life of isolating processes.

Engineering controls

Engineering controls are mechanical devices or processes that suppress or contain chemicals, or limit the area of contamination in the event of spills or leaks. Five types of engineering controls have been considered in estimating the regulatory burden of the workplace exposure standards and include:

- fully-enclosed ventilation booths
- partially-enclosed and ventilated spray booths or fume cupboards
- robotics to minimise operator exposure
- local exhaust ventilation, and
- other engineering controls.

For each of these controls, business survey respondents were asked to provide information on the purchase cost of the control equipment, the expected life of the equipment and the annual operating cost of the equipment.

Table 5 summarises the costing information received from survey respondents. Large businesses that participated in the business survey tend to use engineering controls more frequently than small and medium business. The costs incurred by large business in using this type of control are also relatively large. Large business spend on average over \$1.3 million each year on the use of robotics to control for exposure to hazardous chemicals in the workplace.

Table 5: Summary of costs for engineering controls

| | Business Size | Survey count of businesses using control | Average purchase cost | Average life of equipment | Average annual operating cost |
|---|----------------------|---|------------------------------|----------------------------------|--------------------------------------|
| Fully-enclosed vent booth | Small | 5 | \$0 | 10 | \$0 |
| | Medium | 7 | \$23,000 | 8 | \$2,000 |
| | Large | 33 | \$22,533 | 14 | \$9,171 |
| Partially-enclosed fume cupboard | Small | 5 | \$2,500 | 10 | \$100 |
| | Medium | 14 | \$23,438 | 11 | \$18,763 |
| | Large | 57 | \$340,643 | 13 | \$86,679 |
| Robotics | Small | 1 | N/A | N/A | N/A |
| | Medium | 1 | N/A | N/A | N/A |
| | Large | 19 | \$2,968,333 | 13 | \$1,087,667 |
| Local exhaust ventilation | Small | 8 | \$13,000 | 9 | \$2,967 |
| | Medium | 37 | \$6,974 | 9 | \$5,215 |
| | Large | 90 | \$1,140,457 | 11 | \$666,083 |
| Other | Small | 3 | \$150,000 | 20 | * |
| | Medium | 12 | \$57,100 | 12 | \$6,900 |
| | Large | 15 | \$2,732,300 | 6 | \$1,219,350 |

*Data absent due to no responses.

Administrative controls

Administrative controls relate to the use or development of specific work policy or training. These policies would aim to reduce the amount of time a worker is exposed to a hazardous chemical, reduce the frequency of exposure to a hazardous chemical and to inform workers on how to handle hazardous chemicals or to use equipment.

Five types of administrative controls have been considered in estimating the regulatory burden of the workplace exposure standards and include:

- written work policies and procedures
- reducing the number of workers exposed to chemicals or substances
- reducing the duration and frequency of workers' exposure through specific work procedures
- reducing quantities of hazardous chemicals through inventory reduction, and
- other administrative controls not specified.

Given the challenges in quantifying the costs associated with the development and use of administrative controls, the business survey sought costing information only for written work policies and procedures. In order to quantify the costs associated with developing written work policies and procedures, business survey respondents were asked to provide information on the number of workers responsible at the business for the development of these policies and the annual number of hours each of these workers took to develop the policies.

Table 6 summarises this costing information by business size. In order to determine the average annual cost to business, it is assumed that each worker regardless of business size earns the average weekly wage across all industries⁴⁰.

⁴⁰ Based on Australian Bureau of Statistics (2017), the average weekly earnings across all industries and age groups is \$1,230.70.

Table 6: Summary of costs for administrative controls

| | Business Size | Survey count of businesses using control | Average number of admin persons | Average number of hours spent on WES admin | Average annual cost |
|----------------------|----------------------|---|--|---|----------------------------|
| Work policies | Small | 15 | 3 | 110 | \$11,612 |
| | Medium | 57 | 7 | 134 | \$28,859 |
| | Large | 104 | 56 | 213 | \$344,059 |

Personal protective equipment

Personal protective equipment (PPE) refers to an item used or worn to minimise risk to workers’ health and safety. Common forms of PPE are:

- chemical resistant glasses
- face shield or goggles
- respirators
- gloves, and
- long-sleeved work shirts, trousers and hats.

There are other types of PPE available that duty holders can use to protect workers from exposure to hazardous chemicals. However, only cost information on the PPE identified above was requested from business survey respondents. All other types of PPE are captured under the ‘other’ category.

Table 7 summarises the costing information sought from survey respondents on their use of PPE in the workplace. Despite being one of the lower levels of control, the majority of business survey respondents use PPE. PPE also represents, on average, the cheapest form of control for managing exposure to hazardous chemicals.

Table 7: Summary of costs for PPE

| | Business Size | Survey count of businesses using control | Average purchase cost | Average life of equipment | Average annual cost |
|---|----------------------|---|------------------------------|----------------------------------|----------------------------|
| Chemical resistant glasses | Small | 13 | \$390 | 1 | \$339 |
| | Medium | 53 | \$1,718 | 1 | \$1,354 |
| | Large | 88 | \$19,606 | 1 | \$16,221 |
| Face shield or goggles | Small | 19 | \$549 | 3 | \$172 |
| | Medium | 53 | \$1,731 | 1 | \$1,188 |
| | Large | 108 | \$12,409 | 2 | \$7,204 |
| Respirators | Small | 16 | \$746 | 2 | \$434 |
| | Medium | 57 | \$2,199 | 2 | \$1,233 |
| | Large | 104 | \$65,844 | 1 | \$47,791 |
| Gloves | Small | 20 | \$605 | 1 | \$631 |
| | Medium | 64 | \$2,232 | 1 | \$4,258 |
| | Large | 116 | \$61,233 | 0 | \$148,795 |
| Long-sleeved work shirts, trousers, hats | Small | 17 | \$5,024 | 2 | \$2,100 |
| | Medium | 56 | \$9,794 | 1 | \$6,583 |
| | Large | 107 | \$735,256 | 1 | \$513,292 |
| Other | Small | 7 | \$380 | 2 | \$173 |
| | Medium | 5 | \$650 | 1 | \$813 |
| | Large | 29 | \$169,923 | 2 | \$94,215 |

Air monitoring

Under Section 50 to the WHS Regulations, duty holders must monitor workers exposure to hazardous chemicals if there is uncertainty whether or not the workplace exposure standard has been or may be exceeded, or when it is necessary to work out whether there is a risk to health.

To estimate the costs businesses incur each year as a result of air monitoring activities, the business survey sought information on whether each survey respondent actually undertook air monitoring activities in the workplace, how frequently these activities occur (if applicable), and how much the business spends each year on these activities (if applicable). These average costs are summarised in Table 8.

Based on the business survey results, large business are the most likely to undertake air monitoring in the workplace. Small and medium size businesses are less likely to undertake air monitoring, and consequently spend less money per annum on this.

Many of the large businesses in the business survey indicated that they operate in the mining industry. Mining regulators can require mining businesses to undertake a greater degree of air monitoring than what is specified by the WHS regulations. As such, the business survey respondents that are from the mining industry and are considered large business may incur additional air monitoring costs.

Table 8: Summary of costs for air monitoring

| | Business size | Count of survey respondents using management practice | Likelihood of undertaking air monitoring | Frequency air monitoring is conducted | Average annualised cost |
|--------------------------------|---------------|---|--|---------------------------------------|-------------------------|
| Air monitoring activity | Small | 4 | 15% | Ad hoc | \$1,000 |
| | Medium | 23 | 29% | Annually | \$4,482 |
| | Large | 84 | 62% | Quarterly | \$228,224 |

Occupational hygienists

Occupational hygienists are industry professionals that can provide assistance to duty holders in preventing work-related illness and disease by assessing the work environment and monitoring exposure to hazardous chemicals. Occupational hygienists can also help duty holders develop relevant policies to manage worker exposure and educate workers as to proper handling techniques for hazardous chemicals.

To understand how much it costs duty holders to engage an occupational hygienist, the business survey sought information on whether occupational hygienists are used in the workplace, how frequently they are used (if applicable), and how much per year is spent on this service (if applicable).

These results are summarised in Table 9 and indicate that as with air monitoring activities, large business are the most likely to use an occupational hygienist.

Table 9: Summary of costs for occupational hygienists

| | Business size | Count of survey respondents using management practice | Likelihood of using an occupational hygienist | Frequency of using an occupational hygienist | Average annualised cost |
|-------------------------------|---------------|---|---|--|-------------------------|
| Occupational hygienist | Small | 9 | 35% | Annually | \$2,250 |
| | Medium | 27 | 35% | Annually | \$11,705 |
| | Large | 97 | 73% | Quarterly | \$272,225 |

Estimating the count of business in Australia that use controls for the workplace exposure standards

Table 10 summarises the list of sub-industries selected in which businesses are considered to have regular exposure to hazardous chemicals that have a workplace exposure standard. The corresponding industry and tier are also included in the table.

Table 10: Count of businesses in each tier, by industry

| Tier | Industry | Business size | Count of businesses |
|--------------|--|---------------|---------------------|
| 1 | Agriculture, Forestry and Fishing | Small | 4,005 |
| | | Medium | 338 |
| | | Large | 9 |
| | Mining | Small | 2,819 |
| | | Medium | 380 |
| | | Large | 152 |
| | Manufacturing | Small | 31,484 |
| | | Medium | 3,924 |
| | | Large | 301 |
| | Electricity, Gas, Water and Waste Services | Small | 2,158 |
| | | Medium | 205 |
| | | Large | 25 |
| Construction | Small | 142,466 | |
| | Medium | 4,218 | |
| | Large | 163 | |
| 2 | Wholesale trade, Retail trade, Accommodation and Food Services, Transport, Postal and Warehousing, Information Media and Telecommunications, Financial and Insurance Services, Professional, Scientific and Technical Services, Administrative and Support Services, Public Administration and Safety, Education and Training, Health care and Social Assistance, Arts and Recreational Services, Other Services | Small | 29,082 |
| | | Medium | 1,546 |
| | | Large | 136 |

Based on these selected industries, 223,412 businesses are assumed to have regular exposure to hazardous chemicals. Of these, 212,014 are small business, 10,611 are medium business and 786 are large business.

Not all of these 223,412 businesses are considered to be aware of the workplace exposure standards. Based on the business survey responses, approximately 22 per cent of small businesses, 14 per cent of medium businesses and 7 per cent of large businesses were not aware of the workplace exposure standards. This may be due to the business survey respondents operating in businesses where workplace exposure standards are not required, or due to a genuine unawareness of the workplace exposure standards. Given the business survey was circulated specifically to businesses that were registered on relevant hazardous chemical subscriber mailing lists; it is assumed that the latter is more likely. As such, of the above total businesses assumed to have regular exposure to hazardous chemicals, 83 per cent of small business, 85 per cent of medium business and 93 per cent of large businesses are assumed to use the workplace exposure standards regularly.

Based on these awareness assumptions, it is estimated that 175,142 small businesses, 8,979 medium businesses and 733 large businesses are using controls to comply with the current workplace exposure standards.

The total number of businesses in Australia using each control is assumed to be directly proportional to the total count of businesses that noted their use of a control in the business survey. This is segmented by business size, such that if six of the 32 small

businesses that completed the Business survey use enclosed systems in the workplace, then this proportion is applied directly to the total count of small businesses in Australia.

The use of certain controls is more prevalent in certain industries, and therefore only affect certain businesses. For example, based on the business survey results, the use of robotics is particularly prevalent in the mining industry. The relatively large estimated average annual cost of using robotics may therefore not be representative of all businesses in Australia. As such, if at least 40 per cent of business survey respondents that use a control come from the same industry, the total count of businesses in Australia that are estimated to use that control is directly proportional to the total count of businesses in that industry.

The total count of businesses in Australia using controls and the control types in use are summarised in Table 11 through to Table 14.

Table 11: Estimated count of businesses using isolation controls in Australia

| Control | Business size | Estimated count of businesses using control in Australia |
|---------------------|---------------|--|
| Enclosed systems | Small | 53,304 |
| | Medium | 3,320 |
| | Large | 224 |
| Exhaust extraction | Small | 45,689 |
| | Medium | 2,417 |
| | Large | 383 |
| Isolating processes | Small | 26,009 |
| | Medium | 2,648 |
| | Large | 328 |
| Other | Small | 30,460 |
| | Medium | 3,569 |
| | Large | 142 |

Table 12: Estimated count of businesses using engineering controls in Australia

| Control | Business size | Estimated count of businesses using control in Australia |
|----------------------------------|---------------|--|
| Fully-enclosed ventilation booth | Small | 38,074 |
| | Medium | 3,320 |
| | Large | 181 |
| Partially-enclosed fume cupboard | Small | 38,074 |
| | Medium | 1,612 |
| | Large | 312 |
| Robotics | Small | 7,615 |
| | Medium | 3,320 |
| | Large | 142 |
| Local exhaust ventilation | Small | 60,919 |
| | Medium | 4,259 |
| | Large | 493 |
| Other | Small | 22,845 |
| | Medium | 1,381 |
| | Large | 142 |

Table 13: Estimated count of businesses using administrative controls in Australia

| Control | Business size | Estimated count of businesses using control in Australia |
|----------------------|----------------------|---|
| Work policies | Small | 114,223 |
| | Medium | 6,561 |
| | Large | 569 |

Table 14: Estimated count of businesses using PPE in Australia

| Control | Business size | Estimated count of businesses using control in Australia |
|---|----------------------|---|
| Chemical resistance glasses | Small | 98,993 |
| | Medium | 6,101 |
| | Large | 482 |
| Face shield or goggles | Small | 144,683 |
| | Medium | 6,101 |
| | Large | 591 |
| Respirators | Small | 121,838 |
| | Medium | 6,561 |
| | Large | 569 |
| Gloves | Small | 152,298 |
| | Medium | 7,367 |
| | Large | 635 |
| Long-sleeved work shirts, trousers, hats | Small | 129,453 |
| | Medium | 6,446 |
| | Large | 586 |
| Other | Small | 53,304 |
| | Medium | 576 |
| | Large | 159 |

The average count of businesses using each control type in Australia is summarised in Table 15.

Table 15: Summary of average estimated counts of businesses in Australia using controls

| Control type / Management practice | Business size | Average count of businesses using control in Australia |
|------------------------------------|---------------|--|
| Isolation | Small | 38,865 |
| | Medium | 2,989 |
| | Large | 269 |
| Engineering | Small | 33,505 |
| | Medium | 2,779 |
| | Large | 254 |
| Administrative | Small | 114,223 |
| | Medium | 6,561 |
| | Large | 569 |
| PPE | Small | 116,761 |
| | Medium | 5,525 |
| | Large | 504 |
| Air monitoring | Small | 13,472 |
| | Medium | 1,324 |
| | Large | 227 |
| Occupational hygienists | Small | 30,313 |
| | Medium | 1,554 |
| | Large | 265 |

Calculating the baseline regulatory burden

To estimate the baseline regulatory burden the current workplace exposure standards place upon community, a series of weighted-averages have been calculated.

Weighted-average cost of each control type

Firstly, a weighted-average cost per business size for each control type has been calculated. For each control type, the total number of controls being used in aggregate for each business size has been calculated.

For each control type (isolation, engineering, administrative, PPE) and the management practice of air monitoring and occupational hygienist services, the total number being used is aggregated for each business size. For example, the total number of isolation controls used by small businesses equals the sum of the number of small businesses using each of the isolation controls.

Using these aggregated counts of the number of each business size that uses each control type and management practice, a weighted cost for each is calculated. For example, the average annual cost a small business is estimated to incur in using enclosed systems is \$1,029, with the total number of small businesses using this control estimated to be 53,304. With small business estimated to use 155,461 isolation controls across Australia, the weighted-cost of the control is:

$$\$1,029 \times \frac{53,304}{155,461} = \$353$$

This weighted-cost is reflective of the fact that only approximately one-quarter of small businesses use enclosed systems. A weighted-cost is calculated for each control in each control type for each business size.

The weighed-average cost for each business size to use each control type is calculated as the sum of each weighted-cost of each control. For example, the weighted-average cost of a small business to use an isolation control is \$2,446, which is the sum of the weighted-costs of using enclosed systems, exhaust extraction infrastructure, isolating processes and other isolation controls.

Weighted-average control cost for each business size

With the weighted-average annual cost in using each control type calculated, a weighted-average cost per business size in using controls is then calculated. Table 15 summarises the weighted-average costs attributable to the workplace exposure standards for each business size and control type.

Firstly, the average number of businesses per business size is calculated for each control type. This figure is then divided by the total number of businesses per business size that is estimated to face regular exposure to hazardous chemicals. This proportion is multiplied by the weighted-average annual cost per business size in using each control to calculate the weighted-cost per business size in using that particular control type.

For example, an average of 38,865 small businesses use isolation controls. This represents approximately 22 per cent of all small businesses expected to face regular exposure to hazardous chemicals in the workplace. This proportion is then applied to the weighted-average cost for a small business to use an isolation control of \$2,446 to give a weighted-cost of approximately \$543. This calculation is performed for each control type and management practice, with each weighted-cost added to estimate the total weighted-average cost of a small business to use a control or management practice.

Whilst survey respondents indicated 25 per cent of these control and management practice costs are attributable to the workplace exposure standards, further consultation following the release of the Consultation RIS indicated this was an over-estimation. Stakeholders noted that 15 per cent was a more appropriate allocation of costs to the WES. Each weighted-average cost for each business is adjusted to reflect this 15 per cent cost attribution.

These adjusted weighted-average costs are then multiplied by the total number of businesses expected to use the workplace exposure standards, producing the final baseline regulatory burden figure of approximately \$402 million per annum.

Table 16: Weighted-average costs of controls and management practices attributable to the workplace exposure standards

| Control type / Management practice | Business size | Weighted-average cost of control and management practice based on number of businesses using controls within control type | Weighted-average cost of control and management practice based on number of businesses using control type | Estimated cost attributable to the workplace exposure standards per business |
|------------------------------------|---------------|---|---|--|
| Isolation | Small | \$2,446 | \$543 | \$81 |
| | Medium | \$16,793 | \$5,590 | \$838 |
| | Large | \$584,626 | \$214,767 | \$32,215 |
| Engineering | Small | \$2,688 | \$514 | \$77 |
| | Medium | \$6,578 | \$2,036 | \$305 |
| | Large | \$613,837 | \$212,377 | \$31,856 |
| Administrative | Small | \$11,612 | \$7,573 | \$1,136 |
| | Medium | \$28,859 | \$21,089 | \$3,163 |
| | Large | \$344,059 | \$267,031 | \$40,055 |

| Control type / Management practice | Business size | Weighted-average cost of control and management practice based on number of businesses using controls within control type | Weighted-average cost of control and management practice based on number of businesses using control type | Estimated cost attributable to the workplace exposure standards per business |
|---|----------------------|--|--|---|
| PPE | Small | \$697 | \$465 | \$70 |
| | Medium | \$2,952 | \$1,817 | \$272 |
| | Large | \$148,715 | \$267,031 | \$15,315 |
| Air monitoring | Small | \$1,000 | \$77 | \$12 |
| | Medium | \$4,482 | \$661 | \$99 |
| | Large | \$228,224 | \$70,681 | \$10,602 |
| Occupational hygienist | Small | \$2,250 | \$389 | \$58 |
| | Medium | \$11,705 | \$2,026 | \$304 |
| | Large | \$272,225 | \$98,529 | \$14,779 |

Appendix E: Developing preliminary cost estimates for the impact on duty holders from adoption of option 2

Option 2 is expected to cause some duty holders to experience an increase in annual compliance costs, particularly where a WES value is significantly reduced (i.e. lower value), or if a new hazardous chemical and the associated WES value is added to the WES list. A significantly reduced or new workplace exposure standard may require duty holders to implement additional or higher level controls, thus increasing costs.

Further, changes to WES values that are more frequent can also result in duty holders incurring additional administrative costs related to understanding the changes made to the workplace exposure standards.

The evaluation of the workplace exposure standards using the streamlined methodology are not completed and the specific changes to the WES values or WES list are unknown at this stage. Therefore, an indicative analysis has been undertaken to assess the potential cost impacts of changes to outdated WES values on duty holders.

Two hypothetical scenarios have been considered to illustrate the range of potential impacts:

1. Low case scenario – the changes to the WES values are less significant (i.e. the new values are not significantly different to the current values), resulting in a small proportion of duty holders needing to change procedures in order to comply with an updated WES value or a new workplace exposure standard added to the WES list.
2. High case scenario – the changes to the WES values are more significant (i.e. the new values are significantly different to the current values), resulting in most duty holders needing to change procedures in order to comply with an updated WES value or a new workplace exposure standard added to the WES list.

This appendix sets out the approach to estimating costs to duty holders in both scenarios.

General approach

In considering the impact on duty holders, three key variables can influence outcomes:

- the changes to the workplace exposure standards once evaluated
- the number of businesses using the updated WES values and new workplace exposure standards, and
- the impacts of the change on business—noting in many instances businesses may have already invested in control measures for best practice or to comply with other procedures, such as international or internal standards; therefore, no additional investment will be required.

While the key variables driving duty holders cost impact are known, the potential outcomes for each impact are broad and challenging to predict in advance of the specific evaluation outcomes for individual workplace exposure standards.

To respond to the need to explore the cost to duty holders and the uncertainty regarding the impact of the changes, a series of assumptions supporting a narrative around the impact has been developed, building on the work to date⁴¹.

At a high level, the sources of our estimates of cost impacts to duty holders are outlined below.

- A. **Timing:** Through the adoption of the preferred option, the review of the workplace exposure standards is brought forward to 2023 with a three year transition period, starting in 2020.

⁴¹ Discussion paper, consultation RIS and business survey.

- B. **Changes to the workplace exposure standards:** The review of the workplace exposure standards results in changes to 423 standards, based on a preliminary analysis that indicated:
- a. 40 per cent (251) of the WES values may be outdated and would potentially be changed should the streamlined methodology be introduced
 - b. 13 per cent (94) of the workplace exposure standards are likely to require a new parameter, and
 - c. 78 new chemicals identified to be added to the existing WES list.
- C. **Business response 1:** Businesses only respond to the workplace exposure standards where compliance requirements have increased (to be conservative in estimating costs).
- D. **Business response 2:** Businesses respond to the change to the workplace exposure standards by:
- a. investing in higher order controls (e.g. isolation controls, engineering controls) and/or
 - b. by increasing the use of lower order controls (PPE) and air monitoring to assess workers' exposure.

The duty holders' response to changes to WES values is expected to differ based on business size.

The remainder of this appendix outlines:

- how estimates for the costs related to point D above are developed, with the low case and high case scenarios illustrating the range of potential cost impacts on duty holders, and
- application of the estimated response to the WES value change to a calculation of high and low case cost estimates using the business survey data.

Developing assumptions for how businesses respond to increased compliance requirements

How duty holders may respond to changes to the workplace exposure standards can be estimated by considering how different business sizes consider and implement the hierarchy of controls.

- The *hierarchy of controls* represents how duty holders must control risks of exposure to hazardous chemicals under the model WHS laws. Should a WES value be significantly reduced or a new workplace exposure standard is introduced, it is likely that higher order controls are needed to meet compliance requirements. Management practices such as air monitoring and the use of an occupational hygienist is likely to increase as duty holders check the effectiveness of new or modified control measures.
- *Business size* has influence on the complexity of WHS operations and the ability to invest in different approaches to comply with workplace exposure standards. For example, the business survey indicated that large business tend to use more complex, expensive or resource intensive controls.

The following hypotheses have been developed for how businesses of different sizes are likely to respond to significantly reduced WES values or new workplace exposure standards:

- **Small business:**
 - likely to be more reluctant to invest in expensive, higher level controls such as isolation controls

- likely to increase their use of lower order controls such as PPE, and
- likely to support changes to control measures with management practices such as air monitoring.
- **Medium sized businesses:**
 - likely to strike a balance between investments in control measures and management practices.
- **Large businesses:**
 - likely to invest in higher order controls, as their scale enables them to do so in a more cost effective way, and
 - likely to have management practices already in place and therefore will not need to expand their efforts in this area.

These hypotheses have been applied to develop the low and high case estimates in conjunction with information from the business survey about annual costs to business.

Assumptions for increased use of controls

Table 17 below provides an example of how the estimates have been developed, and considers the use of isolation and engineering controls.

Based on hypotheses about the behaviour of different sized businesses, assumptions were developed for the anticipated response to significantly reduced WES values and new workplace exposure standards. The starting point is the combination of controls used (on average) by businesses of different sizes:

- in the low case, by business size, there is little change assumed except for large businesses, and
- in the high case, it is assumed businesses of many sizes change their behaviour.

Table 17 details the assumptions used in the low and the high case scenarios.

The assumptions in Table 17 were used to calculate part of the cost impact in combination with the results of the business survey. The cost impact was estimated by applying the weighted average annual cost of controls (see Table 15 and Table 16 in Appendix D) by the business size and multiplying this by the increase in use of controls by business size.

Table 17. Assumptions on how businesses will invest in isolation and engineering controls in response to a change in WES value (by business size)

| | Control group | Current state: share of businesses using a control | Current state: average number of controls used* | Survey structure: maximum number of controls | Low case worked example: intensification of use of controls for large business only | High case worked example: intensification of use of controls for all businesses across isolation controls and engineering controls |
|---------------------------------|----------------------|--|---|--|---|---|
| Small (1 WES value change) | Isolation controls | 54% | 1.7 | 3 | <i>No change</i> In the low case, the assumption is that small businesses do not increase the number of isolation controls | <i>Controls in use increase by 1</i> In the high case, the assumption is that the 54% of small businesses using a control from this group in scope for the workplace exposure standards increase the use of controls by 1. |
| | Engineering controls | 46% | 1.8 | 4 | <i>No change</i> In the low case, the assumption is that small businesses do not increase the number of engineering controls | <i>Controls in use increase by 1</i> In the high case, the assumption is that the 46% of small businesses using a control from this group in scope for the workplace exposure standards increase the use of controls by 1. |
| Medium (5 WES values change) | Isolation controls | 47% | 1.5 | 3 | <i>No change</i> In the low case, the assumption is that medium businesses do not increase the number of isolation controls | <i>Controls in use increase by 1</i> In the high case, the assumption is that the 47% of medium businesses using a control from this group in scope for the workplace exposure standards increase the use of controls by 1. |
| | Engineering controls | 65% | 1.4 | 4 | <i>No change</i> In the low case, the assumption is that medium businesses do not increase the number of engineering controls | <i>Controls in use increase by 1</i> In the high case, the assumption is that the 65% of medium businesses using a control from this group in scope for the workplace exposure standards increase the use of controls by 1. |
| Large (21 WES values change) | Isolation controls | 66% | 2.1 | 3 | <i>Controls in use increase by 0.25</i> In the low case, the assumption that for the cohort of 66% of large businesses using a control from this group, one in four in scope for the workplace exposure standards increase the use of controls by 1. | <i>Controls in use increase by 1</i> In the high case, the assumption that the 66% of large businesses using a control from this group in scope for the workplace exposure standards increase the use of controls by 1. |
| | Engineering controls | 80% | 2.0 | 4 | <i>Controls in use increase by 0.25</i> In the low case, the assumption that of the 80% of large businesses using a control from this group, one in four in scope for the workplace exposure standards increase the use of controls by 1. | <i>Controls in use increase by 1</i> In the high case, the assumption that the 80% of large businesses using a control from this group in scope for the workplace exposure standards increase the use of controls by 1. |

Assumptions for increased use of PPE by small business

The hypotheses about how different business sizes respond to significantly reduced WES values and new workplace exposure standards is continued with PPE. Currently, there is a high use of this control measure by medium and large business, with 85 per cent and 90 per cent uptake respectively in the business survey. Therefore, in combination with the expectation that higher level control measures will be implemented, no increase in the use of PPE is expected for medium and large business.

By contrast, it is hypothesised that small business will be reluctant to invest in higher level control measures, and will prefer to increase their use of PPE and management practices. While the use of PPE by small business was high (81 per cent), the business survey and consultation feedback suggests that small business tend to rely on cheaper and less protective PPE such as, P1 dust masks.

For the estimate development, an assumption is made that small business will respond to significantly reduced and new workplace exposure standards by investing in P2 or higher respirators, a more expensive intervention. This assumption has two elements:

- a share of the ~39 per cent of small business that currently use respiratory protection will invest in a more expensive and protective model to comply with the change; upgrading from the weighted average annual cost for small business of \$465⁴² to a model that costs \$1,367.70⁴³, equating to an increase in spend of \$932.20, and
- a share of the ~61 per cent of small business that currently do not use a respirator will invest in one, at the weighted average cost of \$434.50⁴⁴.

Table 18 shows the assumptions used in the high and low case for the share of small business using and not currently using respirators that are expected to invest because of significantly reduced WES values and new workplace exposure standards.

Table 18. Assumptions for small business investment in respirators due to changed WES values or new workplace exposure standards

| | Low case (%) | High case (%) |
|--|---------------------|--------------------|
| Share of small businesses currently using respirators that upgrade | 25 % or one in four | 50 % or one in two |
| Share of small businesses not currently using respirators that invest | 25 % or one in four | 50 % or one in two |

Assumptions for increased use of air monitoring and occupational hygienists

The hypotheses about how different business sizes respond to significantly reduced WES values or new workplace exposure standards is continued with management practices – both air monitoring and use of occupational hygienists.

As discussed earlier, the business survey indicated that large business already have high rates of adoption of these management practices, so the assumptions focus on medium and small business.

Assumptions about the share of businesses using these management practices was the basis for translating the change in behaviour to the low and high cases. This is set out in

⁴² As outlined in Appendix D, estimated average annual costs by business size range have been developed from the survey.

⁴³ As outlined in Appendix D, survey respondents reported their costs. This cost estimate has been developed using the weighted average of the top 25 per cent of respirator prices quoted by business survey respondents.

⁴⁴ As outlined in Appendix D, estimated average annual costs by business size range have been developed from the business survey.

Table 19, which details the current use patterns as reflected in the business survey, and assumptions about the change under the cases.

Table 19. Increase in share of businesses using air monitoring and occupational hygienists, by business size range

| % | Air monitoring (at any frequency) | | | Occupational hygienists (at any frequency) | | |
|---------------|---|---------------------------|----------------------------|--|---------------------------|----------------------------|
| | Survey share of businesses using air monitoring | Low case – proposed share | High case – proposed share | Survey share of businesses using occupational hygienists | Low case – proposed share | High case – proposed share |
| Small | 15 | 25 | 60 | 35 | 45 | 80 |
| Medium | 28 | 33 | 78 | 35 | 40 | 85 |
| Large | 60 | 62 | 80 | 70 | 72 | 75 |

The interpretation of the data in Table 19 is as follows. For air monitoring, the business survey shows that this practice is currently used by 15 per cent of small businesses. In the low case, the assumption is that the share increases by 10 per cent to 25 percent, and in the high case, that the share increases by 45 per cent to 60 per cent.

The assumptions in Table 19 were used to calculate part of the cost impact in combination with the business survey. This was done by applying the average annual cost of air monitoring controls and the use of occupational hygienists (see Table 8 and Table 9) by business size and multiplying this by the increase in use of controls by business size.

Calculating the impact on business in the low and high case

Table 20 summarises the assumptions made about the response by business to significantly reduced WES values relating to controls and management practices. This is the consolidated set of assumptions that informs the development of low and high case scenario cost impact estimates.

Table 20. Consolidated assumptions by business size

| Size | Response | Low case assumption | High case assumption |
|--------------|---|---|--|
| Small | Isolation controls | No change: <i>in the low case, the assumption is that small businesses do not increase the number of isolation controls</i> | No change: <i>in the high case, the assumption is that small business do not increase the number of isolation controls</i> |
| | Engineering controls | No change: <i>in the low case, the assumption is that small business do not increase the number of engineering controls</i> | No change: <i>in the high case, the assumption is that small business do not increase the number of engineering controls</i> |
| | Share of small businesses currently using respirators that upgrade | 25 % – or one in four | 50 % – or one in two |
| | Share of small businesses not currently using respirators that invest | 25 % – or one in four | 50 % – or one in two |

| Size | Response | Low case assumption | High case assumption |
|--------|-------------------------|---|--|
| | Air monitoring | 25% | 60% |
| | Occupational hygienists | 45% | 80% |
| Medium | Isolation controls | No change: <i>in the low case, the assumption is that medium business do not increase the number of isolation controls</i> | Controls in use increase by 1: <i>in the high case, the assumption is that the 47% of medium business using a control from this group in scope for the workplace exposure standards increase the use of controls by 1.</i> |
| | Engineering controls | No change: <i>in the low case, the assumption is that medium business do not increase the number of engineering controls</i> | Controls in use increase by 1: <i>in the high case, the assumption is that the 65% of medium business using a control from this group in scope for the workplace exposure standards increase the use of controls by 1.</i> |
| | Air monitoring | 33% | 78% |
| | Occupational hygienists | 40% | 85% |
| Large | Isolation controls | Controls in use increase by 0.25: <i>in the low case, the assumption that for the cohort of 66% of large business using a control from this group, one in four in scope for the workplace exposure standards increase the use of controls by 1.</i> | Controls in use increase by 1: <i>in the high case, the assumption that the 66% of large business using a control from this group in scope for the workplace exposure standards increase the use of controls by 1.</i> |
| | Engineering controls | Controls in use increase by 0.25: <i>in the low case, the assumption that for the cohort of 80% of large business using a control from this group, one in four in scope for the workplace exposure standards increase the use of controls by 1.</i> | Controls in use increase by 1: <i>in the high case, the assumption is that the 65% of medium businesses using a control from this group in scope for the workplace exposure standards increase the use of controls by 1.</i> |
| | Air monitoring | 62% | 80% |
| | Occupational hygienists | 72% | 75% |

The assumptions summarised in Table 20 for the responses by different sized businesses in the low and high case are costed using the:

- annual cost estimates from the business survey; specifically Table 4, Table 5, Table 6, Table 7, Table 8 and Table 9, and
- number of businesses in each size range that are impacted by the workplace exposure standards; as detailed in Table 10, which is used to model the scale of the response.

In addition, the assumptions around timing are applied as follows:

- the changes are implemented in 2023, and
- there is a three year transitional period commencing 2020.

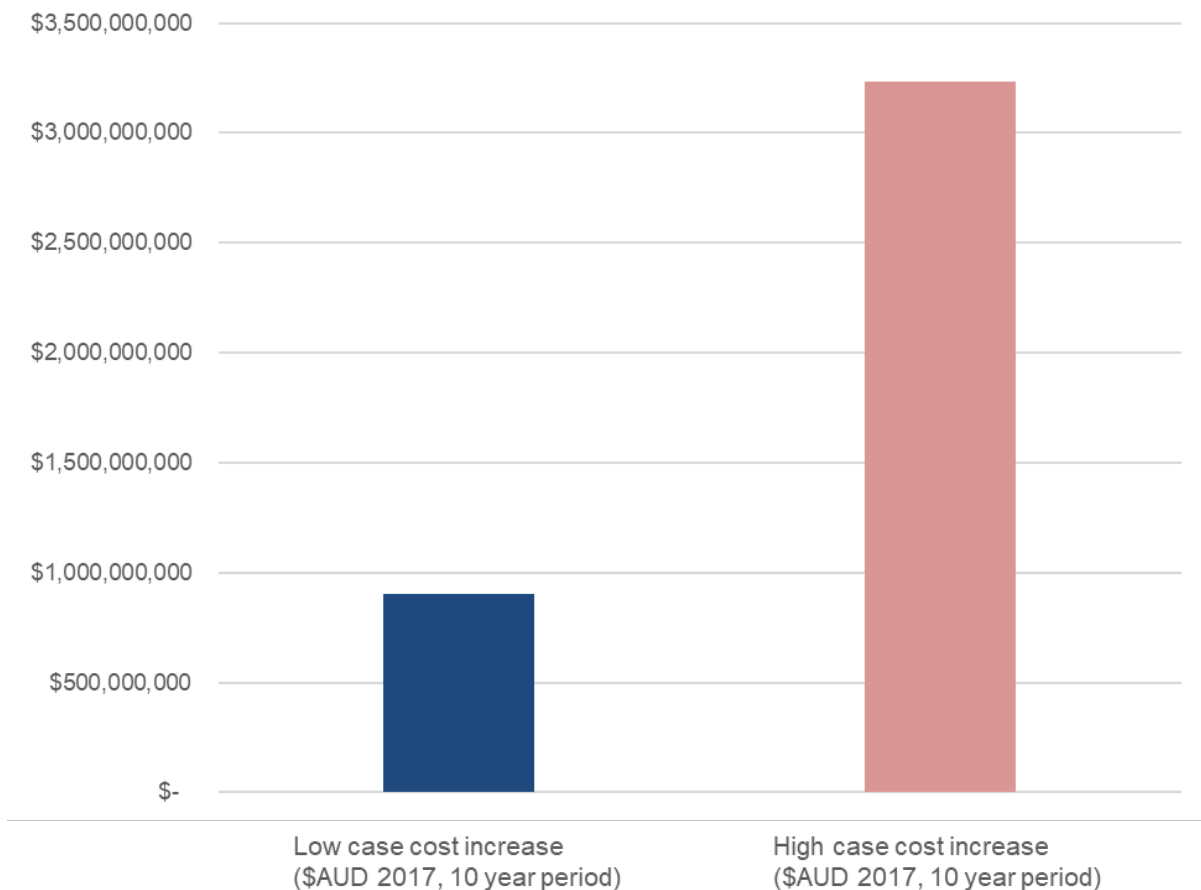
During the three year transitional period, it is assumed businesses transition to the investments they will make in the new arrangements evenly. This models real world behaviour where businesses re-invest in equipment as existing equipment comes to the end of its useful life, and consider the future requirements the equipment will need to address. These timelines are illustrated in Figure 6, alongside the 10 year analysis period adopted in line with OBPR guidance.

Figure 6. Business response to workplace exposure standard change – timing across financial years



The estimated cost impact to businesses in the low and high case scenarios is illustrated in Figure 7. In the low case scenario, cost increases are indicatively estimated at around \$900 million, and in the high case scenario the cost increases are indicatively estimated at around \$3,231 million over 10 years. The range of close to \$2.5 billion over 10 years between the low and high scenario cost impact estimate illustrates the sensitivity of the analysis to various assumptions.

Figure 7. Modelled impact to business over 10 years, low and high cost estimates



It is important to note that the cost impact estimates developed are just two of a range of potential outcomes. The true impacts will depend on the:

- changes to the workplace exposure standards
- number of businesses affected, and
- cost of complying with the new workplace exposure standards.

Appendix F: Costings for the current review process and the streamlined methodology

To estimate the costs incurred by Safe Work Australia in using the current review process and the streamlined methodology, PricewaterhouseCoopers and Safe Work Australia undertook a costing workshop to discuss and source all required data for these analyses.

Figure 1 summarises the key differences between the current review process and the streamlined methodology. Despite these differences, the key functions of the current review process, such as expert working group meetings and stakeholder engagements, will be retained in the streamlined methodology.

General assumptions

A range of general assumptions have been made in order to estimate the costs associated with undertaking the current review process and streamlined methodology. These include:

- eight hour work day
- five day work week
- 44 work weeks per year
- on-cost and overhead multiplier of 1.75 for employment costs⁴⁵
- nine jurisdictions are consulted in updates under both the current review process and streamlined methodology – one for each state and territory and one for the commonwealth, and
- costs are measured in 2017 dollars.

A range of other specific assumptions have been made in regards to the current review process and the streamlined methodology. These are detailed in the relevant sections below.

Current review process costings

Despite the current review process lacking a formalised approach, Safe Work Australia is able to estimate the costs incurred based on the activities normally undertaken in the ad hoc updates. Safe Work Australia estimates that one ad hoc review is conducted every 2.5 years, with the cost per ad hoc update estimated at \$825,000.

In undertaking an ad hoc review, Safe Work Australia and WHS regulators incur a range of costs related to resourcing, consulting working group meetings, regulatory documents and conducting stakeholder engagements. These costs are discussed further below.

Table 20 at the end of this section summarises all assumptions and data used to estimate the cost of using the current review process to update a workplace exposure standard.

Safe Work Australia resourcing costs

Safe Work Australia estimates that one staff member at the Australian Public Service 6 (APS6) level is required for six months full-time to manage the contract and administrative process involved in the current review process.

To estimate this resourcing cost, the average salary of an APS6 staff member has been calculated based on the 2017/18 annual salary rates for APS6.1, APS6.2 and APS6.3 staff⁴⁶. The average annual salary of an APS6 staff in 2017/18 is approximately \$85,389.

⁴⁵ Office of Best Practice Regulation (2014b).

⁴⁶ Salary rates sourced from the Australian Public Service Commission (2016).

The annual salary rate including employment costs is therefore approximately \$149,431. Based on the number of hours an average employee works in a year, the equivalent hourly employment cost is \$84.90 per hour.

With 880 hours of full-time work in six months, the total estimated resourcing cost incurred is therefore \$74,715.67 per ad hoc update.

Consulting costs

Under the current review process, Safe Work Australia may engage consultants to evaluate and peer-review the data used to recommend an update to a workplace exposure standard.

Safe Work Australia expects to spend no more than \$50,000 on the contract for a consultant to undertake the evaluation of the workplace exposure standard, and no more than \$30,000 on the contract for a specialist to undertake a peer-review of the evaluation.

An estimated \$80,000 in total consulting cost is incurred each time one workplace exposure standard is updated.

Stakeholder engagement

Under the current review process, Safe Work Australia and each WHS regulator undertake teleconference consultations with a range of stakeholders, including duty holders, industry bodies and WHS regulators to identify specific issues or impacts that should be considered for the workplace exposure standard under review. The total estimated cost of these consultations is \$373,986 per ad hoc update.

Safe Work Australia estimates that one staff member conducts these consultations for a total of three months full-time per ad hoc update.

The staff member is assumed to be of Executive Level 1 (EL1). The average salary of an EL1 staff member has been calculated based on the 2017/18 annual salary rates of EL1 staff. The average annual salary of an EL1 staff in 2017/18 is approximately \$107,693.

The annual salary rate including employment costs is therefore approximately \$188,462.50. Based on the number of hours an average employee works in a year, the equivalent hourly employment cost is \$107.08 per hour.

With 440 hours of full-time work in three months, the total estimated resourcing requirement for Safe Work Australia is \$47,115.63.

Each jurisdictional WHS regulator is assumed to also have one staff member conduct consultations within their jurisdiction, for a total of three months full-time per ad hoc update.

The APS equivalent staff undertaking these consultations is assumed to be at the APS6 level. With an hourly employment cost of \$84.90 per hour and 440 hours of full-time work in three months, the total estimated resourcing cost per jurisdiction is \$37,357.83.

With nine jurisdictions in total, the total estimated resourcing cost for all WHS regulators is \$336,220.50 per ad hoc update.

The total estimated cost incurred by Safe Work Australia and WHS regulators in conducting the stakeholder engagements is therefore \$383,336.13 per ad hoc update.

Working group meetings

Safe Work Australia currently facilitates working group meetings three times per ad hoc update at an estimated cost of \$211,653.18.

The working group meetings are comprised of 10 members, each assumed to be paid the equivalent of the hourly EL1 wage of \$61.19 per hour. No on costs or overheads are included in this wage. Each meeting is assumed to last for one half-day, or 4 hours in total. Each member is therefore remunerated \$244.76 per working group meeting.

Safe Work Australia requires one staff member to prepare the required documents for each working group meeting. In addition, this staff member is also responsible for progressing meeting actions and deliverables and the preparation of meeting minutes. Safe Work Australia estimate that one EL1 staff member is required full-time for two days to prepare for each meeting and two weeks to finalise meeting outcomes. This is equivalent to 96 hours of full-time work. The total estimated Safe Work Australia resourcing cost per working group meeting is therefore \$10,279.77, where the hourly employment cost for an EL1 is \$107.08 per hour.

In addition, it is estimated that each WHS regulator requires one staff member for 1.5 weeks full-time (60 hours) to progress meeting actions and deliverables. The equivalent staff is assumed to be of EL1 level, with an estimated hourly employment cost of \$107.08 per hour. The total estimated cost for all nine WHS regulators per meeting is \$57,823.72.

The three working group meetings required for each ad hoc update are estimated to have a total cost of \$211,653.18.

Impact analysis of WES value changes

An impact analysis of the benefits and costs of the proposed changes to a WES value will need to be undertaken. This analysis is formally undertaken and documented using a Regulation Impact Statement document.

The impact analysis and related processes undertaken are estimated to cost in the order of \$150,000 over a five-year period.

With two ad hoc updates undertaken in a five-year period, the cost per ad hoc update of undertaking the impact analysis is \$75,000.

Table 21. Assumptions and data, current review process costing

| Assumption | Value | Source |
|--|--------------|---------------|
| Number of reviews | | |
| <i>Over 10 year period</i> | 4 | SWA/PwC |
| Staffing costs | | |
| <i>SWA staff required</i> | 1 | SWA |
| <i>Staff level</i> | APS 6 | SWA |
| <i>Hourly wage</i> | \$48.52 | APS/PwC |
| <i>On cost, overhead multiplier</i> | 1.75 | OBPR |
| <i>Total time commitment per review (hours)</i> | 880 | SWA |
| Consulting costs | | |
| <i>Evaluation/update of standard</i> | \$50,000.00 | SWA |
| <i>Peer review</i> | \$30,000.00 | |
| Public consultations (via teleconference) | | |
| SWA resource | | |
| <i>Staff</i> | EL 1 | PwC |
| <i>Hourly wage</i> | \$61.19 | |
| <i>On cost, overhead multiplier</i> | 1.75 | OBPR |
| <i>Total time commitment per review (hours)</i> | 440 | PwC |
| Jurisdictional regulator resource | | |
| <i>Staff</i> | APS 6 | PwC |
| <i>Hourly wage</i> | \$48.52 | |
| <i>On cost, overhead multiplier</i> | 1.75 | OBPR |
| <i>Total time commitment per jurisdiction per review (hours)</i> | 440 | PwC |
| <i>Number of regulators/jurisdictions</i> | 9 | |
| Working group meetings | | |

| Assumption | Value | Source |
|---|---------------------|---------------|
| <i>Number of meetings per review</i> | 3 | SWA |
| Members | | |
| <i>Number of members</i> | 10 | SWA |
| <i>Length of each meeting (hours)</i> | 4 | |
| <i>Member hourly wage (EL 1)</i> | \$61.19 | APS/PwC |
| SWA resource | | |
| <i>Staff</i> | EL 1 | SWA/PwC |
| <i>Hourly employment cost</i> | \$61.19 | APS/PwC |
| <i>On cost, overhead multiplier</i> | 1.75 | OBPR |
| <i>Preparation time per meeting (hours)</i> | 16 | SWA |
| <i>Time to progress meeting actions and deliverables (hours)</i> | 80 | |
| Jurisdictional regulator resource | | |
| <i>Equivalent staff level</i> | EL 1 | PwC |
| <i>Hourly employment cost</i> | \$61.19 | APS/PwC |
| <i>On cost, overhead multiplier</i> | 1.75 | OBPR |
| <i>Time to progress meeting actions and deliverables (hours per jurisdiction)</i> | 60 | SWA |
| <i>Number of jurisdictions</i> | 9 | PwC |
| Impact analysis of changes to WES values | | |
| <i>Cost</i> | \$150,000 | SWA/PwC |
| <i>WES values per impact analysis</i> | \$2 | |
| <i>Standards updated per RIS</i> | 1 | |
| Total estimated cost per review | \$824,704.97 | |
| Standards per review | 1 | |

Streamlined methodology costings

In adopting the streamlined methodology, two different review types will be undertaken. The two-yearly interim review involves an assessment of the changes that have been made to exposure standards by trusted sources. The five-yearly comprehensive review involves the update of workplace exposure standards selected based on the outcomes of the previous interim review.

In undertaking the interim and comprehensive reviews, Safe Work Australia and the jurisdictional WHS regulators incur a range of costs related to resourcing, consulting working group meetings, preparing regulatory documents and stakeholder engagements.

The total estimated cost of conducting an interim review is \$236,558.40. The total estimated cost of conducting a comprehensive review is different for option 2 and option 3. Under option 2, the total estimated costs of the comprehensive review is \$2.20 million. Under option 3, this cost is estimated to be \$1.48 million.

Table 22 at the end of this section summarises all assumptions and data used to estimate the cost of using the streamlined methodology to update a workplace exposure standard.

Two-yearly interim reviews

The estimated regulatory cost incurred by Safe Work Australia and WHS regulators in conducting an interim review is \$231,000. The details of this estimated cost are discussed below.

Safe Work Australia resourcing costs

Safe Work Australia estimates that one full-time staff member at the APS6 level is required for two months to undertake the interim review.

To estimate this resourcing cost, the average salary of an APS6 staff member has been calculated based on the 2017/18 annual salary rates for APS6.1, APS6.2 and APS6.3 staff.⁴⁷ The average annual salary of an APS6 staff in 2017/18 is approximately \$85,389.

The annual salary rate including employment costs is therefore approximately \$149,431. Based on the number of hours an average employee works in a year, the equivalent hourly employment cost is \$84.90 per hour.

With approximately 293 hours of full-time work in two months, the total estimated resourcing cost incurred is therefore \$24,905.22 per two-yearly review.

Working group meetings

Safe Work Australia is expected to facilitate working group meetings three times per interim review at a total estimated cost of \$211,653.18.

The working group meetings are comprised of 10 members, each assumed to be paid the equivalent of an EL1 hourly wage at \$61.19 per hour. No on-costs or overheads are included in this wage. Each meeting is assumed to last for one half-day, 4 hours in total. Each member is therefore remunerated \$244.76 per working group meeting.

Safe Work Australia requires one staff member to prepare the required documents for each working group meeting. In addition, this Safe Work Australia staff member is also responsible for progressing meeting actions, deliverables and preparation of meeting minutes. Safe Work Australia estimate that one EL1 staff member is required full-time for two days to prepare for each meeting and two weeks to finalise meeting outcomes. This is equivalent to 96 hours of full-time work. The total estimated Safe Work Australia resourcing cost per working group meeting is therefore \$10,279.77, where the hourly employment cost for an EL1 is \$107.08 per hour.

In addition, it is estimated that each WHS regulator requires one staff member for 1.5 weeks full-time (60 hours) to progress meeting actions and deliverables within their jurisdiction. The equivalent staff is assumed to be EL1 level, with an estimated hourly wage of \$107.08 per hour. The total estimated cost for all nine WHS regulators per meeting is \$57,823.72.

The three working group meetings required for each interim review are therefore estimated to have a total cost of \$211,653.18 per interim review.

Five-yearly comprehensive reviews

The estimated regulatory cost incurred by Safe Work Australia and the jurisdictional WHS regulators in conducting a comprehensive review is \$2.20 million for option 2 and \$1.48 million for option 3. The details of these estimated costs are discussed below.

Safe Work Australia resourcing costs

Safe Work Australia estimates that two full-time staff members at the APS6 and EL1 level are required for six months full-time each to manage the contract and administrative process involved in the comprehensive review.

To estimate this resourcing cost, the average salaries of APS6 and EL1 level staff have been calculated. As with the two-yearly interim reviews, the average annual salary of an APS6 staff in 2017/18 is approximately \$85,389. For the EL1 staff, the average annual salary has been calculated based on the 2017/18 annual salary rates for EL1.1 to EL1.7

⁴⁷ Salary rates sourced from the Australian Public Service Commission (2016).

staff.⁴⁸ The average annual salary of an EL1 staff in 2017/18 is therefore approximately \$107,693.

Including employment costs, the equivalent hourly employment cost is \$84.90 per hour for an APS6 and \$107.08 per hour for an EL1.

With approximately 880 hours of full-time work in six months, the total estimated resourcing cost incurred is therefore \$74,715.67 for the APS6 staff and \$94,231.25 for the EL1 staff per comprehensive review.

Stakeholder engagements

Under the streamlined methodology, Safe Work Australia and each WHS regulator currently expect to undertake ad hoc teleconference consultations with a range of stakeholders, including duty holders, industry bodies and industry regulators. The total estimated cost of these consultations is \$720,915.09 for option 2 and \$464,694.59 for option 3 per comprehensive review.

Safe Work Australia estimates that one staff member will conduct these consultations for a total of three months full-time per comprehensive review.

The staff member is assumed to be at the EL1 level. The average annual salary of an EL1 in 2017/18 is approximately \$107,693. Including on-costs and overheads, the equivalent hourly employment cost is \$107.08 per hour.

With 440 hours of full-time work in three months, the total estimated resourcing requirement for Safe Work Australia is \$47,115.63.

Safe Work Australia also expects to have additional staff prepare a stakeholder engagement plan for these consultations. This plan is expected to take two weeks full-time to prepare.

The staff member is assumed to be at the APS level 6. With 16 hours of full-time work in two weeks and an hourly employment cost of \$84.90 per hour, the total estimated cost to prepare the plan is \$1,358.47.

Furthermore, each WHS regulator is assumed to have one staff member assist in conducting the stakeholder engagements for their jurisdiction. Under option 2, the staff member is required six months full-time. For option 3, the staff member is required three months full-time.

An APS 6 level equivalent staff member is assumed to undertake these consultations. With an hourly employment cost of \$84.90 per hour, the total estimated resourcing cost per jurisdiction is \$74,715.67 for option 2, and \$37,357.83 for option 3.

With nine jurisdictions in total, the total estimated resourcing cost for all the WHS regulators is \$672,441.00 for option 2 and \$336,220.50 for option 3 per five-yearly comprehensive review.

The total estimated cost incurred by Safe Work Australia and the WHS regulators in conducting the stakeholder engagements is therefore \$720,915.09 for option 2 and \$384,694.59 for option 3 per five-yearly comprehensive review.

Impact analysis of WES value changes

In future comprehensive reviews, an impact analysis of the benefits and costs of the proposed changes to the WES values will only be undertaken under exceptional circumstances or at the discretion of Safe Work Australia.

Should the requirement arise, Safe Work Australia estimates that the cost of undertaking an analysis and the related processes is approximately \$300,000.

⁴⁸ Salary rates sourced from the Australian Public Service Commission (2016).

Ad hoc updates

In addition to the interim and comprehensive reviews, Safe Work Australia expect to undertake ad hoc updates. These ad hoc updates will be undertaken when a workplace exposure standard requires an update outside of the defined review schedule.

Safe Work Australia expects to undertake two ad hoc updates every five years under option 2. This is reduced to one per five years under option 3 given that duty holders may be less likely to comply with the workplace exposure standards in the event they are advisory. The ad hoc updates will utilise the streamlined methodology.

To conduct the ad hoc updates, Safe Work Australia anticipates contracting an evaluation consultancy and peer-review analyst. The contract for the evaluation consultancy is expected to be no more than \$50,000 and the contract for the peer-review is expected to be no more than \$30,000.

Under option 2, the total cost of conducting the ad hoc reviews is \$160,000 per five years. Under option 3, this cost is expected to be \$80,000 over five years.

Table 22. Assumptions and data, streamlined methodology costing

| Assumption | Value | Source | Value | Source |
|---|-------------------|---------|--------------------|---------|
| | Two-yearly review | | Five-yearly review | |
| Number of reviews | | | | |
| Over a 10 year period | 4 | SWA | 2 | SWA |
| Staffing costs | | | | |
| SWA staff required | 1 | SWA | 2 | SWA |
| Staff level | APS 6 | SWA | APS 6, EL 1 | SWA/PwC |
| Total time commitment per review (hours) | 293.33 | SWA | 880 | SWA |
| Hourly wages | | | | |
| APS 6 | \$48.52 | APS/PwC | \$48.52 | APS/PwC |
| EL 1 | | N/A | \$61.19 | APS/PwC |
| On costs, overhead multiplier | 1.75 | OBPR | 1.75 | OBPR |
| Consulting costs | | | | |
| Evaluation/update of standard | N/A | | \$600,000 | SWA |
| Peer review | N/A | | \$250,000 | SWA |
| Public consultations (ad hoc, via teleconference) | | | | |
| SWA resource | | | | |
| Staff | N/A | | EL 1 | PwC |
| Hourly wage | N/A | | \$61.19 | APS/PwC |
| On cost, overhead multiplier | N/A | | 1.75 | OBPR |
| Total time commitment per review (hours) | N/A | | 440 | SWA |
| Preparation of engagement plan | | | | |
| SWA resource | N/A | | APS 6 | PwC |
| Hourly wage | N/A | | \$48.52 | APS/PwC |
| On cost, overhead multiplier | N/A | | 1.75 | OBPR |
| Total time commitment per review (hours) | N/A | | 16 | SWA |
| Jurisdictional regulator resource | | | | |
| Equivalent staff | N/A | | APS 6 | PwC |
| Hourly wage | N/A | | \$48.52 | APS/PwC |
| On cost, overhead multiplier | N/A | | 1.75 | OBPR |
| Total time commitment per jurisdiction per review (hours) | N/A | | 880 | SWA |

| Assumption | Value | Source | Value | Source |
|--|---------------------|---------|-----------------------|-----------------------|
| | Two-yearly review | | Five-yearly review | |
| Number of jurisdictions | | | 9 | PwC |
| Working group meetings | | | | |
| Number of meetings per review | 3 | SWA | N/A | |
| Members | | | | |
| Number of members | 10 | SWA | N/A | |
| Length of each meeting (hours) | 4 | SWA | | |
| Member hourly wage (EL 1) | \$61.19 | APS/PwC | | |
| SWA resource | | | | |
| Staff | EL 1 | SWA/PwC | N/A | |
| Hourly employment cost | \$61.19 | APS/PwC | | |
| On cost, overhead multiplier | 1.75 | OBPR | | |
| Preparation time per meeting (hours) | 16 | SWA | | |
| Time to progress meeting actions and deliverables (hours) | 80 | | | |
| Jurisdictional regulator resource | | | | |
| Equivalent staff level | EL 1 | PwC | N/A | |
| Hourly employment cost | \$61.19 | APS/PwC | | |
| On cost, overhead multiplier | 1.75 | OBPR | | |
| Time to progress meeting actions and deliverables (hours per jurisdiction) | 60 | SWA | | |
| Number of jurisdictions | 9 | PwC | | |
| RIS (if required)⁴⁹ | | | | |
| Cost | N/A | | \$300,000 | PwC |
| (express as max or potential number of standards per RIS) | | | 60 | SWA |
| Ad hoc updates | | | | |
| Evaluation/update of standard | | | \$50,000.00 | SWA |
| Peer review | | | \$30,000.00 | |
| Frequency per 5 years | | | 2 | |
| | | | Option 2 | Option 3 |
| Total estimated cost per review | \$236,558.40 | | \$2,199,862.01 | \$1,483,641.51 |
| Standards per review | 30 | | 60 | |

⁴⁹ In future comprehensive reviews, an impact analysis of the benefits and costs of the proposed changes to the WES values will only be undertaken under exceptional circumstances or at the discretion of Safe Work Australia. Therefore, this cost is unlikely to be realised.

Appendix G: Regulatory burden measurement costings

The Regulatory Burden Measurement (RBM) Framework applies to new regulations or changes to existing regulations and requires any additional regulatory costs they impose on businesses, community organisations and individuals be quantified.

The Commonwealth is attributed fifty per cent of the regulatory burden cost. For this decision RIS the cost offset for option 2 is estimated to be \$1,099,931 every five years (see table 22). Safe Work Australia warrants that the portfolio will identify suitable offsets.