

National Silicosis Prevention Strategy 2023-2028 and accompanying National Action Plan

February 2023

Contents

Contents	2
Foreword.....	3
Executive Summary.....	5
Part One: Introduction	8
1.1 Background.....	8
1.2 About the Strategy	9
Audience.....	9
Consultation and development	10
1.3 Policy Context.....	11
1.4 The growing burden of silicosis in Australia	11
Re-emergence of an old disease	11
Australians living with silicosis	12
Silicosis causes permanent disability and can be fatal.....	13
Silicosis is preventable.....	13
Many workers are at greater risk of exposure to silica dust	14
Part Two: The Strategy.....	16
2.1 Goal.....	16
2.2 Principles	16
2.3 Enablers.....	16
2.4 Priority Areas for Action.....	17
PRIORITY AREA 1: WORKPLACE RISK REDUCTION.....	18
PRIORITY AREA 2: EDUCATION AND AWARENESS.....	29
PRIORITY AREA 3: HEALTH MONITORING, SCREENING AND SURVEILLANCE	36
PRIORITY AREA 4: GOVERNANCE.....	45
PRIORITY AREA 5: RESEARCH AND DEVELOPMENT.....	49
Part Three: Monitoring and Reporting	56
Acknowledgements.....	57
Glossary.....	59
References.....	65

Foreword

The National Silicosis Prevention Strategy and accompanying National Action Plan can and must protect workers.

Silicosis is an entirely preventable occupational lung disease. There are also other serious diseases caused by exposure to silica which should not be forgotten, such as lung cancer and autoimmune diseases.

In Australia, silicosis has been known to cause death and disability for over 100 years. The number of Australians recently diagnosed with silicosis, particularly associated with engineered stone work, has caused government, health professionals, businesses, unions, and workers to call for safer workplaces to protect workers, reduce disability and stop premature deaths. A comprehensive approach is needed that includes failsafe preventive measures, strong legislation and regulation that is consistently enforced, coordinated surveillance and monitoring, expanded air monitoring programs and improved health screening methods.

The engineered stone benchtop industry is only one of many industries where workers are exposed to silica. Evidence clearly identifies other industries where workers are at risk including quarrying, construction, tunnelling, mining and many manufacturing processes. Respirable crystalline silica (RCS) attacks the lungs and with high levels, silicosis can develop after just months of hazardous levels of exposure but may also strike many decades later when workers have retired.

Silicosis is not new, and numerous federal and State or Territory parliamentary inquiries were held prior to the Australian Government Department of Health establishing the National Dust Disease Taskforce (Taskforce) in 2019. The Taskforce undertook an independent review of the systems in place to protect Australians who are at risk of occupational dust disease and recommended a range of strategies and actions to protect workers and inform a national approach to the prevention, early identification, control and management of occupational dust diseases in Australia. The All of Governments' Response to the Final Report of the National Dust Disease Taskforce in March 2022 agreed or agreed in principle to most of the Taskforce recommendations; none were ruled out completely.

A lack of investment in research, monitoring and disease surveillance in Australia has made it impossible to quantify the current prevalence and long-term direct and indirect effects of silicosis on Australian workers and the economy. However the large number of silicosis cases that have been identified in the last five years clearly demonstrate that silicosis, and occupational lung disease more broadly, must be regarded as a national emergency. There has been a systemic failure to protect workers from this entirely preventable disease.

A lack of targeted, coordinated action and commitment to protect workers from silica dust has failed to keep workers safe from harmful exposures, identify those who may be at risk of diseases, and to support workers diagnosed with silicosis or related diseases.

The National Silicosis Prevention Strategy outlines an urgent reform agenda to protect Australian workers and to ultimately eliminate silicosis as an occupational

lung disease in Australia. The Strategy sets out how coordinated action across work health and safety and population health frameworks will protect workers from developing silicosis and support those living with the disease.

The Strategy acknowledges the considerable and constantly evolving work already implemented and underway across jurisdictions, but more must be done. History tells us there are no shortcuts in addressing this issue. It is critical that an all-of-governments approach is adopted, one that fosters collaboration between regulators, health professionals, employers, unions, workers, and business. It is not acceptable that Australia is incapable of implementing a nationally consistent preventive approach. The lives of Australian workers currently depend on a system that has been found wanting and inadequately evaluated. This needs to urgently change.

We acknowledge the considerable input of many people and organisations across many sectors into the creation of this Strategy and Action Plan.

It is incumbent on all to pursue this Strategy with vigour and implement the Action Plan without delay.

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Executive Summary

Silicosis is a serious, irreversible occupational lung disease that causes permanent disability. There is no effective treatment for it, and it is often fatal. Available data indicates the prevalence of silicosis is increasing in all states and territories and across a number of industries. Furthermore, the actual rate is likely to be higher due to undiagnosed and unrecorded cases.

It is estimated up to 600,000 Australian workers are potentially being exposed to silica dust each year across a wide range of industries.

All Australian, State and Territory governments support the development of the National Silicosis Prevention Strategy (NSPS) 2023-2028 and accompanying National Action Plan (NAP).

The NSPS Goal is: To prevent and ultimately eliminate silicosis as an occupational disease in Australia.

The development of the NSPS and associated NAP is one of a number of recommendations from the Australian Government's National Dust Disease Taskforce (recommendation 3a), responds to the most up to date evidence and builds on bodies of work currently in place at various jurisdictions. All Governments agree on the need for urgent reform to enable measures which keep workers and their families safe and healthy.

The NSPS and NAP identify five priority areas for action to prevent and ultimately eliminate silicosis in Australia:

Priority Area 1: Workplace Risk Reduction

Objectives:

- Strengthen work health and safety measures to give greater protection to workers
- Support employers to effectively manage the risks posed by RCS exposure in the workplace, comply with WHS duties and implement safe systems of work
- Eliminate hazardous RCS exposure in Australian workplaces
- Ensure the multi-sector and multidisciplinary workforce required to eliminate silicosis in Australia is suitably trained, resourced and distributed.

Priority Area 2: Education and Awareness

Objectives:

- Increase awareness and knowledge of the risks of RCS exposure in all sectors
- Increase knowledge of safe work practices and compliance with WHS duties
- Increase consumer awareness of the risks when choosing a high silica content product such as engineered stone to inform consumer choice
- Influence stakeholder behaviours across the supply chain to reduce RCS exposure and better protect workers.

Priority Area 3: Health Monitoring, Screening and Surveillance

Objectives:

- Improve the quality, frequency and coverage of health monitoring and surveillance for current and former RCS exposed workers
- Implement a nationally consistent workplace health monitoring and surveillance program for silicosis supported by a national information system
- Enhance evidence-based screening and surveillance to optimise health outcomes for Australian workers.

Priority Area 4: Governance

Objectives:

- Establish a cross-jurisdictional governance mechanism to coordinate and monitor a comprehensive national program of reform and preventative measures designed to fundamentally address the risks facing workers in industries that generate RCS
- Drive greater consistency across jurisdictions in WHS policy, practices, behaviours and information.

Priority Area 5: Research and Development

Objectives:

- Develop a strategic national approach to silicosis prevention research and development
- Build the evidence base for silicosis prevention as well as the capability of the research sector
- Enhance the capabilities of population-level monitoring and surveillance of silicosis and other occupational lung diseases in Australia
- Translate silicosis knowledge into WHS policy, practices, behaviours and information to better protect workers from RCS exposure.

To be successful in achieving this goal, the NSPS and NAP must be a coordinated, national approach to silicosis prevention that engages government, national employers' and workers' organisations, as well as other partners concerned in its active implementation.

A comprehensive all of government, business, union and community approach is required that includes failsafe preventive measures, strong legislation and regulation that is consistently enforced, coordinated surveillance and monitoring, expanded air monitoring programs and improved health screening methods.

The Action Plan is built on extensive stakeholder consultation, building on Taskforce collaborations and overseen by a multi-disciplinary and sector Expert Steering Committee.

The Action Plan recommendations must be delivered in parallel or in conjunction with a number of Australian, State or Territory occupational health and safety

frameworks and activities under way however the inconsistency of approaches and lack of harmonisation is a serious risk to the successful implementation of this Plan. It is important to recognise that with the transient nature of the workforces involved, many do not experience symptoms until they have left the industry or many years later during their retirement.

A comprehensive governance framework and evaluation and monitoring framework is proposed to ensure the Action Plan remains front of mind for all stakeholders.

To be effective a whole of Government, industry, community, and business response is required; that follows health and OHS evidence and the most up to date research; that is independently monitored and transparently and frequently reported on; and at its core has the prevention of death and disability at the centre.

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Part One: Introduction

1.1 Background

The National Silicosis Prevention Strategy (NSPS) and accompanying National Action Plan (NAP) have been developed in response to the re-emergence of silicosis in Australia. Silicosis is a debilitating and often fatal occupational lung disease that is caused by the inhalation of silica dust particles. It is entirely preventable. There are several other diseases caused by silica exposure, including lung cancer, which are under recognised and under compensated in Australia (1).

In recent years a number of Senate and Ministerial enquiries into silica dust and other hazardous and toxic workplace exposures have occurred (2-4). However, the lack of progressive, sustained action in prevention is noted.

On 26 July 2019, the Commonwealth Government announced the establishment of a National Dust Disease Taskforce (the Taskforce). The role of the Taskforce was to inform a national approach to the prevention, early identification, control, and management of dust diseases in Australia (5). The Taskforce focused its review on accelerated silicosis and engineered stone but recognised the need for broader action across the spectrum of occupational dust diseases. The Taskforce's Final Report, handed to the Minister for Health and Aged Care in June 2021, recognised the recent progress being made by Safe Work Australia and its members, including the Commonwealth and State and Territory governments, representatives of employers and representatives of workers. It noted that existing regulatory frameworks have not effectively protected workers and that reform is urgently required (6).

Immediate action is required to better protect workers from hazardous exposures, reduce the burden of occupational respiratory disease, and ensure Australia has strong, responsive and fit for purpose arrangements that identify occupational respiratory hazards early and ensure safe workplaces (6).

The Commonwealth, State and Territory governments developed an All of Governments' Response to the Final Report of the Taskforce (the All of Governments' Response), published April 2022, which agreed in principle to the Taskforce's recommendations. All governments support the prioritisation of investment in prevention activities and the finalisation and implementation of the NSPS and accompanying NAP. See Box 1.

All governments' support the Taskforce's view that further decisive action is required to better protect workers in dust generating industries and to better support affected workers and their families (7). The All of Governments' Response noted that joint deliberate action is required from all levels of government, industry, unions, and workers to drive change with the shared objective to eliminate silicosis amongst workers and increase quality of life for those already impacted, and their families (7).

Box 1: All of Governments' Response to the Final Report of the National Dust Disease Taskforce (7)

NDDT Recommendation 3a. Finalise and implement the National Silicosis Prevention Strategy and associated National Action Plan.

Australian governments support this recommendation.

The Commonwealth Government is currently developing the National Silicosis Prevention Strategy (NSPS) and accompanying National Action Plan (NAP) in recognition of the need for a more effective prevention system for silicosis in Australia. The NSPS and NAP aim to drive co-ordination and create linkages between existing and planned prevention activities being undertaken by Commonwealth, State and Territory health departments, WHS policy agencies and regulators, industry and unions. The NSPS and NAP will promote information sharing, improve consistency in practice and information, avoid duplication and reduce gaps in prevention efforts. The NSPS and NAP are being designed in close consultation with relevant stakeholders including representatives of State and Territory governments and is expected to be finalised in 2022.

As part of the development of the NSPS and NAP, stakeholders will identify and commit to progressing specific initiatives.

1.2 About the Strategy

The NSPS and accompanying NAP is the first national plan designed to prevent and ultimately eliminate silicosis as an occupational disease in Australia.

The NSPS and NAP outline a coordinated, national approach to silicosis prevention that engages government, national employers' and workers' organisations, as well as other partners concerned in its active implementation.

The scope of the Strategy includes:

- Primary prevention (prevent and reduce workplace exposure and risk) and secondary prevention (early detection and screening of at-risk workers)
- All forms of silicosis (acute, accelerated, chronic)
- All industries, occupations and tasks where workers are at risk of silicosis and silica-related diseases
- Workplaces of all sizes, including micro businesses, small to medium enterprises (SMEs) and larger businesses
- Each step in the supply chain of high silica-containing products, such as engineered stone, to ensure coverage (e.g. importing, supplying, manufacturing and disposal of engineered stone benchtops)
- Opportunities for intervention across the health care system.

Audience

This Strategy has been developed for policy makers at all levels of government and a range of non-government stakeholders including industry, unions, workers, employers, regulators, medical and health professionals and researchers.

Consultation and development

Lung Foundation Australia (LFA) is facilitating the development of the NSPS and NAP for government consultation.

Consultation processes undertaken by LFA to develop the NSPS and NAP over January 2022 - February 2023 included workshops, key opinion leader interviews, patient/carer interviews, open consultation process, and surveys. Extensive consultation was undertaken with stakeholders including affected workers and their families, with input from governments, industry, unions, workers, employers, regulators, medical and health professionals, researchers and peak bodies. The process was overseen by a multi-disciplinary and sector Expert Steering Committee (see [members](#) and [Terms of Reference](#)) with advice and input from a Reference Group (see [members](#) and [Terms of Reference](#)).

The NSPS and NAP were informed by the large body of silicosis and occupational lung diseases work undertaken over many years in Australia and internationally. They are a direct result of the National Dust Disease Taskforce's Final Report (6) and the All of Governments' Response (7). The NSPS and NAP draws on contemporary public health, disease prevention, respiratory health, and work health and safety literature.

This work was informed by the All of Governments' Response, Stocktake of Silicosis Prevention Activities (unpublished) and the NSPS Silicosis in Australia Scientific and Evidence Report.

[NSPS Scientific and Evidence Report - Silicosis in Australia](#)

[All of Governments' Response to the Final Report of the National Dust Disease Taskforce](#)

The NSPS and NAP are aligned with the joint International Labour Organization (ILO)/World Health Organization (WHO) Global Programme for the Elimination of Silicosis (GPES) (8), which calls for the elimination of silicosis worldwide by 2030.

Other parallel work items considered during development of the NSPS and NAP include:

- Consultation Regulation Impact Statement: Managing the risks of respirable crystalline silica (9)
- Occupational Dust Diseases Monitoring and Evaluation Approach, developed by the Australian Government Department of Health and Aged Care.

A summary of how the actions identified in the NAP intersect with the Taskforce's Final Report, the All of Governments' Response, and Safe Work Australia's 2022

Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica*, is provided [here](#).

1.3 Policy Context

National efforts to prevent and ultimately eliminate silicosis in Australia occur within a complex and multi-sectorial policy environment that includes population health and work health and safety.

The NSPS and NAP aligns with key policy documents, including:

- National Strategic Action Plan for Lung Conditions February 2019 (10)
- National Preventive Health Strategy 2021-2030 (11)
- Australia's Long Term National Health Plan (12)
- National Strategic Framework for Chronic Conditions (13)
- National Aboriginal and Torres Strait Islander Health Plan 2021-2031 (14)
- National Agreement on Closing the Gap (15)
- Australia's Primary Health Care 10 Year Plan 2022-2032 (16)
- Stronger Rural Health Strategy (17)
- Australian Work Health and Safety Strategy 2012-2022 (18)
- Safe Work Australia Occupational Lung Diseases 2022 work plan (19)
- Blueprint for Mentally Healthy Workplaces (20)
- National Tobacco Strategy 2022-2030 (in consultation)
- State and Territory policies and strategies, as per the State and Territory Work Health and Safety Portfolio section of the Stocktake of Silicosis Prevention Activities (unpublished).

The NSPS and NAP will support Australia's international commitments as a member of the ILO, including the recent adoption of a resolution to add the principle of a safe and healthy working environment to the ILO's Fundamental Principles and Rights at Work. This landmark decision in June 2022 means that all ILO Member States commit to respect and promote the fundamental right to a safe and healthy working environment, whether or not they have ratified the relevant Conventions (21).

1.4 The growing burden of silicosis in Australia

Re-emergence of an old disease

Silicosis is one of the oldest known occupational diseases (22, 23), and remains a risk in many Australian workplaces (24, 25). In recent years, there has been a major re-emergence of silicosis in Australia, particularly associated with the engineered (artificial) stone benchtop industry (25, 26).

There is a total lack of comprehensive data capturing the incidence, prevalence and outcomes of silicosis in Australia. Most data are sourced from workers' compensation claim and cause-of-death statistics (23, 27). As such, the full scale

and impact of silicosis in Australia is unknown. However, available data indicate the prevalence of silicosis is increasing in all states and territories and across a number of industries. Furthermore, the actual rate is likely to be higher due to undiagnosed and unrecorded cases.

A 1992 study predicted that 1,010 silicosis cases would occur over 40 years in Australia (28), but this is likely to be an underestimate. A 2012 survey of the Australian working population found that 6.6% of the Australian workforce (329,000 workers) were exposed to RCS and 3.7% were exposed to high levels when carrying out tasks at work, with exposure particularly common among miners and quarry workers (91.7% exposed) and construction workers (80% exposed) (29). Since this time and over the past 10 years, government investment into infrastructure has increased dramatically, leading to an increased number of workplaces with RCS exposures (30). In addition, the use of engineered stone has increased considerably (26).

A recent Australian study suggests a sharp rise in levels of exposure, with approximately 584,050 Australian workers currently occupationally exposed to RCS. Between 83,090 and 103,860 silicosis cases and 10,390 lung cancers are expected to result from current RCS exposure (31). Insurers are now adjusting their forecasts due to the predicted increase in cases of silicosis (32).

Australians living with silicosis

Best estimates of the current scale of the problem in relation to engineered stone are drawn from data collected and reported by some jurisdictions. Evidence suggests that there are at least 579 Australians living with silicosis currently (33). The number of identified silicosis cases in Australia associated with work in the stone benchtop industry as of May 2022 are provided in Table 1. Current reports indicate the potential for widespread undiagnosed disease in the engineered stone industry (34).

As of July 2022, WorkCover Queensland had completed the health screening of 1,053 stonemasons exposed to RCS from engineered stone – 253 people were diagnosed with a work-related lung condition. Of the workers screened, 204 (19.4%) have silicosis, including 36 with a diagnosis of progressive massive fibrosis, and 13 have a respiratory condition that is not silicosis (35).

Health screening conducted by some jurisdictions in recent years indicates that nearly one in four engineered stone workers who have been in the industry since before 2018 are suffering from silicosis or other silica dust related diseases (6).

Table 1: Silicosis cases in the Australian engineered stone industry as of May 2022 (33)

Jurisdiction	Number of silicosis cases
Queensland	238
Victoria	175
New South Wales	121

Western Australia	24
South Australia	18
Tasmania	3
Northern Territory	No publicly available data
Australian Capital Territory	No publicly available data

Silicosis causes permanent disability and can be fatal

Silicosis is a serious, irreversible occupational lung disease that causes permanent disability. There is no effective treatment for it and it is often fatal.

Silica dust particles when inhaled - respirable crystalline silica (RCS) - can travel deep into the lungs and lead to a range of respiratory diseases, including:

- Silicosis – acute, accelerated and chronic (progressive massive fibrosis)
- Chronic Obstructive Pulmonary Disease (COPD), including chronic bronchitis
- Lung cancer.

Silica dust also increases the risk of developing chronic kidney disease, autoimmune disorders, and other adverse health effects, including an increased risk of activating latent tuberculosis, fungal infections, eye irritation and eye damage (36).

Silicosis and silica-related diseases can have a long latency (the lag between the first exposure to the hazard and when the disease is diagnosed clinically), and damage to the lungs from silica dust may not appear for many years. Silica-related lung cancer is often fatal (37).

Australians living with silicosis and their carers report physically and psychologically debilitating symptoms and significant unmet needs (6, 38, 39).

[At the] “end of every day I am buggered. My chest is sore, it hurts to breathe, my feet and hands hurt...that’s my daily life.” Former geologist, 48 years, living with chronic silicosis and sarcoidosis

“It’s like a black cloud over your head every day.” Former tiler, 61 years, living with silicosis

There is no cure for silicosis. However, there is good progress being made in the treatment of occupational lung diseases and early detection offers the best chance of long term survival.

Occupational exposure is the predominant source of RCS. Occupational exposure to RCS and other hazardous airborne contaminants contributes substantially to the burden of lung disease in Australia and internationally (6, 40).

Silicosis is preventable

Silicosis is an entirely preventable occupational lung disease.

Silicosis can be prevented by eliminating or minimising the generation of and exposure to RCS in workplaces. See Box 2 for further details on how silica dust can penetrate deep into the lungs causing permanent damage that can lead to serious illness or death.

Box 2: Silica dust can penetrate deep into the lungs

Silica is silicon dioxide, a naturally occurring and widely abundant mineral that forms the major component of most rocks and soils. There are non-crystalline and crystalline forms of silicon dioxide. It is found in natural stones like granite and sandstone and is used to create manufactured products like tiles. Different types of rock and rock products can contain different amounts of silica. Engineered stone is an artificial product that is defined in relation to the percentage of silica contained in the material, however definitions vary across states and territories. Depending on the product and manufacturer, engineered stone can contain less than 10% silica or up to 97% silica.

Silica dust is generated in workplace mechanical processes such as crushing, cutting, drilling, grinding, sanding, sawing or polishing of natural stone or man-made silica containing products. Workers are exposed to silica dust whenever it is airborne and they can breathe it in.

Silica dust can have a range of sizes, from very small (less than 10 micrometres [μm] in diameter) to larger particles that can be seen with the naked eye. Silica particles that are less than 10 μm in diameter are known as RCS as they are small enough to breathe in and penetrate deep into the lungs. These dust particles can be so small that they cannot be seen under normal lighting or with the naked eye and stay airborne for long periods of time. When inhaled, RCS dust particles can travel deep into the lungs causing permanent damage that can lead to serious illness or death. The non-crystalline or amorphous forms of silica are less toxic but can also cause similar lung damage at high exposure levels.

Many workers are at greater risk of exposure to silica dust

It is estimated up to 600,000 Australian workers are potentially being exposed to silica dust each year across a wide range of industries (6). Between 83,090 and 103,860 silicosis cases and 10,390 lung cancers are expected to result from current RCS exposure (31).

Generally workers are at risk of silica exposure if any material containing quartz is liberated from the natural environment (such as mining and quarry work), or when silica is used in industrial and manufacturing processes. Silica is used in an ever-expanding range of industrial processes and materials due to its inherent chemical properties but also its abundance and low cost.

The cumulative dose of silica exposure is the most important factor in development of silicosis (41). Workers exposed to high levels of silica dust are at risk of silicosis and other silica-related diseases. Workers are also at risk in industries where relatively low amounts of RCS is present.

In one study, occupations with the highest exposure, in order of mean exposure, were miners, construction workers, engineers, plumbers, handypersons, heavy vehicle drivers, farmers, machine operators, animal and horticultural workers, scientists, metal workers, and electrical workers. The occupations with the highest proportion of workers exposed to high levels of silica dust were miners, construction workers, plumbers, handypersons, and engineers (29). Workers are also at risk in industries where relatively low amounts of crystalline silica are present, such as those involved in jewellery polishing, dental prosthesis production and ceramics production.

In the absence of comprehensive national health monitoring data on silicosis, Australia is very reliant on workers' compensation statistics to monitor disease trends, which have well-known limitations (27). Between 2000 and 2019, accepted silicosis workers' compensation claims recorded by Safe Work Australia were predominantly in the manufacturing and construction industries (41% each), followed by mining (8%), and electricity, gas, water and waste services (5%), with other industries accounting for the remainder (6).

Recently, due to the identification of numerous workers contracting silicosis in the stone benchtop fabrication and installation industry, the very high risk of exposure to silica dust from engineered stone has been revealed (22, 26, 34, 40, 42-44).

A complete, up-to-date understanding of which industries currently expose workers to harmful levels of silica dust is lacking in Australia.

Part Two: The Strategy

Note for reader: Summary Infographics of the Strategy and Action Plan will be inserted on completion.

2.1 Goal

To prevent and ultimately eliminate silicosis as an occupational disease in Australia.

2.2 Principles

Guiding principles to drive future action to address silicosis and other occupational lung diseases include:

- Workers right to a healthy and safe working environment – All Australian workers have a fundamental right to a healthy and safe working environment, as recognised nationally and internationally (18, 21)
- An All-of-Governments and Whole-of-Government Approach – coordinated, decisive action and leadership by the Commonwealth, and State and Territory governments; and comprehensive, coordinated action across government departments and portfolios
- Working in Partnership – cooperation between stakeholders, and deliberate action by all including Commonwealth, State and Territory Health departments, WHS policy agencies and regulators, industry, unions and medical and health professionals
- Robust Scientific Evidence Base for Silicosis Prevention – action is evidence-informed where knowledge exists, with a focus on generating new knowledge to address gaps.

2.3 Enablers

Enablers that will assist in achieving this Strategy:

- Governance and Leadership – clear governance and strong leadership, evidence-informed decision making, collaboration and information sharing
- Adequate legislative and regulatory frameworks – balanced and nationally consistent frameworks, strong adherence to safe work practices and compliance with WHS duties
- Research, Data and Information – research and use of data and information to build knowledge, enable monitoring, inform action, and drive improved consistency in practice and information to avoid duplication and reduce gaps in prevention efforts
- Technology – use of existing technology and development of new technologies to generate new knowledge and initiatives for effective and accessible silicosis prevention
- Resources – adequate allocation, appropriate distribution and efficient use of resources to eliminate silicosis as an occupational lung disease in Australia.

2.4 Priority Areas for Action

The NSPS and NAP identify five priority areas for action to prevent and ultimately eliminate silicosis in Australia:

- Priority Area 1: Workplace Risk Reduction
- Priority Area 2: Education and Awareness
- Priority Area 3: Health Monitoring, Screening and Surveillance
- Priority Area 4: Governance
- Priority Area 5: Research and Development.

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PRIORITY AREA 1: WORKPLACE RISK REDUCTION

“There is no good reason why an advanced economy such as Australia should have workers suffering from silicosis and accelerated silicosis. The current situation results from a failure of regulation, in learning from the past and responding to new consumer demands, and a lack of understanding by employers and workers of the risks associated with exposure to respirable silica dust, including in new forms combined with resins and plastics in manufactured stone”. Health agency (45).

Australia’s WHS laws

WHS regulation in Australia is a shared responsibility, with the Commonwealth, States and Territories responsible for implementing, regulating and enforcing WHS laws in their jurisdiction. Australia has model WHS laws that have been adopted in all jurisdictions except Victoria, which has similar laws in place.

The model WHS laws, maintained by Safe Work Australia, comprise the model WHS Act (46), model WHS Regulations (47), and model Codes of Practice (42). Safe Work Australia develops national policy relating to WHS and workers’ compensation; the Commonwealth, States and Territories regulate and enforce WHS laws in their jurisdiction.

These elements are supported by the National Compliance and Enforcement Policy (NCEP) (48) which sets out principles on how WHS regulators monitor and enforce compliance with WHS laws (48).

Under the model WHS laws, businesses must eliminate or minimise risks to workers, so far as is reasonably practicable, including the risks from exposure to hazardous airborne contaminants like RCS. A combination of different control measures is required to eliminate or minimise the generation of RCS in the workplace – for example, using wet cutting methods, local exhaust ventilation, shift rotation and personal protective equipment (PPE). Businesses must also:

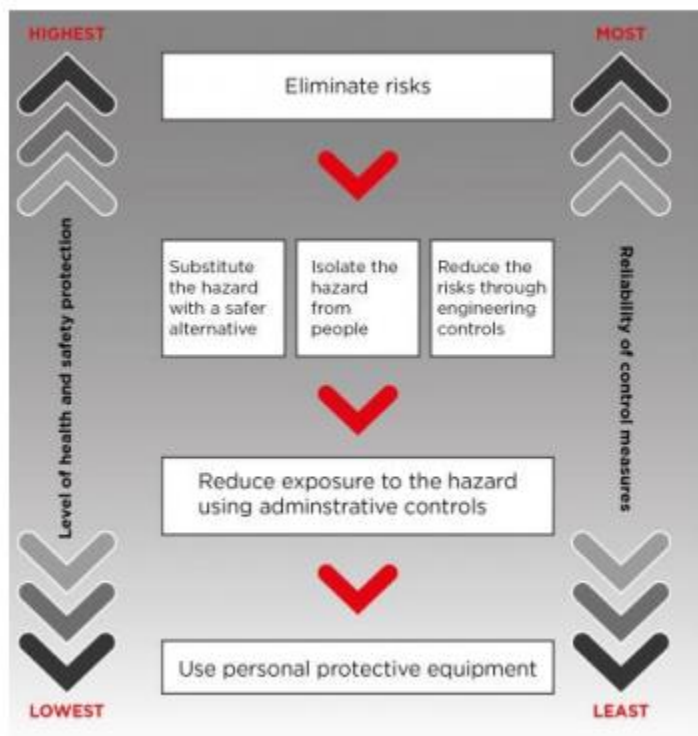
- Comply with prescribed maximum workplace exposure level for hazardous airborne chemicals like RCS
- Conduct air monitoring if there is any uncertainty that the Workplace Exposure Standard (WES) for RCS is being exceeded or to find out if there is a risk to a worker’s health, and
- Organise and pay for health monitoring so any changes to workers’ health can be detected (48).

Hierarchy of controls for silicosis prevention

Controlling exposures to hazards in the workplace is vital to protecting workers. The hierarchy of control measures (Figure 1) ranks control measures from the highest level of protection and reliability to the lowest.

The hierarchy of control measures requires that a person conducting a business or undertaking (PCBU) must first aim to eliminate a risk. If it is not reasonably practicable to eliminate a risk, the risk must be minimised by substituting the hazard with something safer, isolating the hazard, or using engineering control measures. If risks still remain, they must be minimised, so far as is reasonably practicable, using administrative control measures. Any remaining risks must be minimised with suitable personal protective equipment (PPE). Using this hierarchy can lower worker exposure to RCS and reduce risk of silicosis, illness and injury (49).

Figure 1: Hierarchy of Control Measures (42)



Current activity and investment

Safe Work Australia has undertaken substantial work to address the recent increase in silicosis cases through its Occupational Lung Diseases Work Plan (19). The Workplace Exposure Standard (WES) for RCS has been halved, and the model WHS laws are being amended to expressly prohibit uncontrolled dry-cutting of engineered stone. A model Code of Practice, *Managing the risks on respirable crystalline silica from engineered stone* (42) has been published to provide practical guidance on WHS duties and safe work practices, and can be used by courts as evidence of what businesses should be doing to keep workers safe (42).

Jurisdictions have also taken immediate steps to address the increase in silicosis cases, including through legislative changes, development of Codes of Practice, education and awareness campaigns and compliance audits, and the establishment of collaborative mechanisms such as the Heads of Workplace Safety Authorities (HWSA) working group on silicosis (7). In 2022, Victoria commenced the first licencing scheme for businesses working with engineered stone.

As part of the All of Governments' response to the Final Report of the Taskforce, WHS Ministers tasked Safe Work Australia to consider the Taskforce's findings as part of a regulatory impact analysis (RIA) on regulatory and non-regulatory options to minimise the risks of silica dust in all silica dust-generating industries. The range of options being considered by Safe Work Australia's 2022 Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica at work*, include a licencing scheme for the engineered stone industry to restrict access to the product to those businesses that can demonstrate the ability to effectively manage the risks, and additional requirements for implementing control measures and reporting. The RIA will identify options that result in the greatest net benefit to the Australian community, based on an analysis of the relative costs and benefits. The outcomes of this work will be presented to WHS Ministers in early 2023. It is critical that these reforms are prioritised and urgently considered and implemented by Commonwealth, State and Territory governments.

Maintaining the status quo is not acceptable

Systemic failures and low compliance with existing WHS regulation is putting Australian workers' health and safety at risk. In particular, non-compliance in the stone benchtop industry is evident, as noted during the Taskforce consultation (6) and documented elsewhere (see Box 3). Further regulatory reform is urgently needed, along with increased and sustained compliance and enforcement by regulators to ensure business are complying with their WHS duties and implementing safe practices.

Box 3: Documented failures of control in the stone benchtop sector

In the stone benchtop sector there have been numerous documented failures of control associated with the surge in silicosis cases. Some of these failures include:

- Use of a high silica content material and the failure to identify the hazard of crystalline silica
- Failure to manage the risk of / control exposure
- Failure to provide the correct respiratory protective equipment
- Failure to provide training in the use, maintenance and storage of personal protective equipment
- Failure to conduct personal air monitoring
- Failure to provide health monitoring for workers (50).

Government commitment

In 2021, the Taskforce recommended strengthening work health and safety measures to ensure workers are protected from exposure to RCS and its devastating consequences.

All Australian Governments support in principle the Taskforce's recommendation to strengthen work health and safety measures to ensure workers are protected from exposure to RCS and its devastating consequences (7).

Safe Work Australia's 2022 Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica at work*, will lay the foundation for WHS reform. The outcomes of this work will be presented to WHS Ministers in early 2023.

Priority activities

Reform is urgently needed.

Processes to implement a full **ban on the importation of some or all engineered stone products** should commence if, by July 2024, there are no measurable and acceptable improvements in regulatory compliance rates for the engineered stone sector and/or preventive measures prove to be ineffective.

Consideration of a ban will require Commonwealth, State and Territory governments to work together to develop a comprehensive framework to evaluate the effectiveness of compliance with WHS duties and the effectiveness of measures to protect workers, including any further measures implemented following Safe Work Australia's regulatory impact analysis process. The decision regarding the ban on importation of engineered stone products is to be based on an objective assessment of the requirements established under the framework.

Investment in measures to address gaps in silicosis knowledge and to ensure comprehensive and centralised data is available to inform the ban decision is imperative, as identified in Activity 1.4, 3.3 and 5.1. Required data to be available includes data on occupational RCS exposures, incidence of silicosis, uptake of and effectiveness of control measures and regulatory compliance with WHS duties in Australia.

While an express ban on uncontrolled dry cutting of engineered stone with power tools has not been implemented in all jurisdictions, it is not permitted under WHS laws as dry cutting would typically exceed the WES for RCS. Safe Work Australia Members have agreed to amend the model WHS regulations to expressly prohibit uncontrolled dry cutting of engineered stone. Once finalised, jurisdictions should take action to urgently implement the prohibition under their WHS laws.

Unacceptable exposures to RCS are occurring in other industries such as mining, quarrying, construction and tunnelling, as well as engineered stone (51), and workers from industries not associated with engineered stone are being diagnosed with silicosis. One example of this is shown in the NSW Dust Disease Register where at least 10 workers in heavy and civil engineering construction and site preparation services/earthmoving work were diagnosed with silicosis in 2021-2022 (52). The prior year ~43% of workers who were diagnosed with silicosis in NSW were from industries

outside of engineered stone (53). At the NSW Budget Estimates, SafeWork NSW disclosed that 21 workers have silicosis from tunnelling work in NSW in the last 5 years (54). Controlling the dust at the source is necessary regardless of whether it is artificial stone, natural stone, concrete or other silica-containing products.

Recent modelling conducted by Curtin University modelled the impact of various interventions, one of which was wet cutting methods during all concrete cutting and grinding tasks. The modelling showed that the use of wet cutting methods was estimated to result in a reduction of between 5,090 and 6,360 cases of silicosis, in addition to 640 cases of lung cancer (31). There is strong evidence demonstrating the reduced exposures associated with controlled cutting (55-58).

“Without a prohibition on uncontrolled dry cutting of silica-containing materials, we risk failing an at-risk group larger in size than the engineered stone industry.” Kate Cole OAM, Certified Occupational Hygienist

Implementation of a **national ban to expressly prohibit uncontrolled dry cutting or processing of silica-containing materials** is required, with an accompanying compliance strategy to support the elimination of dry cutting of silica-containing products.

Development and implementation of a **national licensing framework** to support the introduction of jurisdictional licensing schemes for businesses working with engineered stone should effectively achieve many prevention goals (6). Licensing would restrict access to the product to those businesses that can demonstrate the ability to effectively manage the risks associated with engineered stone, by implementing necessary controls and educating their employees. A national licensing framework would support the introduction of jurisdictional licensing schemes for businesses working with engineered stone. Licensing would need to span all of the supply chain to be effective and be enforced by WHS regulators, with a publicly available database of licence holders (6). WorkSafe Victoria introduced an engineered stone licence requirement in 2021 which allows businesses (either an employer or self-employed person) to work with engineered stone if they meet the necessary safety requirements (59).

Safe Work Australia's 2022 Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica at work*, includes consideration of a national licensing framework for PCBU's working with engineered stone. It notes that a system developed to administer a licensing framework could also be used to collate health and air monitoring data (9).

Measuring workers' exposure to RCS via **air monitoring (or exposure monitoring)** is necessary to establish compliance with the WES for RCS and to determine if control measures are working as planned. Exposure monitoring to determine a worker's exposure involves measuring the level of silica dust in the breathing zone of workers using a personal sampler during their usual shift activities (including routine breaks) and is performed by an occupational hygienist (24).

Despite exposure monitoring being the key way that businesses determine compliance with the WES, very few businesses in the stone benchtop industry have

undertaken the necessary monitoring (50). This is due to a number of factors including perceived cost as a barrier, confusion about how to meet WHS obligations, and lack of access to appropriately qualified accredited occupational hygienists (6). Measures to enhance air monitoring and reporting in relation to RCS are required to ensure employers regularly carry out air monitoring to assess RCS exposure.

“It is the contention of the NDDT that cost is a barrier, but industry is extremely profitable. Mining and construction are profitable businesses - importers of engineered stone are profitable international companies. The cost of WHS compliance is part of doing business. It appears that this cost is being, at times, transferred to SMEs and workers.” Deborah Vallance, Australian Council of Trade Unions

Safeguarding the validity of air monitoring relies on the capabilities of qualified occupational hygienists. A disparity in the level of experience and qualifications of those conducting air monitoring and inspections has been highlighted as a real issue by medical professionals, support groups and certified occupational hygienists (6). A requirement for air monitoring to be carried out under the governance of a Certified Occupational Hygienist (COH)[®] will help to standardise air monitoring to promote data integrity and ensure the effective implementation of WHS obligations by competent professionals (6). This potential role of occupational hygienists is not explicitly explored in options set out in Safe Work Australia's 2022 Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica at work*.

A systemic, national approach to air monitoring data collection and sharing is required to optimise the role of air monitoring in supporting WHS compliance. There are examples of this occurring in Queensland where mines and quarry sites routinely measure RCS and report on it to the regulator (60). A centralised national exposure registry is required to report on compliance with the WES, with a requirement for mandatory reporting of exceedances of the WES for RCS to jurisdictional regulators, and immediate regulatory action in response to exceedances of the standard. The exposure registry must align with the National Occupational Respiratory Disease Registry (Registry).

Although there is currently no explicit requirement for results of air monitoring data to be provided to regulators, Safe Work Australia is currently investigating if reporting of exceedances of the WES for some or all airborne contaminants could be mandatory under the dangerous incident provisions of the model WHS Act (9).

The introduction of a **national requirement for a Safe Work Method Statement (SWMS)** or similar statement to be completed before carrying out work that includes a risk of exposure to RCS will support PCBUs to fulfil their WHS duties in relation to managing the risks of RCS in the workplace and provide greater protection to workers.

A similar obligation is considered in Safe Work Australia's 2022 Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica at*

work, as part of the engineered stone licencing framework, which states: "licensees would be required to develop and implement an engineered stone control plan which:

- identifies the work undertaken by the licence holder that requires an engineered stone licence,
- states the hazards and risks associated with that work (i.e. includes a risk assessment),
- sufficiently describes measures to control those risks,
- describes how the risk control measures are to be implemented, and,
- is set out and expressed in a way that is readily accessible and comprehensible to all people who use it" (9, pg.32).

A requirement for SWMS for work that includes a risk of exposure to RCS utilises an existing WHS document to provide greater protections to workers and is similar to existing documents and templates currently in place across jurisdictions, industries and issues, such as the WorkSafe Victoria Engineered Stone Control Plan, and Asbestos Management Plans.

The **Workplace Exposure Standard (WES) for Respirable Crystalline Silica (RCS)** determines the maximum acceptable level of silica dust exposure that is not expected to cause adverse effects on the health of an exposed worker and must not be exceeded under WHS laws. Businesses adopt a combination of controls to prevent worker exposure to RCS above the WES (42, 61).

The WES for RCS was recently reviewed and all jurisdictions have implemented the new WES (8-hour TWA of 0.05 mg/m³) under their WHS laws. It is important that the WES for RCS (both the level and methodology) and other airborne contaminants are reviewed regularly (every 2-3 years) and is further reduced to a health-based WES for RCS of 0.02 mg/m³. Further research is needed to enable lower standards to be effectively measured.

Existing WHS laws specify requirements for the provision of information to enable safe use of products. It is important to improve the availability and visibility of **product labels and Safety Data Sheets (SDS)** across the supply chain to ensure data on silica content is readily available to inform both worker safety and customer behaviours. The first step is to conduct a rapid desktop review of legal requirements across jurisdictions for SDS and product labelling for materials and products that contain silica to identify current practices and inconsistencies. A recent NSW Review recommended a mandated, consistent format for product labels and safety data sheets for manufactured stone products (4).

Designers, manufacturers, importers and suppliers do not currently have a duty to provide information as a safety data sheet for solid products that contain crystalline silica, such as engineered stone. However, SDS are an effective way to communicate information downstream about the risks when working with engineered stone and it is considered good practice to make them available (24). Implementation of a national requirement for a consistent format for SDS and

product labels for materials and products that contain silica, including engineered stone, is necessary, accompanied by a national compliance education and awareness campaign targeting product and chemical suppliers and SDS for silica-containing products. SWMS will play an important role in ensuring businesses are complying with their WHS duties and implementing safe systems of work.

Development and implementation of a **workforce plan** is required to ensure the multi-sector and multidisciplinary workforce required to reduce RCS exposure and eliminate silicosis in Australia is suitably trained, resourced and distributed. The workforce to be covered in the workforce plan includes, but is not limited to:

- Medical and healthcare practitioners including General Practitioners (GPs), Consultant Physicians in Occupational and Environmental Medicine, Respiratory Physicians, Radiologists and B readers with special expertise in occupational lung disease and allied health professionals who all have an important role in identifying and assessing workers exposed to RCS dust with engineered stone (case identification) and carrying out health assessments and surveillance (62)
- Occupational hygienists who undertake air monitoring and recommend suitable control measures
- Work health and safety workforce, including inspectors.

The workforce plan should include measures to increase the supply of occupational hygienists in Australia in collaboration with higher education providers, states and territories, peak bodies and workplaces by strengthening recruitment pathways, raising awareness of the career and promoting occupational hygiene as an attractive career choice. Adequate resourcing of the Work Health and Safety workforce, including inspectors, is imperative for a comprehensive and robust compliance and enforcement regime.

To support work health and safety monitoring and compliance activities where workers are at risk of RCS exposure, the development of best practice compliance and enforcement principles in relation to the risks associated with RCS is called for.

Objectives:

- Strengthen work health and safety measures to give greater protection to workers
- Support employers to effectively manage the risks posed by RCS exposure in the workplace, comply with WHS duties and implement safe systems of work
- Eliminate hazardous RCS exposure in Australian workplaces
- Ensure the multi-sector and multidisciplinary workforce required to eliminate silicosis in Australia is suitably trained, resourced and distributed.

NATIONAL ACTION PLAN PRIORITY AREA 1: WORKPLACE RISK REDUCTION

Activity	Success Measure	Outcome	Responsibility	Timeframe
<p>1.1. Commence processes to implement a full ban on the importation of some or all engineered stone products if, by July 2024, there are no measurable and acceptable improvements in regulatory compliance rates for the engineered stone sector and/or preventative measures prove to be ineffective, including:</p> <ul style="list-style-type: none"> • Develop a comprehensive framework to evaluate the effectiveness of compliance with WHS duties and the effectiveness of measures to protect workers • Invest in measures to address gaps in silicosis knowledge and to ensure comprehensive and centralised data is available to inform the ban decision. 	<p>Comprehensive national data available to monitor regulatory compliance rates and the effectiveness of measures to protect workers in the engineered stone sector</p>	<p>Decision regarding a ban on the importation of engineered stone products based on an objective assessment of the requirements established under the framework</p>	<p>Commonwealth, State and Territory Governments</p>	<p>Framework developed by July 2023</p> <p>Commence ban processes by July 2024 if there are no measurable and acceptable improvements in regulatory compliance rates for the engineered stone sector and/or preventative measures prove to be ineffective</p>
<p>1.2. Implement a national ban to expressly prohibit uncontrolled dry cutting or processing of silica-containing materials and develop and implement an accompanying compliance strategy.</p>	<p>Nationally consistent implementation of a ban to expressly prohibit uncontrolled dry cutting or processing of silica-containing materials</p> <p>Delivery of compliance strategy directed toward the elimination of uncontrolled dry cutting or processing of silica-containing materials</p>	<p>High compliance with ban</p> <p>Reduced RCS exposure in businesses working with silica-containing materials</p>	<p>Safe Work Australia</p> <p>Commonwealth, State and Territory Governments</p>	<p>2023-24</p>
<p>1.3. Develop and implement a national licensing framework to support the introduction of jurisdictional licensing schemes for businesses working with engineered stone.</p>	<p>Development of a national licensing framework for businesses working with engineered stone</p>	<p>Access to engineered stone limited to PCBUs who meet the required licensing standards or competencies</p>	<p>Safe Work Australia</p> <p>Commonwealth, State and Territory Governments</p>	<p>2024-25</p>

Activity	Success Measure	Outcome	Responsibility	Timeframe
	<p>Introduction of jurisdictional licensing schemes for businesses working with engineered stone</p> <p>Publicly available database of licence holders</p>	<p>Reduced RCS exposure in businesses working with engineered stone</p>		
<p>1.4. Implement measures to enhance air monitoring and reporting in relation to RCS to ensure:</p> <ul style="list-style-type: none"> Employers regularly carry out air monitoring to assess exposure to RCS Air monitoring is carried out under the governance of a Certified Occupational Hygienist (COH)® Mandatory reporting of exceedances of the WES for RCS to jurisdictional regulators Immediate regulatory action is taken in response to exceedances of the WES for RCS A national register is established that reports on compliance with the WES for RCS. 	<p>Frequency of air monitoring is defined in legislation</p> <p>Requirement for air monitoring to be overseen by a COH® and exceedances reported to the jurisdictional regulator documented in legislation</p> <p>National exposure registry for RCS and other airborne contaminants established</p> <p>Increase in workplace air monitoring by PCBU's</p> <p>Visibility at a national level on the level of compliance across industry</p>	<p>Over-exposures to RCS are reported to jurisdictional regulators and action is taken</p> <p>Enhanced compliance with model WHS laws, including Regulation 49 and the WES for RCS</p> <p>Reduced RCS exposure in workplaces</p>	<p>Safe Work Australia</p> <p>Employers</p> <p>Researchers including proposed CRE in Silicosis Prevention (Activity 5.2)</p>	2023-24
<p>1.5. Introduce a national requirement for a Safe Work Method Statement (SWMS) or similar Statement to be completed before carrying out work that includes a risk of exposure to RCS to support PCBU's to fulfil their WHS duties in relation to managing the risks of RCS in the workplace.</p>	<p>Requirement for SWMS or similar Statement to be completed before carrying out work that includes a risk of exposure to RCS adopted into WHS laws across all jurisdictions</p> <p>Adoption of SWMS by workplaces within at-risk industries</p>	<p>Increased uptake of safe work practices and compliance with WHS duties</p> <p>Reduced RCS exposure in workplaces</p>	<p>Safe Work Australia</p> <p>Commonwealth, State and Territory Governments</p> <p>PCBU's</p>	2024-25
<p>1.6. Implement measures to ensure that the WES for RCS protects exposed workers from adverse health effects, including:</p> <ul style="list-style-type: none"> Review the WES maximum level of exposure every 2-3 years Review WES methodology Further research to enable lower standards to be effectively measured. 	<p>Regular review of WES for RCS and other airborne contaminants</p> <p>WES methodology reviewed</p> <p>New air monitoring technologies developed</p>	<p>Evidence-based WES protects exposed workers from adverse health effects</p>	<p>Safe Work Australia</p> <p>Industry/Occupational hygiene sector</p>	Review 2025-26

Activity	Success Measure	Outcome	Responsibility	Timeframe
1.7. Improve the availability and visibility of product labelling (e.g. label / Safety Data Sheets) across the supply chain by: <ul style="list-style-type: none"> • Conduct a rapid desktop review of legal requirements across jurisdictions for Safety Data Sheets and product labelling for materials and products that contain silica • Implement national requirement for a consistent format for Safety Data Sheets and product labels for materials and products that contain silica, including engineered stone products • Implement a national compliance, education and awareness campaign targeting product and chemical suppliers and safety data sheets for silica-containing products. 	Product labelling available and visible across the supply chain	Workers and consumers aware of risks associated with engineered stone products	Commonwealth, State and Territory Governments Safe Work Australia Industry	2024-25
1.8. Develop and implement a workforce plan to ensure the multi-sector and multidisciplinary workforce required to eliminate silicosis in Australia is suitably trained, resourced and distributed, including measures to: <ul style="list-style-type: none"> • Increase the supply of occupational hygienists in Australia • Ensure adequate resourcing of the Work Health and Safety workforce, including inspectors. 	Workforce plan developed	Workforce suitably trained, resourced and distributed	Commonwealth Government Industry Unions Health and Medical Professional Groups	2025-26
1.9. Development of best practice compliance and enforcement principles in relation to the risks associated with RCS.	Delivery of best practice principles	High compliance with WHS duties Reduced RCS exposure in businesses working with engineered stone	Heads of Workplace Safety Authorities (HWSA)	2023

PRIORITY AREA 2: EDUCATION AND AWARENESS

The implementation of targeted silicosis prevention education and awareness is essential if Australia is to make real headway in eliminating silicosis.

Education and awareness key in the fight against silicosis

The gaps in knowledge relating to silicosis and its prevention and management are significant and evident amongst Australian businesses, workers and the broader community.

There is a lack of understanding and awareness of the hazardous nature of working with silica-containing products including engineered stone. Some workers had never heard of silicosis before their diagnosis (6).

Limited information and awareness about the most effective available control measures for reducing or eliminating RCS exposure, and a lack of understanding about how to implement effective controls is also evident. The lack of consistency across jurisdictions in WHS practice and information and more importantly, lack of consistency with guidance material, means businesses are not receiving consistent messaging and are not clear about their requirements.

"I always wore my mask but there was no enforcement of it. They put warning signs on the finished products to warn consumers, but there was no understanding, no training, no monitoring." Worker (39)

The importance of education and awareness to prevent silicosis by raising awareness of effective control measures has been highlighted by findings that most early cases of engineered stone-associated silicosis occurred in small businesses with deficiencies in workplace control measures, including inadequate ventilation, lack of provision of appropriate respiratory protection, and 'dry-processing' of engineered stone (34). A lack of knowledge of the control measures, and how to implement them, is also evident.

Under the model WHS laws, businesses must eliminate or minimise risks to workers, so far as is reasonably practicable, that arise from the work they are performing, including the risks from exposure to hazardous airborne contaminants like silica dust.

A 46 year old former labourer currently living with complex silicosis and progressive massive fibrosis explained that no company they had worked for ever mentioned anything about their risks [of working with RCS or developing silicosis]. "The companies I was working for, you do your work, you hurry up...you don't worry about the rest".

A recent editorial noted that, "Of the few reports on silicosis ... most circle back to education as a tool in the fight against the disease" (63). There is strong support for effective education and communication strategies (6).

Government commitment

In April 2021, the Taskforce recommended the implementation of a national, targeted education and communication campaign, using lessons learned from jurisdictions and key stakeholders, by the end of 2021 (6).

In the All of Governments' Response to the Final Report of the Taskforce, Australian governments supported the Taskforce's recommendation (7).

Safe Work Australia's 2022 Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica at work*, considers implementation of national awareness and behaviour change initiatives to minimise the risks of RCS exposure with a focus on duty holders in the construction, manufacturing, tunnelling, quarrying, demolition and mining industries and compliance with the model WHS laws (9).

Current activity and investment

A number of silicosis education and awareness campaigns have been delivered by the Commonwealth, State and Territory governments and Non-Government Organisations (NGOs). Safe Work Australia and state and territory regulators have undertaken education and awareness raising campaigns targeting businesses with risks of exposure to RCS to ensure they are meeting their WHS duties.

The Commonwealth Government is currently funding specific education and awareness campaigns to prevent the risk of exposure to occupational lung diseases. This includes funding to Lung Foundation Australia to improve awareness and understanding of lung conditions for population groups considered to be at an increased risk of experiencing poor lung health in Australia.

Additional Commonwealth funding was allocated in the 2022-23 Budget for further education and awareness raising activities targeting high risk employees, high risk industries, carers and families of those impacted and culturally and linguistically diverse employees and employers.

In 2021, Safe Work Australia ran a national education and awareness campaign for occupational lung diseases that targeted duty holders in the construction, agriculture, manufacturing, and engineered stone industries. The 'Clean Air. Clear Lungs.' campaign ended in December 2021.

The Commonwealth Government recently funded the development of silica safety awareness training and competency framework for inclusion in relevant national training products, such as those relating to demolition, bricklaying and stonemasonry.

Current education and awareness activities include the Thoracic Society of Australia and New Zealand / Lung Foundation Australia's Occupational Lung Disease Short

Course and Online Module, funded by the Commonwealth Government, and the 10830NAT Course in Crystalline Silica Exposure Prevention.

Core audiences for silicosis prevention education and awareness

Education and awareness activities must be targeted at a range of different stakeholders in order to achieve meaningful change and eliminate silicosis in Australia. The core audiences for silicosis prevention education and awareness activities are identified in Box 4 with a brief description of how the focus of activities will vary for different stakeholder groups.

Box 4: Core audiences for silicosis prevention education and awareness

Education and awareness activities targeting a range of different stakeholders are required (6), including:

- Workers and families about risks, workers' rights and preventive measures, including workers previously exposed to silica dust and retired workers due to the latency period of the disease
- Businesses, including employers and PCBUs about risks, control measures and legislative requirements
- Medical and healthcare practitioners about occupational risk, symptoms, presentation and evidence-based diagnostic techniques to help early diagnosis of silicosis, avenues to support those affected, and to enable rapid referral for support
- Work health and safety inspectors about risks and control measures, and their role in providing advice, assisting workplaces to resolve health and safety issues and enforcing legislative requirements
- Manufacturers, suppliers, importers and designers to ensure compliance with WHS duties including promoting safe practices through labelling, provision of safety sheets for each stage of the supply chain and taking a lead role in product stewardship
- The housing and construction industry (e.g. architects, engineers, designers, builders), as well as home renovators of kitchen and bathrooms and the general public, about the risks associated with using silica containing products when they are not handled safely, and to encourage consideration of safer alternatives
- Consumers about the risks associated with silica-containing products when appropriate control measures are not used and to encourage consideration of safer alternatives.

Priority activities

A deep understanding of core audiences is needed to ensure silicosis prevention education and awareness activities are tailored to the audience and effective at influencing behaviour. **Behavioural insights research** with the range of core stakeholders is required to build on the Quantum Market research commissioned by the Taskforce in 2019 and 2021 (38, 39), and should form part of all education and awareness activities.

A **national, comprehensive and targeted education, communication and awareness program** is required to support the provision of healthy and safe working environments and better protect workers from RCS exposure. Tailored strategies and messages based on the insights, needs and roles of stakeholders is imperative.

Education, communication and awareness activities will:

- Target industries where workers are at risk of silicosis due to RCS exposure
- Align with existing WHS duties and legislative requirements
- Account for various levels of literacy as well as culturally and linguistically diverse audiences
- Consider and apply existing behavioural insights to ensure a focus on the best ways to prevent or reduce behaviours that increase risk of workplace RCS exposure
- Include content on the legal rights and responsibilities of different stakeholders
- Include the development of practical guidance and tools for use in workplaces in a variety of modalities.

Education, communication and awareness activities will have a strong focus on workers and businesses at each step of the supply chain in order to reduce the risk of RCS exposure. For example, activities targeting the engineered stone industry would be delivered at each step of the supply chain including extraction, crushing and grinding, manufacturing, import, packaging and labelling, transport, storage, sale, fabrication, installation, and demolition (64).

The significant rise in cases of silicosis has been associated with the increased importation and use of engineered stone in Australia (65). Education, communication and awareness activities will also target consumers and other professionals (e.g. architects, builders) to raise awareness about the risks associated with silica.

Implementation of a **national requirement for accredited silicosis prevention and silica management education and training** to be provided to workers at risk of RCS exposure is critical to better protecting Australian workers. The development and implementation of a national **accreditation system** for silicosis prevention and silica management education and training, and an accompanying competency and learning framework, are pivotal to effective implementation of this requirement.

This approach is similar to existing practices in other high risk work (e.g. forklift licence, safe working at heights training) where workers are required to complete

accredited education and training, with re-training at a minimum of every two years.

The Commonwealth Government-funded silica safety awareness training and competency framework may, upon completion, inform the national accreditation system (Activity 2.3) and the national licensing framework for businesses working with engineered stone (Activity 1.3).

Different measures are required to ensure that silicosis prevention education and awareness activities are available for businesses in at-risk industries, such as **education and training subsidies** to increase access and affordability and the establishment of a centralised **online directory of accredited education and training** providers and opportunities. The opportunity to provide self-guided options and scale up existing activities need to be explored.

Objectives:

- Increase awareness and knowledge of the risks of RCS exposure in all sectors
- Increase knowledge of safe work practices and compliance with WHS duties
- Increase consumer awareness of the risks when choosing a high silica content product such as engineered stone to inform consumer choice
- Influence stakeholder behaviours across the supply chain to reduce RCS exposure and better protect workers.

NATIONAL ACTION PLAN PRIORITY AREA 2: EDUCATION AND AWARENESS

Activity	Success Measure	Outcome	Responsibility	Timeline
2.1. Undertake behavioural insights research with the core audiences for silicosis prevention to inform the development of targeted education, communication and awareness activities.	<p>Behavioural insights research undertaken with core audiences for silicosis prevention</p> <p>Audience insights used to inform the development of targeted education, communication and awareness activities</p>	Deep understanding of core audiences gained	Government, Unions, Employers NGOs Construction, Design, Architecture and Industry Professional Associations	2023
2.2. Implement a national, comprehensive and targeted education, communication and awareness campaign that is tailored for and targets the core audiences for silicosis prevention education and awareness activities.	<p>Campaigns developed based on audience insights and behaviour change theory</p> <p>Campaigns co-designed with core audiences for silicosis prevention</p> <p>Regular and ongoing education, communication and awareness activities, including dissemination of information and materials</p> <p>Robust evaluation undertaken that informs ongoing delivery</p>	<p>Increased awareness and knowledge and behaviour change among core audiences, including:</p> <ul style="list-style-type: none"> Increased awareness by workers and families about risks, workers' rights and preventive measures Improved understanding by businesses about risks, control measures and legislative requirements, leading to increased uptake of safe work practices and reduced RCS exposure in workplaces Suitably trained and equipped medical and healthcare professional workforce Increased awareness by consumers and other professionals about the risks associated with silica 	Government, Industry, Unions, NGOs	2023 and ongoing
2.3. Implement a national requirement for accredited silicosis prevention and silica management education and training to be provided to workers who are at risk of RCS exposure, including: <ul style="list-style-type: none"> Develop and implement a national accreditation system for silicosis prevention and silica 	<p>Requirement for information, instruction and training to be provided to workers who are likely to be exposed to risks associated with undertaking high-risk crystalline silica work adopted into WHS laws across all jurisdictions</p> <p>Accreditation system and competency and learning framework in place</p>	<p>Improved understanding of control measures</p> <p>Improved uptake of safe work practices</p> <p>Improved compliance with WHS duties</p>	Commonwealth, State and Territory Governments Health and Industry Professional	2023-24

<p>management education and training</p> <ul style="list-style-type: none"> • Subsidise silicosis education and training to increase access and affordability • Establish a centralised online directory of accredited education and training. 	<p>Alignment of existing education and training with the competency framework</p> <p>Online directory of accredited education and training</p> <p>Uptake of training among employers and workers in at-risk industries</p>		<p>Associations and Societies</p>	
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PRIORITY AREA 3: HEALTH MONITORING, SCREENING AND SURVEILLANCE

“Nationally consistent and frequent health screening and surveillance of workers is critical to detecting silicosis early so that affected workers can access appropriate care and deficiencies in workplace controls can be identified. Silicosis can manifest many years after exposure to respirable crystalline silica – hence the need for monitoring in and out of the workplace.” Respiratory and Sleep Physician.

Health monitoring of current workers

Health Monitoring

Health monitoring is a statutory requirement under WHS laws.

Health monitoring is provided by a person conducting a business or undertaking (PCBU) for a worker. It involves using medical tests to monitor and protect a worker’s health because of exposure to hazardous chemicals (66).

Health monitoring is referred to as health surveillance in Western Australia and is also known as respiratory surveillance in the medical literature.

The purpose of occupational health monitoring and screening is to detect an adverse effect from workplace exposure at an early, pre-clinical stage which allows interventions to protect the health of the worker. The identification of any worker with an adverse health effect is also an indicator of failure to control the exposure at the workplace, thereby putting other workers at risk. The aim is to have zero adverse health effects, and even one affected worker requires thorough review of preventive measures to protect other workers at the workplace.

Under the model WHS regulations, employers and PCBUs have a legal obligation to “provide health monitoring for workers if they carry out ongoing work using, handling, generating or storing crystalline silica, and there is a significant risk to the worker’s health because of exposure.” (67). RCS is identified under Schedule 14 of the WHS Regulations to be a hazardous substance requiring provision of health monitoring.

Under the model WHS laws, PCBUs/employers have a duty to determine if significant risk is present and to decide if health monitoring is necessary. This requires knowledge of the product and its risks, and judgement of the person conducting the business or undertaking. Significant risk decisions are made taking into consideration the likelihood of exposure to a hazardous chemical, including air monitoring results, in conjunction with the known health effects of the chemicals. In the case of RCS, the likelihood of exposure when working with silica containing materials is high and the known health risks are many and serious (6).

While health monitoring is required under the model WHS laws, there are concerns about the lack of a nationally consistent approach to implementation of health monitoring, and accessibility of health screening assessments for occupational respiratory dust diseases (6).

Safe Work Australia's Consultation Regulation Impact Statement is scoping options to amend the model WHS regulations to clarify existing WHS requirements for high-risk silica processes, and explicitly set out requirements such as for health monitoring (9).

Active screening of workers

In recent years, several jurisdictions in Australia have provided active health screening programs for workers in the stone benchtop industry. There is inconsistency in the approaches taken by jurisdictions due to a lack of overarching national guidance (6).

These free programs have been extremely important, in particular as a means of identifying workers with silicosis (who are often asymptomatic) and providing appropriate management.

"I got my lungs checked in a SafeWork program back in 2019 after close to two decades of being exposed to silica at work. No-one I worked for ever talked to me about getting my lungs checked. And the very first time I had them looked at I found out I had silicosis." Former labourer, 46 years, living with silicosis

The programs have also provided further knowledge about the benchtop industry in Australia and engineered stone silicosis. As an indication of the extent of silicosis in the benchtop industry, in July 2022 the Queensland program had completed assessments of 1053 workers and identified 204 (23%) with silicosis, including 36 with progressive massive fibrosis, the most severe form of silicosis (35). A similar pattern of silicosis prevalence has been found in the Victorian stonemason screening registry (33).

Ongoing respiratory surveillance is imperative

Lifetime health monitoring and ongoing respiratory surveillance of workers who currently have, or previously had, exposure to RCS will help to identify the disease earlier, prevent further RCS exposure, and play an important role in reducing the adverse consequences of a diagnosis. Importantly, the symptoms of silicosis may not appear for many years after exposure, which is why continued health surveillance beyond employment for workers in at-risk industries is critical (68, 69).

Such monitoring also provides an opportunity to raise awareness of the risks of silica and to educate workers about the need to correctly apply protective controls to reduce their risk of developing silicosis. Important advice regarding other respiratory

hazards (e.g. smoking and vaping) can also be provided. It is important that contemporary methodologies such as low dose high-resolution computed tomography (HRCT) scans and enhanced respiratory function testing be included, wherever practicable, as the minimum requirement for health monitoring (44).

Despite convincing evidence regarding prevalence of occupational RCS exposure in Australia and internationally, the evidence base supporting standard screening methods requires further enhancement, including further research into the role of modern lung function testing and radiological techniques.

It is important that health monitoring and surveillance is undertaken effectively. The lessons learned from the re-emergence of Black Lung (Box 5) and the need for the most effective health monitoring and screening need to be applied to the workforce exposed to silica to avoid the same mistakes (67).

Box 5: Lessons learned from the re-emergence of coal worker's pneumoconiosis

The review into the respiratory component of the health monitoring program for Queensland coal miners undertaken due to the re-emergence of Black Lung (coal worker's pneumoconiosis) resulted in [improvements](#) to many aspects of the program, including:

- Suitable training of the doctors
- Better quality control and auditing processes
- Use of higher quality and more effective screening techniques
- Better and more accessible recording of findings, to allow for longitudinal surveillance (70).

Government commitment

In April 2021, the Taskforce made a number of recommendations relating to health monitoring, screening and surveillance.

In the All of Governments' Response to the Final Report of the Taskforce, Australian governments supported the following Taskforce recommendations:

- Urgently conduct a regulatory impact analysis that must consider strengthening the health monitoring requirements to include contemporary methodologies such as low dose high resolution computerised tomography (HRCT) scans, and to cover all workers at risk of exposure to RCS (Recommendation 1c)
- Develop national guidance to identify people at risk from RCS exposure and improve the quality, frequency and coverage of health screening assessments for current and former workers (Recommendation 2)
- Design and implement an Early Detection and Rapid Response Protocol to identify emerging workplace risk using data from the National Occupational Respiratory Disease Registry when it becomes operational, and other sources (Recommendation 3c) (6, 7).

Regarding Taskforce recommendation 5, Better support medical, health and other related professionals to improve the diagnosis and management of workers affected by silicosis, Australian governments supported recommendation 5b and 5c, noting recommendation 5a (7).

Safe Work Australia's 2022 Consultation Regulation Impact Statement, *Managing the risks of respirable crystalline silica at work*, considered the replacement of chest X-Ray with low dose HRCT in the minimum regulatory requirements for health monitoring but assessed it as infeasible (9) and it was not included. The health monitoring, screening and surveillance activities outlined in Priority Area 3 are also not included (9).

Priority activities

Conducting a **rapid desktop review** of existing health monitoring, screening and surveillance programs for silicosis across all jurisdictions and at-risk sectors will clearly describe current practice including gaps and variations and create a roadmap for optimising best practice and progressing towards national harmonisation. The desktop review will build on the Stocktake of Silicosis Prevention Activity in Australia included in the All of Governments' Response.

In line with recommendations of the Taskforce and the 2021 Review of the Dust Disease Scheme in NSW (4), it is imperative for Australia to **review and improve health monitoring requirements** for workers exposed to RCS (4). Required measures include:

- Developing national guidance to identify people at risk from RCS exposure and improve the quality, coverage and risk-based approach to frequency of health screening assessments for current and former workers
- Providing greater clarity regarding which workers are at risk of silicosis and need to undergo health monitoring by defining and clarifying what constitutes risk; and,
- Providing certainty of requirements by stipulating that HRCT scans are the primary method of screening for workers exposed to RCS.

Implementation of measures to **enhance the medical screening and assessment** of workers exposed to RCS to ensure that all workers (former, current and future) have been screened using HRCT scans. It is critical that data is captured, centrally collected and reported publicly on the number of individual workers screened, the types of scans performed, and the location of silica-related cases.

Establishment of a **national occupational health monitoring and surveillance information system** is required; this functionality should form part of the ongoing, staged development of the National Occupational Respiratory Disease Registry to enable the Registry to capture health monitoring data and track current and former workers over time, with strong links to the Monitoring and Evaluation Framework currently under development.

Processes to identify and reach all workers exposed to RCS and to follow up on screening or treatment drop out is critical. It is important that screening services are supportive, accessible and free to workers, and offer a streamlined pathway to treatment and compensation where applicable. Funding and delivery of **outreach services** to increase CT screening in regional, rural and remote communities across Australia is vital.

Due to a number of factors including the potentially long lag time between RCS exposure and the appearance of disease symptoms, the high risk of RCS exposure in the engineered stone industry, and the transitional employment patterns of the workforce, the development, implementation and funding of **ongoing national follow up/surveillance of former workers** (including those who have retired or left the industry) who have been exposed to RCS in the engineered stone industry is critical.

An **Early Detection and Rapid Response Protocol** is required to enable the early identification of and response to, emerging occupational respiratory risks and associated diseases, using data from the Registry when it becomes operational and other sources. The All of Governments' Response supports the development of the Early Detection and Rapid Response Protocol and additional Commonwealth funding was identified in the 2022-23 Budget to support this activity.

A competency-based **Silicosis Accreditation Program for medical professionals** who undertake health screening assessments will ensure high quality screening is undertaken and improve the diagnosis, management and care of people with silicosis in Australia. Establishment of the accreditation program with accompanying requirement for continuing professional development, in collaboration with the relevant professional colleges and societies, and development and maintenance of a public register of accredited medical professionals, is required. The program should complement existing initiatives, such as the work of Lung Foundation Australia to develop a national, evidence-based Lung Health Competency and Education Framework for primary health care professionals that supports best-practice care for people with lung disease and lung cancer.

Further development of the National Guidance for doctors assessing workers exposed to RCS dust with specific reference to engineered stone related silicosis is required, including regular review in consultation with experts and medical colleges to ensure it remains updated with the latest research and available evidence, and translation of the National Guidance into clinical guidelines. The All of Governments Response States the Commonwealth Governments commitment to fund the development and implementation of resources to encourage and support General Practitioners to use the National Guidance and to undertaking regular review of the National Guidance. The Commonwealth Government Budget 2022-23 allocated funding for training to support use of the *National Guidance for doctors assessing workers exposed to respirable crystalline silica dust with specific reference to engineered stone related silicosis*.

Objectives:

- Improve the quality, frequency and coverage of health monitoring and surveillance for current and former RCS exposed workers
- Implement a nationally consistent workplace health monitoring and surveillance program for silicosis supported by a national information system
- Enhance evidence-based screening and surveillance to optimise health outcomes for Australian workers.

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NATIONAL ACTION PLAN PRIORITY AREA 3: HEALTH MONITORING, SCREENING AND SURVEILLANCE

Activity	Success Measure	Outcome	Responsibility	Timeline
3.1. Conduct a rapid desktop review of existing health monitoring, screening and surveillance programs for silicosis across all jurisdictions and at-risk sectors.	<p>Review completed</p> <p>Recommendations to strengthen health monitoring, screening and surveillance documented</p>	Clear understanding of current practice and opportunities for optimising best practice and achieving national harmonisation	<p>Commonwealth, State and Territory Governments</p> <p>Appropriate Regulators and/or Research Bodies</p> <p>Health Professional Associations and Medical Bodies</p> <p>Unions and Industry Partners</p>	2023-24
<p>3.2. Review and improve health monitoring requirements for workers exposed to RCS, by:</p> <ul style="list-style-type: none"> Developing national guidance to identify people at risk from RCS exposure and improve the quality, coverage and risk-based approach to frequency of health screening assessments for current and former workers Providing greater clarity regarding which workers are at risk of silicosis and need to undergo health monitoring by defining and clarifying what constitutes risk Providing certainty of requirements by stipulating that HRCT scans are the primary method of screening for workers exposed to RCS. 	Health monitoring requirements of model WHS laws strengthened to cover all workers at risk of exposure to RCS and provide certainty of requirements including best practice methodologies	<p>Evidence-based health screening and surveillance</p> <p>Use of higher quality and more effective screening techniques</p>	<p>Commonwealth, State and Territory Governments</p> <p>Safe Work Australia</p>	2023-24
3.3. Implement measures to enhance the medical screening and assessment of workers exposed to RCS to ensure that all workers (former, current and future) have been screened using HRCT scans, including:	National occupational health monitoring and surveillance information system established	<p>Early detection of disease</p> <p>Population level data to inform preventive measures</p>	Commonwealth, State and Territory Governments	2023-24

<ul style="list-style-type: none"> Establish national occupational health monitoring and surveillance information system Implement processes to identify and reach all workers exposed to RCS and to follow up on screening or treatment drop-out Fund and deliver outreach services to increase CT screening in regional, rural and remote communities across Australia. 	<p>Accurate, national screening data collected centrally and reported publicly on the number of individual workers screened, the types of scans performed, and location of silica-related cases</p> <p>Screening services are supportive, accessible and free to workers, and offer a streamlined pathway to treatment and compensation where applicable</p> <p>Screening processes operational, including outreach services with an initial focus on regional, rural and remote communities</p> <p>Increased access to health screening assessments</p> <p>Increased screening participation</p>		Industry	
<p>3.4. Develop, implement and fund the ongoing national follow up/surveillance of former workers (including those who have retired or left the industry) who have been exposed to RCS in the engineered stone benchtop industry.</p>	<p>Increased access to health screening assessments</p> <p>Increased screening participation</p> <p>Accurate, national screening data captured</p>	<p>Early detection of disease</p> <p>Population level data to inform preventive measures</p>	Commonwealth, State and Territory Governments	2023-24 and ongoing
<p>3.5 Design and implement an Early Detection and Rapid Response Protocol to identify emerging workplace risks using data from the Registry when it becomes operational, and other relevant sources (6).</p>	<p>Early Detection and Rapid Response Protocol established and implemented</p>	<p>Early identification of new and emerging occupational exposures and risks to Australian workers, and contemporary data to guide agile responses</p>	Commonwealth Government Industry Unions	2024-25
<p>3.6. Develop and implement a competency-based Silicosis Accreditation Program for medical professionals who undertake health screening assessments.</p>	<p>Silicosis Workforce Accreditation Program established</p>	<p>High quality health screening assessments undertaken by competent, accredited workforce</p>	Commonwealth Government RACP / TSANZ	2023-24

	Public register of accredited medical professionals			
<p>3.7. Further development of the <i>National Guidance for doctors assessing workers exposed to respirable crystalline silica dust with specific reference to engineered stone related silicosis</i>:</p> <ul style="list-style-type: none"> • Undertake regular review of the National Guidance in consultation with experts and medical colleges, to ensure it remains updated with the latest research and available evidence • Translate the National Guidance into clinical guidelines. 	Clinical guidelines developed	Increased provision of evidence-based care	NHMRC Health Professional Societies and Bodies including RACP and TSANZ	2023-24

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PRIORITY AREA 4: GOVERNANCE

“There is a pressing need for national coordination of Australia’s response to the current silicosis epidemic. An independent governance mechanism with the powers to effect change and keep Australian workers safe is urgently needed and long overdue.” Respiratory and Sleep Physician.

The establishment of a robust governance mechanism to protect workers from exposure to RCS dust is supported by Australian governments (7) and stakeholders (6). A national governance mechanism is required to improve communication and information sharing, coordinate responses, and report on progress. A national governance mechanism will align efforts made by individual jurisdictions in response to the re-emergence of silicosis in Australia and drive national consistency in the protection of workers.

Government commitment

In 2021, the Taskforce reported stakeholder concern about failures to protect workers and that few recommendations of the May 2006 Senate Inquiry into *Workplace Exposure to Toxic Dust* (2) had been progressed and implemented. The Taskforce identified a lack of national consistency, noting inconsistencies across jurisdictions regarding regulatory arrangements, health screening, air monitoring, guidance materials, and the interpretation, application and enforcement of WHS laws. It recommended the establishment of a cross-jurisdictional governance mechanism to coordinate responses, including the provision of annual reporting to Health and WHS Ministers in all jurisdictions on the implementation of the Taskforce recommendations and the effectiveness of measures in improving compliance to prevent silicosis in workers, with the first report due in July 2022 (6).

In the All of Governments’ Response to the Final Report of the Taskforce, published in April 2022 (7), Australian governments supported the Taskforce recommendation, noting that the Commonwealth Government is developing a Monitoring and Evaluation Framework in consultation with State and Territory governments to guide Commonwealth, State and Territory government agencies’ data collection and reporting activities, with the first progress report to be provided in 2023 (7).

Governance mechanism functions and principles

“Australia needs a governing mechanism with teeth – one that goes beyond the collection of data and reporting. We need an independent, robust governance mechanism with the ability to influence workplace policy, practice and behaviour and drive preventive action to better protect workers. The time to act is now.” Kate Cole OAM, Certified Occupational Hygienist

There is strong evidence and stakeholder consensus regarding the required functions and principles of the governance mechanism to coordinate and monitor Australia's response to the silicosis epidemic.

A key function of the governance mechanism will be administering the NSPS and accompanying NAP. This will include oversight of implementation, monitoring and reporting on the progress and impact of individual preventative measures as well as their collective impact on worker safety and related health outcomes to better understand the risks associated with exposure to silica dust and the possible need for a product ban as outlined in Activity 1.1. Data collection and reporting activities will be informed by the Monitoring and Evaluation Framework currently under development.

For Australia's response to the silicosis epidemic to be effective, the governance mechanism must be enshrined in legislation with the ability to proactively influence WHS policy, practice and behaviour across all levels of government, including jurisdictional WHS regulators and workplaces. As noted in the All of Governments' Response, the information collected through the Registry will be a critical component of the Monitoring and Evaluation Framework currently being developed by the Commonwealth Government (7), and it is important that the governance mechanism has strong links to the Registry (7).

Appropriate resourcing and ongoing funding of the governance mechanism is imperative.

It is critical that Australia's governance mechanism is underpinned by the following:

- **Prevention:** A focus on the prevention of RCS exposure and the elimination of silicosis in Australia
- **Independence:** A commitment to serving workers by providing the highest level of protection from the risks associated with RCS exposure
- **Lived experience:** The meaningful engagement of workers affected by silicosis and their families
- **Innovation:** A remit to drive change, reform and to explore new opportunities and solutions to protect workers from exposure to RCS and its devastating consequences. Maintaining the status quo is not acceptable
- **Multidisciplinary:** A multidisciplinary approach with the input of relevant technical expertise (e.g. public health, medical, scientific, epidemiology)
- **Representation:** The input of workers and workplace parties from different industries and occupations where workers are at risk of RCS exposure.

Potential governance models

It was evident during the development of this Strategy that stakeholders continue to be concerned and frustrated by the systemic and ongoing failures to protect workers from developing silicosis. There remains strong support for reform including the establishment of a robust governance mechanism to protect workers from exposure to RCS dust.

The NSPS Expert Steering Committee considered a number of governance models during the development of this Strategy, with consideration to the functions and principles required for the governance mechanism to be effective within the Australian context. Two models were identified as viable options:

1. Standing Ministerial Advisory Committee reporting to the Australian Government Department of Health and Aged Care and Department of Employment and Workplace Relations Ministers, with a 3-year interim measure until Australia's Centre for Disease Control and Prevention is fully operational and can assume responsibility.
2. Establishment of a new independent body, similar to the Asbestos Safety and Eradication Agency (ASEA) yet with the ability to influence WHS policy, practice and behaviour across all levels of Government, including jurisdictional WHS regulators.

Priority activities

Urgent establishment of a cross-jurisdictional governance mechanism, in line with the Taskforce recommendation and All of Government response, to coordinate and monitor Australia's response to the current silicosis epidemic.

Objectives:

- Establish a cross-jurisdictional governance mechanism to coordinate and monitor a comprehensive national program of reform and preventative measures designed to fundamentally address the risks facing workers in industries that generate RCS
- Drive greater consistency across jurisdictions in WHS policy, practices, behaviours and information.

NATIONAL ACTION PLAN PRIORITY AREA 4: GOVERNANCE

Activity	Success Measure	Outcome	Responsibility	Timeline
<p>4.1. Establish a cross-jurisdictional governance mechanism, in line with the Taskforce recommendation and All of Government Response.</p>	<p>Cross-jurisdictional governance mechanism established</p> <p>Governance mechanism enshrined in legislation, with the ability to influence WHS policy, practices, behaviours and information</p> <p>Governance mechanism underpinned by a focus on prevention and the coordination and monitoring of preventative measures, with input from multidisciplinary experts, workers affected by silicosis and their families, and representation of workers and workplace parties</p> <p>Appropriate resourcing and ongoing funding of governance mechanism</p>	<p>Coordinated national response to the silicosis epidemic in Australia</p> <p>Improved communication and information sharing among jurisdictions</p> <p>Greater consistency across jurisdictions in WHS policy, practices, behaviours and information to better protect workers from RCS exposure</p>	<p>Commonwealth Government</p>	<p>2023</p>

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PRIORITY AREA 5: RESEARCH AND DEVELOPMENT

Silicosis is not a new disease yet major gaps in silicosis knowledge exist which hinder our ability to act effectively and protect workers from exposure to RCS and its devastating consequences.

Gaps in silicosis knowledge

The gaps in knowledge relating to silicosis and its prevention and management are significant and in Australia in particular, there are major gaps in the epidemiological understanding of the disease.

Currently in Australia there is no centralised system to capture and share data on occupational RCS exposures, incidence of silicosis, uptake of and effectiveness of control measures, and regulatory compliance with WHS duties. The lack of available data and gaps in silicosis knowledge is due to a number of factors, including:

- Poor awareness of occupational lung diseases including silicosis
- Lack of an operational Registry that links with State-based registers
- Lack of an Australian air monitoring exposure registry
- Lack of a national occupational health monitoring and surveillance information system
- Reliance on workers compensation and death certification data which has been repeatedly demonstrated to severely under report cases
- Delayed recognition of occupational respiratory diseases by medical professionals
- Delayed case identification due to deficiencies in occupational health monitoring programs and the use of low sensitivity methods
- Lack of a strategic national approach to research.

Current evidence gaps regarding measures to prevent silicosis are extensive and include:

- Level of compliance with health monitoring being undertaken by employers across all at-risk sectors, and the sensitivity of currently recommended health monitoring requirements, including effectiveness of screening
- Level of non-compliance with the current WES for RCS, and industries where non-compliance is occurring most frequently
- Verification of the WES for RCS of less than 0.05mg/m³, and its evidence-based impact on workers' risk exposure
- Understanding of the differences in regulatory compliance activities across jurisdictions
- Understanding how employers and PCBUs determine if "significant risk" of employee exposure to RCS is present and decide if exposure monitoring and health monitoring is provided

- The adequacy of low levels of exposure monitoring techniques and technology, including their long-term viability
- Behavioural insights to build evidence of the best ways to prevent or reduce behaviours that increase risk of workplace RCS exposure
- Development of alternative low-silica content materials to substitute those currently in use, including materials currently available and new products under development.

See [NSPS Scientific and Evidence Report – Silicosis in Australia](#) (Section 1.11) for further gaps in silicosis knowledge and research and development priorities.

Government commitment

In recognition of the gaps in silicosis knowledge and lack of available data, in 2021 the Taskforce recommended enhancing the silica and occupational respiratory disease evidence base and research expertise in Australia, and operationalising the Registry as soon as possible (6).

In the All of Governments' Response, Australian governments supported the Taskforce's recommendation (7).

As part of the Australian Government's response to the re-emergence of silicosis, a Registry is in development (6), with an initial focus on mandatory reporting of all cases of silicosis by respiratory and occupational physicians, and voluntary reporting of other occupational respiratory diseases, such as work-related asthma. Initial reports of the Registry design indicate that it will capture and report on a range of data (i.e. numbers of new cases, causative exposures, industries of exposure, occupations and job tasks where the exposure occurred and relevant medical tests) and will determine incidence trends, which will assist in targeting and monitoring the effectiveness of interventions and preventative measures.

Current activity and investment

The Commonwealth Government committed \$6 million to silicosis research in the 2021-22 Budget. Five grants for silicosis research projects were funded through Medical Research Future Fund (MRFF) and National Health and Medical Research Council (NHMRC), including projects on early diagnosis, silicosis treatment and management (71). Results are expected mid-2024.

Funding was allocated in the Commonwealth Government Budget 2022-2023 to operationalise the national Registry. Since 2019, registries of varying sophistication and capability have commenced operation in four Australian jurisdictions: Queensland, New South Wales, Victoria and South Australia.

Safe Work Australia's 2022 work plan states that they are investigating opportunities to commission research into the effectiveness of engineering controls to minimise

RCS exposures in workers processing engineered stone, particularly in newer products that have lower crystalline silica content (19).

Priority activities

Much remains to be understood about silicosis despite recent investments in silicosis research by the Commonwealth Government and others.

Additional funding to address the gaps in silicosis knowledge and build evidence as well as the capability of the research sector is required. There is also a strong need to invest in comprehensive national silicosis data sources and infrastructure to enable data capture and information sharing (27).

The **National Occupational Respiratory Disease Registry** is critical to understanding the prevalence and incidence of silicosis and other occupational respiratory diseases in Australia.

Occupational lung disease registries operate in countries such as Austria, Belgium, the Czech Republic, France, Finland, the United Kingdom, Brazil and some states of the United States (72) and provide useful examples to learn from and emulate (72)(71)(70).

A well-resourced and functioning Registry will support the elimination of preventable occupational respiratory diseases in Australia by facilitating earlier detection, intervention and prevention.

Operationalising the Registry is a matter of urgency and it is critical that ongoing staged development is undertaken to evolve its functionality over time and build the capabilities of occupational dust diseases data collection in Australia (Box 6).

Box 6: Ongoing staged development of the Registry

Ongoing staged development will provide opportunities for the Registry to evolve over time and expand to include the following data requirements and features:

- Mandatory notifications by clinicians of all occupational respiratory diseases (e.g. work-related asthma)
- Interactivity and bidirectional data flow, including data synthesis and regular reporting of findings back to stakeholders
- Publicly available, up-to-date reports
- Registry data available to research institutions to enable research projects
- Engagement and interaction with multiple stakeholders, including high level clinical leadership
- Government commitment to sustained funding
- Responsiveness to changing requirements over time and the addition of further enhancements and/or links to other relevant databases such as workers' compensation, air monitoring and health monitoring data
- Longitudinal data including health outcomes (73).

A strategic national approach to silicosis research that gives prominence to silicosis prevention is needed. An internationally relevant and nationally coordinated **silicosis prevention research strategy** would help to address identified gaps in silicosis knowledge and build the evidence base. The strategy would encompass disease surveillance and population health research, basic science and clinical research, behavioural and market research, implementation science and knowledge translation, and research and development (product redesign and development).

Funding of a **NHMRC Centre for Research Excellence (CRE) in Silicosis Prevention** and a comprehensive, integrated grants program building on NHMRC Partnership Grants, Australian Research Council (ARC) Linkage Grants and industry research and development activities would help to close data gaps, build the evidence base as well as the capability of the research sector, and support collaboration and information sharing. Furthermore, the CRE could help to generate the robust evidence required to inform the decision regarding a ban on the importation of engineered stone products, as outlined in Activity 1.1.

The pillars for the CRE would reflect the National Silicosis Prevention Research Strategy and may include:

- Pillar A: Epidemiology, including health monitoring and surveillance
- Pillar B: Data including registries, patient reported outcomes and behavioural insights
- Pillar C: Product design, development and handling across the silica supply chain
- Pillar D: Prevention, risk reduction and use of control measures, including air monitoring and adaptive new technologies
- Pillar E: Research workforce capability, education and translation.

Development of a comprehensive **National Silicosis Profile** as per global best practice is necessary to enable a full understanding of the current scale and impact of silicosis in Australia and enable monitoring of change over time. At a minimum, the Profile needs to report all 16 data recommended by the joint ILO/WHO Global Programme for the Elimination of Silicosis (GPES) (8, 74) – see Box 7. The Profile should be updated annually and be publicly available.

Box 7: ILO/WHO Global Programme for the Elimination of Silicosis (GPES) National Silicosis Profile data (74)

1. Estimated total number of workers exposed to crystalline silica dusts in the country
2. Full list of industries where exposure to crystalline silica is present in the country and list of industries with the largest numbers of workers potentially exposed to crystalline silica dust

3. Industries with high risk of exposure (where overexposure is documented as exceeding occupational exposure limits) and estimated total number of workers at high risk
4. Prevalence of silicosis (total number of workers with diagnosed silicosis to-date) – national, with a breakdown by industries
5. Prevalence rate (total number of workers who have silicosis at a particular time or during a particular period divided by the number of workers at risk of developing silicosis at this point of time) - national and in various industries or occupations (e.g. sandblasting)
6. Number of suspected cases of silicosis (an estimate of a total number of workers exposed to crystalline silica but never having undergone health surveillance or diagnosis made)
7. Incidence of silicosis (number of new diagnosed cases yearly), with a breakdown by industries
8. Incidence rate of silicosis (rate at which new cases of silicosis occur in the population, (i.e. new cases of silicosis diagnosed during the year is the numerator and the number of total number of workers exposed is the denominator)
9. Under-diagnosis or under-reporting coefficient (where available, to make better estimate of prevalence and incidence of silicosis)
10. Acute cases of silicosis – common or uncommon, silico-tuberculosis
11. Total number of workers eligible for compensation for silicosis (per year) and the numbers of individuals compensated yearly
12. Number of deaths from silica-related diseases (per year)
13. National enforceable occupational exposure limits for crystalline silica
14. The system for inspection and enforcement of the exposure limits
15. Estimated economic losses due to silicosis (where available)
16. Major studies on epidemiology of silica-induced diseases in the country (74)(73)(72).

Objectives:

- Develop a strategic national approach to silicosis prevention research and development
- Build the evidence base for silicosis prevention as well as the capability of the research sector
- Enhance the capabilities of population-level monitoring and surveillance of silicosis and other occupational lung diseases in Australia
- Translate silicosis knowledge into WHS policy, practices, behaviours and information to better protect workers from RCS exposure.

NATIONAL ACTION PLAN PRIORITY AREA 5: RESEARCH AND DEVELOPMENT

Activity	Success Measure	Outcome	Responsibility	Timeline
5.1. Operationalise the Registry and undertake ongoing staged development to continue to enhance functionality and build the capabilities of occupational dust diseases data collection in Australia.	<p>Registry operational</p> <p>High level of clinical engagement</p> <p>Mandatory notifications of silicosis by respiratory and occupational physicians</p> <p>Ongoing investment in the Registry</p> <p>Ongoing staged development of the Registry and expanded functionality</p>	<p>National, population-level monitoring and surveillance of silicosis</p> <p>Knowledge of the prevalence and incidence of silicosis in Australia</p> <p>Early identification of new and emerging occupational exposures and risks to Australian workers, and contemporary data to guide agile responses</p> <p>Timely responsiveness of regulators to the findings from the Registry</p> <p>Expanded capabilities of occupational dust diseases data collection in Australia</p>	Commonwealth Government	2023-24
5.2. Fund a NHMRC Centre for Research Excellence (CRE) in Silicosis Prevention and a comprehensive, integrated grants program building on NHMRC Partnership Grants, ARC Linkage Grants and industry research and development activities.	<p>Centre for Research Excellence in Silicosis Prevention and/or a comprehensive, integrated grants program established</p> <p>Increased investment in silicosis prevention research</p> <p>Funded fellowships and scholarships</p>	<p>Greater collaboration and information sharing and partnerships across sectors including research, government and industry</p> <p>Improved understanding of silicosis prevention</p> <p>Enhanced capabilities of occupational dust diseases research in Australia</p> <p>Preparation of annual report on the progress of the NSPS and NAP provided to the NSPS/NAP governance mechanism and Health and WHS Ministers in all jurisdictions, and publicly available</p> <p>Translation of knowledge into WHS policy, practices, behaviours and information to better protect workers from RCS exposure</p>	<p>Commonwealth Government</p> <p>NHMRC</p> <p>ARC</p> <p>MRFF</p> <p>Industry</p> <p>Unions</p> <p>NGOs / PPPs</p>	2024-25
5.3. Develop a National Silicosis Prevention Research Strategy in partnership with industry and	Strategy developed with widespread stakeholder and researcher involvement	Framework to guide a strategic national approach to silicosis prevention research and development in place	Commonwealth Government	2024-25

governments to address identified evidence gaps.	Identification of silicosis prevention priority areas for further research funding	Improved understanding of silicosis including preventative measures Enhanced silica and occupational respiratory disease research expertise in Australia Translation of knowledge into WHS policy, practices, behaviours and information to better protect workers from RCS exposure	Industry	
5.4. Develop a comprehensive National Silicosis Profile.	National Silicosis Profile developed as per global best practice National Silicosis Profile publicly available and updated annually	Knowledge of the scale and impact of silicosis in Australia and changes over time	Commonwealth Government	2024-25 and ongoing annually

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Part Three: Monitoring and Reporting

The NSPS provides a framework to guide action on silicosis prevention and coordinate activities across stakeholder groups to prevent and ultimately eliminate silicosis in Australia.

Implementation of the NSPS is supported by the NAP. The NAP outlines specific activities, success measures, outcomes, responsibility and timeframes over a five year period, i.e. 2023-2028.

A robust governance mechanism is required to oversee the implementation of the NSPS and NAP, including oversight of monitoring and reporting against progress. Annual reports should be provided to Health and WHS Ministers in all jurisdictions annually on the implementation of the NAP and the effectiveness of measures in reducing RCS exposure to prevent silicosis, including recommendations for stakeholders to respond to the evidence in a timely manner and continue to reform and refine practice to keep workers safe.

Annual reports are to be publicly available and underpinned by a comprehensive Monitoring and Evaluation framework.

There is a pressing need to improve Australia's data sources on silicosis to more effectively monitor trends over time and provide regulatory agencies, industry, workers and occupational health professionals with the necessary information to detect emerging respiratory threats and better monitor the effectiveness of preventive measures (27). The NSPS has identified several national data collection mechanisms that are required to enable comprehensive monitoring and reporting and support the elimination of silicosis in Australia, including:

- A well-resourced and functioning Registry (Activity 5.1)
- National exposure registry for RCS and other airborne contaminants (Activity 1.4)
- National occupational health monitoring and surveillance information system (Activity 3.3)
- Early Detection and Rapid Response Protocol (Activity 3.5)
- Annual reports provided to Health and WHS Ministers in all jurisdictions
- Workers' compensation data
- Compliance and enforcement activity data from each jurisdiction.

It is suggested that the Centre for Research Excellence (CRE) in Silicosis Prevention outlined in Activity 5.2 collates and consolidates the data to produce an annual report on the progress of the NSPS and NAP.

Acknowledgements

The Government thanks all who have contributed to the development of the Strategy and accompanying Action Plan. We particularly appreciate the involvement of affected workers and their families who shared information about their experiences during the consultation processes.

The Strategy, facilitated by Lung Foundation Australia, has benefited from the guidance of an NSPS Expert Steering Committee and Reference Group, alongside input from governments, industry, unions, workers, employers, regulators, medical and health professionals, researchers and peak bodies.

NSPS Expert Steering Committee

- Dr Ryan Hoy – Chair
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- Emeritus Prof Malcolm Sim AM, Royal Australasian College of Physicians
- Jennifer Low, Australian Chamber of Commerce and Industry
- Kim Smith, Caesarstone
- Deborah Vallance, Australian Council of Trade Unions
- Prof Deborah Yates, The Thoracic Society of Australia and New Zealand and Royal Australasian College of Physicians
- Australian Government Department of Health and Aged Care (observer)
- Department of Employment and Workplace Relations (observer)

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- Dr Ronald McCoy, The Royal Australian College of General Practitioners
- Tracey Browne, Australian Industry Group
- Megan Davison, Minerals Council of Australia
- Tony Lopez, Housing Industry Association
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- Rebecca Sostarko, Master Builders Australia
- Trevor Torrens (until December 2022), Lee McCallum (from January 2023), Asbestos Disease Support Society / Silicosis Support Network
- Dr Nick Allsop, iCare
- Julia Collins, Asbestos Safety and Eradication Agency
- Perdita Dickson, WorkSafe Victoria
- Catherine Jones, SafeWork SA
- Janine McPherson (until June 3, 2022), Tobias Reeves (from June 6, 2022), Office of Industrial Relations (QLD)
- Alice Morris, WorkSafe Tasmania
- Aklesh Nand, SafeWork NSW
- Sally North, Department of Mines, Industry Regulation and Safety (WA)
- Evan Pengelly, Resources Safety & Health Queensland
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Common and complex terms and acronyms and their definitions.

Definitions are consistent with those used by Safe Work Australia (42, 67, 75, 76) and the Australian Government Department of Health and Aged Care (62, 77).

AIOH	Australian Institute of Occupational Hygienists
ARC	Australian Research Council
ASEA	Asbestos Safety and Eradication Agency
Burden of disease	The quantifiable impact of a disease, injury or risk factor on a population, using the disability-adjusted life year (DALY) measure.
COH	Certified Occupational Hygienist
CRE	Centre for Research Excellence
Crystalline silica	The crystalline form of the abundant naturally occurring mineral silica or silicon dioxide (SiO ₂). It is present in almost all types of rocks, sand, clays, shales and gravel and in construction materials such as concrete, tiles and bricks.
Duty holder	Any person who owes a work health and safety duty under the WHS Act including a person conducting a business or undertaking, a designer, manufacturer, importer, supplier, installer of products or plant used at work (upstream duty holder), officer or a worker.
Early intervention	The process of taking action and/or providing support to a person who is experiencing or demonstrating any of the early symptoms of illness.
Engineered stone	Engineered stone is an artificial product that is defined in relation to the percentage of silica contained in the material, however definitions vary across States and Territories. Engineered stone can contain up to 97 per cent silica.
GPES	Global Programme for the Elimination of Silicosis
GPs	General Practitioners
Health	A state of complete physical, mental, social and emotional wellbeing and not merely the absence of disease or illness.

	The capacity to access, understand, appraise and use information to make health-related decisions in everyday life.
Health monitoring	The required monitoring of a worker while they are deployed in a role assessed to be at risk, to identify changes in their health status because of exposure to specific hazardous substances in the workplace. Health monitoring is a statutory requirement under Work Health and Safety (WHS)/Occupational Health and Safety (OHS) laws. Health monitoring is referred to as health surveillance in Western Australia.
Health promotion	A broad term to describe activities that enable communities and individuals increase control over and improve their health. Health promotion focuses on addressing and preventing the root causes of ill health, rather than on treatment and cure.
Health screening	The term health screening is in reference to the process of case finding and diagnosis. While this screening has recently been focussed on workers in the stone industry, it does not have the same purpose and intent as health monitoring under the model WHS laws.
Health surveillance	A system of ongoing health checks.
Health system	All activities with the primary purpose to promote, restore, and maintain health.
Hierarchy of Control	The hierarchy of risk control measures ranks control measures from the highest level of protection and reliability to the lowest.
HRCT	High-resolution computed tomography
HWSA	Heads of Workplace Safety Authorities
ILO	International Labour Organization
Incidence	The number of new cases (of an illness or event, and so on) occurring during a given period.
LFA	Lung Foundation Australia
Life expectancy	An indication of how long a person can expect to live, depending on the age they have already reached. Technically, it is the number of years of life left to a person at a particular age if death rates do not change.

Codes of practice are practical guides to achieving the standards of health, safety and welfare required under the model WHS Act and the model WHS Regulations in a jurisdiction. To have legal effect in a jurisdiction a model Code of Practice must be approved as a code of practice in that jurisdiction.

Model WHS Act

Model Work Health and Safety Act - The model WHS Act forms the basis of the WHS Acts that have been implemented in all jurisdictions across Australia except Victoria. The main object of the Act is to provide for a balanced and nationally consistent framework to secure the health and safety of workers and workplaces.

Model WHS Regulations

Model Work Health and Safety Regulations - The model WHS Regulations set out detailed requirements to support the duties in the model WHS Act.

Mortality

Number or rate of deaths in a population during a given time period.

MRFF

Medical Research Future Fund

NDDT

National Dust Disease Taskforce

NGO

Non-Government Organisation

NHMRC

National Health and Medical Research Council.

NORDR

National Occupational Respiratory Disease Registry (also referred to as 'Registry')

OEP

Occupational and Environmental Physician

PCBU

Person Conducting a Business or Undertaking. Under the model WHS laws in place in all jurisdictions apart from Victoria, a PCBU has specific duties, so far as reasonably practicable, to ensure the health and safety of workers while they are at work in the business or undertaking and of others who may be affected by the carrying out of the work. In Victoria OHS legislation imposes similar duties on employers.

PPE

Personal protective equipment (PPE). Anything used or worn by a person to minimise risk to the person's health and safety.

PPP

Public private partnerships

Prevalence

The number or proportion (of cases, instances, and so forth) in a population at a given time.

Prevention

Measures to keep people healthy and well and to avoid the onset of illness, disease or injury.

Primary health care

Services delivered in many community settings, such as general practices, community health centres, Aboriginal health services and allied health practices which come under numerous funding arrangements.

Primary prevention

Focuses on reducing risk factors to prevent a disease or disorder before it arises. This includes behavioural factors; biomedical factors; and specific protective factors.

Public health

Activities aimed at benefiting a population, with an emphasis on prevention, protection and health promotion as distinct from acute treatment tailored to individuals with symptoms.

RCS

Respirable Crystalline Silica (RCS). Respirable dust (less than and equal to 10 micrometres (μm)) in diameter of the following CAS numbers:

- Cristobalite 14464-46-1
- Quartz 14808-60-7
- Tridymite 15468-32-3, and
- Tripoli 1317-95-9.

Synonyms: a quartz, crystallized silicon dioxide, silica, calcined diatomaceous earth.

Registry

National Occupational Respiratory Disease Registry (also referred to as 'NORDR')

Regulatory impact analysis (RIA)

A regulatory impact analysis is a tool used by governments, when introducing or abolishing regulation, to assess the likely impact of viable options against the default position of no change in a way that is transparent and accountable.

Risk

The possibility harm (death, injury or illness) might occur when exposed to a hazard.

Risk factor

Attributes, characteristics or exposures that increase the likelihood of a person developing a disease or health disorder.

RPE

Respiratory Protective Equipment (RPE). A type of PPE designed to protect the worker from inhaling an airborne hazardous substance. The common term for RPE is a respirator.

RTO

Registered Training Organisation

SDS

Safety Data Sheet

Secondary prevention

Focuses on the early detection and best practice management of a disease or disorder to reduce deterioration and long-term effects. This includes identifying people at risk of ill-health through screening programs, general health examinations, as well as the identification of complications and co-morbidities.

Screening (for health)

A systematic method of detecting risk factors or suspicious abnormalities among people who are symptom free, so that health problems can be either prevented or followed up, diagnosed and treated as early as possible.

SME

Small and Medium Enterprise

SWMS

Safe Work Method Statement

TSANZ

Thoracic Society of Australia and New Zealand.

Wellbeing

It is not just the absence of disease or illness, it is the complex combination of a person's physical, mental, emotional and social factors. Wellbeing is strongly linked to happiness and life satisfaction.

WES

Workplace Exposure Standard (WES). A Workplace Exposure Standard published by Safe Work Australia in the Workplace Exposure Standards for Airborne Contaminants. A Workplace Exposure Standard for a particular chemical sets out the legal concentration limit of that chemical that must not be exceeded, known as the workplace exposure limit (WEL).

WHS

Work Health and Safety

WHS Duties

WHS laws require organisations that employ paid workers ensure, so far as is reasonably practicable, the physical and mental health and safety of workers, including volunteers.

Worker

Any person who carries out work for a PCBU, including work as an employee, contractor, subcontractor, self-employed person, outworker,

Workplace

apprentice or trainee, work experience student, employee of a labour hire company placed with a 'host employer' and volunteers.

Any place where work is carried out for a business or undertaking and includes any place where a worker goes, or is likely to be, while at work. This may include offices, factories, shops, construction sites, vehicles, ships, aircraft or other mobile structures on land or water.

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