Guide to preparing SDS for products containing Respirable Crystalline Silica

December 2018
IMPORTANT NOTICE – PLEASE READ

This document has been produced by Cement Concrete & Aggregates Australia (CCAA) in good faith and provides general guidance on preparing Safety Data Sheets (SDS) for products containing Respirable Crystalline Silica (RCS).

This document should be used in conjunction with members’ own assessment of operational matters, workplace health and safety (WH&S) and legal obligations particular to their individual situation. It is not a substitute for expert advice (including expert WH&S assessments), which should be obtained by members. Further, CCAA does not represent or warrant that this document covers all applicable safety and operational issues in relation to this subject matter.

To the full extent permitted by law, CCAA disclaims any and all liability for any inaccuracy, misstatement or omission in this document and for any loss, damage, injury or death arising whether directly or indirectly from reliance upon any part or all of the contents of this document and members release CCAA from any such liability.

This document was prepared having regard to information and opinion sourced by CCAA in good faith prior to December 2018. Further research and development, applicable Australian laws, regulations and standards that are undertaken and issued following this date may affect the accuracy, currency or relevance of the contents of this document. Members must seek their own advice on this.

Further, CCAA acknowledges that it may be appropriate for members having taken their own independent expert advice to adopt operational measures that are at variance to the general guidance provided in this document. This document should be considered as part, but not in substitution for, an overall assessment by members of the circumstances relevant to their particular operations.

This document is copyright © Cement Concrete & Aggregates Australia December 2018 and must not be copied or reproduced without written permission. This document is only for the use of members of CCAA upon request. It is not to be used or relied upon by third parties.
Cement Concrete & Aggregates Australia is the peak body for the heavy construction materials industry in Australia. We represent the interests of a $15 billion industry which employs directly and indirectly over 110,000 Australians.

Heavy construction materials play a vital role in delivering the infrastructure required to support a growing Australia. Without these materials we would not have our roads, bridges, airports, homes or hospitals and almost all aspects of the built environment that we depend on.

People have relied on heavy construction materials for thousands of years because of their strength, durability and dependability, and while the technology and processes have improved, these materials are as important to modern society today as they have ever been.

CCAA works to support its members’ interests by:

- Defending and developing markets
- Advocating in the political, regulatory realms
- Supporting the industry’s licence to operate
- Building an understanding of our industry and its vital role
- Supporting the development of skills for the future
- Influencing development of codes and standards
CONTENTS

1. Introduction

2. Silica and Health
   2.1. About Respirable Crystalline Silica
   2.2. Health Effects of Respirable Crystalline Silica
   2.3. Exposure to Respirable Crystalline Silica

3. SDS Preparation and Information
   3.1. Australian Regulatory Requirements
   3.2. Risk Communication
   3.3. Use of Plain Words
   3.4. When to include RCS References

4. Further Information
   4.1. Useful Resources
   4.2. Regulator Information

5. SDS Templates*
   5.1. Cementitious Materials*
   5.2. Wet Concrete*
   5.3. Aggregates (Coarse and Fine)*

* Separate Documents.
1. INTRODUCTION

The heavy construction materials industry produce and supply a wide range of products which may contain respirable crystalline silica. CCAA has developed this guideline for use when preparing Safety Data Sheets (SDS) for these products. The goal is to assist users of these products to obtain consistent and appropriate health and safety information. The industry aims to provide information to users of their products which are based on current knowledge and best-practice workplace health and safety principles.

Information to customers and users on the health and safety effects of exposure to products comes from SDS, labels and other technical and advisory documents provided by the manufacturer or distributor.

Australian legislation (Federal and State) requires that appropriate information to ensure the health and safety of persons exposed to products is provided to end users.

Safe Work Australia provides guidance on SDS best practice including the Hazardous Chemical Information System (HCIS). In May 2018, Safe Work Australia revised its recommendation in the HCIS for Respirable Crystalline Silica to categorise it as carcinogenic with the statement “May cause cancer by inhalation”.

This Guide contains an explanation of the issues requiring consideration when preparing SDS for products which contain Respirable Crystalline Silica. Three SDS templates are available for download from www.ccaa.com.au. The templates are in the national format set out in the Safe Work Australia model Code of Practice for Preparation of Safety Data Sheets for Hazardous Chemicals. The Code of Practice should be considered together with this guidance when preparing a SDS.

CCAA reminds and advises that it is the responsibility of material suppliers to ensure that the SDS produced by them is accurate and complete and meets their obligations under all applicable laws, standards and regulations.
2. SILICA AND HEALTH

2.1 About Respirable Crystalline Silica

Silica is one of the most abundant minerals in the earth’s crust and forms the major component of most rocks and soils. Silica occurs in crystalline and non-crystalline (amorphous) forms. Quartz is the most common form of crystalline silica and is the second most common mineral on the earth’s surface.

Respirable crystalline silica or “RCS” is the respirable dust fraction of crystalline silica that can penetrate deep into the lungs. Respirable dusts are defined as being less than 10 microns with a mean diameter of 4.25 microns and are often referred to as “invisible dusts” because they are too small to be seen with the naked eye.

Workplace exposure to RCS can occur in many industries including quarrying, mining, mineral processing (e.g. drying, grinding, bagging and handling), slate working, stone crushing and dressing, foundry work, brick and tile making, some refractory processes, construction work, including work with stone, concrete, brick and some insulation boards, tunnelling, building restoration and in the pottery and ceramic industries.

2.2 Health Effects of Respirable Crystalline Silica

Breathing in large amounts of very fine dust of any sort can be harmful; however, particular dusts, like RCS can carry a greater health risk.

RCS dust can penetrate deep into the lungs. The body’s natural defence mechanisms may eliminate most of the respirable dust inhaled, however, in case of prolonged exposure to excessive levels of RCS dust, it becomes difficult to clear from the lungs and an accumulation can, in the long term, lead to serious and irreversible lung disease, predominately silicosis.

Silicosis occurs when respirable crystalline silica is deposited in the air sacs of the lungs. This causes inflammation, which can result in scarring and calcification, and eventually reduced lung capacity.

Silicosis can vary from mild to severe and is generally described as three types:

I. Chronic Silicosis – Is the most common form of silicosis and can develop from prolonged exposure (10 – 30 years) to moderate levels of RCS.

II. Accelerated Silicosis – Occurs within 5 – 10 years of exposure to high levels of RCS.

III. Acute Silicosis – Occurs as a result of extremely high exposures over a relative short period of time (i.e. within five years).

Early symptoms of silicosis include shortness of breath, a dry cough and a general feeling of ill health. As the disease progresses the symptoms may become more severe and can lead to permanent disablement and early death.

In addition to silicosis, links have also been made between exposure to RCS and other respiratory diseases such as chronic obstructive pulmonary disease (COPD).

Safe Work Australia has listed respirable crystalline silica as a carcinogen. While there is debate in medical literature concerning whether there is any direct risk of lung cancer directly arising from long-term high over-exposure to respirable crystalline silica, without first contracting silicosis, Safe Work Australia has followed the Global Harmonised Standard approach of listing RCS as a carcinogen.
2.3 Exposure to Respirable Crystalline Silica

Health effects associated with crystalline silica only occur following exposure through inhaling it in its respirable form. Minimising or preventing exposure to RCS is the key requirement for users of crystalline-silica-containing products. Regulations requiring employers to control exposures are applicable in many work situations.

Exposure to persons may be regarded as unprotected or protected. Protected exposure means working or being in an atmosphere where there is dust, but the person wears personal protective equipment in the form of a respirator, which prevents or minimises the dust actually being inhaled into the lungs. A respirator, when correctly chosen, worn and maintained, will reduce the amount of dust inhaled by factors of 10 or greater.

Safe Work Australia is responsible for prescribing the national exposure standards for substances and mixtures that pose a risk to worker health. These are legal concentration limits that must not be exceeded in the workplace.

The exposure standard for RCS is set at 0.1mg/m$^3$ on an 8hr time weighted average and workplace health and safety legislation prescribes that it is the duty of the persons conducting a business or undertaking (PCBU) to ensure that a worker is not exposed to concentrations above the exposure standard. Where workers have a working day longer than eight hours or work more than 40 hours a week, the exposure standard will need to be adjusted to compensate for the greater exposure during the longer work shift.
3 SDS PREPARATION AND INFORMATION

3.1 Australian Regulatory Requirements

Safe Work Australia and state-based regulators set the workplace health and safety standards and requirements for workers and should be referred to as the authoritative source of information.

The duty of suppliers to provide a SDS is created by the Model Workplace Health and Safety legislation (except in Victoria and Western Australia where State Workplace Health and Safety Acts and Regulations apply).

Regulatory requirements are applicable to the workplace setting and set out the duties of employers, manufacturers, and suppliers. However, in practice a SDS may be consulted by a self-employed person or home user, and the information needs to be aimed at all end users of products. In general, SDS (and contained advice) may not be appropriate for use on manufacturing or supplier sites, as specific information about health and safety may be more appropriately included in job safety analyses and standard operating procedures.

3.2 Risk Communication

The purpose of a SDS is to give information about health and safety in a form which is understood by the reader, and practical guidance regarding minimisation of risk when using the product.

There is extensive medical and technical information available about RCS and although it is necessary to give comprehensive information, the detail cannot all be contained in a SDS, and the language may need modifying to make it understandable.

3.3 Use of Plain Words

Particular care should be taken in SDS sections dealing with First Aid, Health Effects, or Emergency action. In these sections, lack of clarity, overuse of technical terms, or ambiguity, can lead to delay or incorrect action being taken in situations requiring immediate action.

Medical or technical terms should be avoided where plain words are available which most readers will understand. If medical or technical terms are used, they should be used correctly according to a medical or technical dictionary. For example, using terms such as lachrymation (or lacrimation) may be less informative to the average reader, whereas “watering of the eyes” is more likely to be understood. However, words such as “tear” may be difficult for non-English speakers because it has two meanings, e.g. the phrase “causing tears” is ambiguous.

In general, where hazardous ingredients or exposures may be created by situations such as fire or combustion of a product, such hazards are listed in the sections on Fire (Section 5) or spillage, but not identified in overall categorisation of the hazards of the product, e.g. in Sections 2 or 11. There may be exceptions to this for particular products.

3.4 When to Include RCS References

Effectively, a SDS needs to reflect the risks associated with RCS when the product contains $\geq 0.1\%$ respirable crystalline silica.

As per this guideline and the templates supplied, a SDS for products containing RCS should identify its presence as a hazardous chemical, and provide additional information on composition, exposure controls, appropriate personal protection, toxicological (health) information, together with other safety information and contacts.
4. FURTHER INFORMATION

4.1 Useful Resources

- Crystalline Silica and Health Website (EU) (European Industrial Minerals Association, 2014) - [https://safesilica.eu/](https://safesilica.eu/)
- Good Practice Guide on Workers Health Protection through the Good Handling and Use of Crystalline Silica and Products Containing it (NEPSI The European Network on Silica, 2006) - [https://www.nepsi.eu/sites/nepsi.eu/files/content/editor/good_practice_guide_-_english_original_additional_task_sheets_-251006_modified_16072012-.pdf](https://www.nepsi.eu/sites/nepsi.eu/files/content/editor/good_practice_guide_-_english_original_additional_task_sheets_-251006_modified_16072012-.pdf)

4.2 Regulators Information

5. SDS TEMPLATES

The SDS templates developed by CCAA contain suggested rather than prescribed content for a SDS. They represent examples of SDS and should not be considered definitive. It is the responsibility of the material suppliers to determine requirements. It will not cover all products, situations and foreseeable conditions of use. Not all the optional wording will be necessarily used, and additional information may be required relating to other ingredients. Where there is doubt about health or safety aspects for a particular product, the relevant expertise should be sourced.

Each template includes brief commentary regarding variations required for that SDS in the case of different levels of RCS or other materials.

There are three templates in the pack:

5.1. Cementitious Materials (Dry)
5.2. Wet Concrete
5.3. Aggregates (Coarse and Fine)

These templates can be downloaded from www.ccaa.com.au