



ASSIST INFORMATION SHEET:



Asbestos minerals in schools

Asbestos is not a single mineral, but is a collective name given to a number of very fibrous minerals. These are complex silicate minerals of magnesium and iron. Three different asbestos minerals are commonly referred to by colour – white, blue and brown asbestos. There are also some other associated minerals, which although not ‘asbestos’, have a somewhat similar fibrous nature and could be considered potentially hazardous. Very few of these are likely to appear in a school setting. There is also the possibility that some mineral specimens that are not asbestos could include some asbestos mineral content, though the risks of this are considered to be very low.



Science ASSIST has listed in the tables below the minerals that may possibly be found in school mineral kits.

Asbestos minerals

Name(s)	Appearance	Notes	Images
<p>Chrysotile</p> <p>Also uncommonly known as Leucotile</p> <p>(A member of the Serpentine mineral group)</p>	<p>White/light coloured, as mineral specimens, usually obviously fibrous in appearance.</p>	<p>White asbestos. As the former most commonly used industrial asbestos mineral, it is responsible for most asbestos contamination issues.</p> <p>School science areas may have specimens of chrysotile that pre-date current health and safety knowledge.</p> <p>In recent years an imported mineral kit included specimens of Leucotile, which, apparently because of the obscure synonym, were not at first recognised as being asbestos.</p> <p><u>Any chrysotile or leucotile specimens in schools should be removed as per instructions further in this document.</u></p>	 <p style="text-align: right;">1</p>  <p style="text-align: right;">2</p>





<p>Crocidolite (The fibrous form of the Amphibole mineral Riebeckite)</p>	<p>Blue, silky lustrous fibrous mineral.</p>	<p>Blue asbestos. Though an uncommon mineral, it was commercially mined for many years in the WA town of Wittenoom. The former school specimen supply company Geological Specimen Supplies (GSS) used Crocidolite in some of their mineral kits, particularly the Lustre kit that demonstrated this mineral property. These kits date from the 1970s when crocidolite was being mined and used industrially, and before its health risks were fully known. Given the popularity of the GSS mineral kits, some schools will have these kits, though it is likely that they are no longer in use. <u>Any specimens of crocidolite should be removed, as per instructions further in this document.</u></p>	 <p style="text-align: right;">3</p>
<p>Amosite (The very uncommon fibrous form of the Amphibole mineral, Grunerite)</p>	<p>Brown fibrous mineral.</p>	<p>Brown asbestos. Not commercially mined in Australia, and to the best knowledge of Science ASSIST, not supplied to Australian schools as mineral specimens. ASSIST believes that it is highly unlikely that schools will have specimens of this mineral. <u>Any specimens of amosite should be removed, as per instructions further in this document.</u></p>	 <p style="text-align: right;">4</p>



Other fibrous asbestos-like minerals

Name(s)	Appearance	Notes	Images
<p>Actinolite Tremolite (A mineral series in the Amphibole mineral group)</p>	<p>Actinolite- dark green coloured fibrous mineral. Tremolite- white to grey fibrous mineral.</p>	<p>These two minerals belong to the same complex continuous silicate mineral series, and also belong to the larger collective Amphibole group. The semi-precious gem mineral, jade (nephrite) is a non-fibrous form of actinolite. Though uncommon, it is possible that some schools may have specimens of fibrous Actinolite. As this mineral is potentially harmful, and as it is not relevant to the Science curriculum, <u>any specimens of actinolite or tremolite should be removed, as per instructions further in this document.</u></p>	 <p style="text-align: right;">5</p>  <p style="text-align: right;">6</p>


<p>Other fibrous minerals</p>		<p>There are some other fibrous minerals that are potentially hazardous. These include the fibrous mineral Erionite, a member of the larger Zeolite mineral group.</p> <p>Science ASSIST is not aware of any of these having been supplied to schools as teaching specimens. Their presence in schools is considered to be very unlikely.</p> <p><u>Should such specimens raise concern, schools are advised to isolate the specimens in question by double bagging* and sealing them, pending further advice or removed as per instructions further in this document.</u></p>	
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Rock and mineral specimens with potential asbestos contamination

Name(s)	Appearance	Notes	Images
<p>Talc (mineral specimen)</p>	<p>A fine-grained white to pale green grey very soft mineral.</p>	<p>Talc is a magnesium silicate mineral, white to pale green grey in colour. It is the mineral with the designated hardness of 1 on Mohs Hardness scale. As such it has been a common item in school science for many decades, both as mineral specimens and as components of kits such as the older GSS Hardness kits, and the more recent versions of these from various other suppliers.</p> <p>Talc is a required mineral in the science curriculum.</p> <p>Geologically, it is possible for talc mineral specimens to include asbestos fibre contamination (e.g. actinolite). However, as educational talc specimens will have almost always come from commercial talc mines, and as commercial talc mining depends on an asbestos free product, the contamination of school talc specimens with asbestos fibres is considered to be very unlikely.</p> <p>Science ASSIST is currently aware of a number of Australian suppliers of talc specimens who can certify an asbestos free product. <u>Where schools are in doubt of the origin of their talc specimens, these can be double bagged* and sealed pending further advice or removed as per instructions further in this document.</u></p>	 <p style="text-align: right;">7</p>  <p style="text-align: right;">8</p>  <p style="text-align: right;">9</p>  <p style="text-align: right;">10</p>

<p>Serpentine/ Serpentinite</p>	<p>Green soapy lusted rocks- sometimes called soapstone. The hydrated silicate minerals are serpentine; the resultant metamorphic rock rich in them is serpentinite.</p>	<p>Though not asbestos, it is possible that serpentinite can contain some asbestos fibres. This is not considered to pose a significant risk as school specimens of soapstone will be static and not subject to the generation of dust.</p> <p>The use of serpentine in a school science setting may be limited to earlier mineral property kits such as the GSS Lustre Kit, where it may demonstrate soapy or waxy lustre.</p> <p>Science ASSIST considers that this material has little if any current curriculum value, and therefore <u>specimens should be removed, as per instructions further in this document.</u></p>	 <p>11</p>  <p>12</p>
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What is not asbestos?

Name(s)	Appearance	Notes	Images
<p>Tiger Eye</p>	<p>Yellow semi precious gemstone with a fibrous texture, common in brooches, cuff links etc.</p>	<p>Silica after crocidolite: meaning that the original crocidolite mineral has been replaced by silica, so that all the original asbestos has gone, but the original fibrous structure of the blue asbestos is now preserved as silica. <u>This is NOT asbestos, and is considered safe.</u></p>	 <p>13</p>

Note: Various alerts on this issue have also listed the additional following terms: **anthophyllite**, **richterite** (amphibole minerals); **antigorite**, **lizardite** (serpentine minerals); **offretite** (a zeolite mineral) and **vermiculite** (a phyllosilicate mineral). Regarding vermiculite: although there is some evidence that there has previously been some contamination of vermiculite, current suppliers generally test for asbestos, so this does not appear to present a concern for recent (post 1990) supplies.

Science ASSIST considers that these are most unlikely to be occurring in school mineral samples. If in doubt, specimens can be double bagged* and sealed pending further advice.

Alerts have also listed **amphibole** and **zeolite**. These are large mineral groups comprising many members, most of which are not fibrous, and are considered safe. It is more helpful to identify the specific varieties that may be fibrous and hazardous. These are noted in the tables above, for example **Crocidolite** (an amphibole), and **Erionite** (a zeolite).

The removal of geological samples of asbestos

Schools may have geological specimens of asbestos and/or specimens that potentially contain asbestos. Therefore, it is recommended that a review of all mineral kits and geological specimens be undertaken to assess for the presence of asbestos. Your school will need to make a judgement, in consultation with your state/territory workplace health and safety regulator, on how to proceed depending upon the contents and condition of your geological collection. Schools may be able to manage the risks at the school level or may need to arrange for specialist help. See Heads of Workplace Safety Authorities (HWSA) Imported Materials with Asbestos Working Group, *Health and safety alert - Asbestos in mineral kits*, November 2015, Asbestos Safety and Eradication Agency website,

https://www.asbestossafety.gov.au/sites/asbestos/files/Safety_Alert_Asbestos_mineral_kits_9_November_2015.pdf

Managing the risks

Health risks associated with asbestos exposure relate to the inhalation (breathing in) of very fine fibres. If asbestos material is in good condition, is intact and has not been disturbed, it is unlikely to release asbestos fibres. Accordingly, any potential risk of exposure to asbestos is considered to be minimal.

For further information see **Appendix A**.

Science ASSIST recommends the following steps be taken:

1. **Immediately suspend all use** of any suspect kits or geological samples.
2. **Alert your school principal** and/or safety officer in the school regarding the need for a review of the school's geological samples to assess for the **possible** presence of asbestos.
3. **Undertake an audit of the geological specimens** in the school. This would include boxed rock and mineral kits as well as single specimens. Identify any specimens that either by name or by appearance could be asbestos, asbestos like, or could possibly contain asbestos. School staff should avoid disturbing dust or fibres by actions such as sweeping, dusting or vacuuming. Specialist help of a geologist may be required for identifying unlabelled specimens.
4. **Consult your school policy for dealing with asbestos**. Links to policies of government state/territory educational jurisdictions these are given in Appendix A.
5. **Consult your state/territory workplace health and safety regulator** regarding regulations and recommended processes for the removal and disposal of asbestos containing materials. Specialist assistance from a health and safety adviser may be appropriate.
6. **Ensure that future purchases** of rock and mineral specimens are from a supplier who is able to confirm that they **are asbestos free**, and document this instruction for any future acquisitions. Note: a number of suppliers are already providing this certification.

Get organised:

Before you start: see 'Key 'DOS and DON'TS' for handling asbestos materials', Department of Health website, <http://www.health.gov.au/internet/publications/publishing.nsf/Content/asbestos-toc~asbestos-key-handle> (6 March 2013).

- **Personnel:** Arrange for a competent person, who has the knowledge and skills to recognise and safely remove geological specimens of, or potentially containing asbestos.
- **Time:** Arrange sufficient time to do this when there will not be interruptions. This may best be done during the school holidays.
- **Place:** Perform the examination of rocks and minerals in an area which is easy to clean up, such as in a science laboratory with smooth bench tops and vinyl floors (i.e. not on carpeted floors)
- **Personal Protective Equipment (PPE):** The following will be required:
 - **Dust mask:** a dust mask, which is certified and labelled as conforming to the Australian Standard P1 or P2. These are available at hardware stores and safety suppliers. A general dust mask is not sufficient protection
 - **Safety glasses, disposable gloves and a disposable apron** are all recommended
- **Clean up items:** Have the following on hand.
 - Wet wipes/disposable cloths for wet wiping rocks and containers.
 - Spray bottle with some water and detergent for dampening down the rocks.
 - Heavy-duty plastic bags* for disposal: It is possible to purchase commercially produced heavy-duty bags* that are pre-labelled as asbestos waste from safety suppliers.
 - New plastic containers, such as fishing tackle boxes with individual compartments and a lid.

Kits containing known asbestos mineral specimens

Kits usually have a list of named items included, so this enables the relatively easy identification of the presence of asbestos minerals.

- **Option A: If your kit has been purchased recently**
Do not disturb contents, double bag* the entire kit and contact your supplier. They may request a recall so follow their instructions accordingly and request a replacement kit that is certified to be asbestos free.
If a recall is not provided follow option B.
- **Option B:**
Do not disturb contents, double bag* and dispose** of the entire kit.

Kits containing mineral specimens potentially containing asbestos (e.g. talc, serpentine)

Talc and asbestos minerals can sometimes geologically occur together^{1,2,3}, and it is possible that talc specimens could potentially be contaminated with some asbestos fibres. However as the talc specimens that are supplied to schools probably will have come from commercial talc mines for 'cosmetic talc' where the product would need to be asbestos free, the risk of asbestos contamination from this source is considered to be very low. Whilst the possibility of this and the risk to staff and students is low, it cannot be discounted. Likewise it is possible for serpentine/serpentinite specimens to include some asbestos.

- **Option A: If your kit has been purchased recently**
Contact your supplier to confirm if it is asbestos free. They may request a recall so follow their instructions accordingly and request a replacement kit that is certified to be asbestos free.
If a recall is not provided, follow option B or C
- **Option B:**
If your school/regulator instructs you: double bag* and dispose** of the entire kit

- **Option C:**

If your school/regulator permits this procedure: follow the instructions below for the removal of any talc or serpentine specimen and wet cleaning of the remainder of the kit.

Procedure for the removal of talc/serpentine and wet cleaning of kits (if permitted by your state/territory regulator)

1. Wear appropriate personal protective equipment (PPE) such as safety glasses, gloves, disposable apron and an Australian Standard dust mask marked P1 or P2.
2. Spray the kit or specimens with some soapy water to dampen any dust.
3. Remove any specimens of mineral talc or other suspect specimens from kits, which have not been confirmed as asbestos free and double bag* them for disposal**.
4. Wet wipe the remaining rock/mineral specimens in the kit/collection with wet wipes or disposable cloths. Dispose of used cloths as “asbestos waste” and double bag* them for disposal**. Note: specimens that are difficult to clean due to their shape and are not soluble in water may be submerged in water for cleaning and then this water can be flushed to waste.
5. Decide if the old container for the kit can be cleaned. If so then clean with soapy water. If not then dispose container as “asbestos waste” and double bag* them for disposal**.
6. Place ‘cleaned’ rocks/minerals in a new specimen container (such as a clear plastic fishing tackle box)
7. Dispose of all used PPE as ‘asbestos waste’ and double bag* it for disposal**. Wash safety glasses after use.
8. Ensure good laboratory hygiene and thoroughly wash your hands

Individual mineral specimens

Schools may have a collection of individual rock and mineral specimens, which possibly include asbestos and other specimens potentially containing asbestos (e.g. serpentine, talc). These may not be identified/labelled and could be stored loose in cupboards, drawers or boxes and may be very dusty due to years of sitting undisturbed.

Schools may need to request assistance from a geologist and/or a health and safety advisor in managing the identification of samples, assessing the risk of any possible contamination, and addressing the clean-up.

*Double bag: seal specimens in two sturdy plastic bags which are a minimum of 0.2mm thickness and labelled as required in the ‘Model Code of Practice - How to Safely Remove Asbestos’ (Note: ordinary zip-lock bags are not sufficiently thick), or place all items for disposal in a commercially produced heavy-duty plastic bag, which is sealed and pre-labelled with ‘Caution Asbestos waste – do not inhale dust’

** **Note: All asbestos waste should be taken to an asbestos disposal facility.** Your nearest facility can be located using the online tool on the Asbestos Safety and Eradication Agency (ASEA) website: <http://asbestossafety.gov.au/search-disposal-facilities>

Image references

1. **Chrysotile** (white asbestos) also known as Leucotile. Stock photo.
2. Example of a kit containing Leucotile stored in a zip lock bag. (Reproduced with permission Qld DETE 2014)
3. **Crocidolite** (blue asbestos), variety of Riebeckite - Locality: Pomfret Mine, Vryburg - Exposed in the Mineralogical Museum, Bonn, Germany. © Raimond Spekking (own work) [CC BY-SA 4.0](#) (via Wikimedia Commons) [https://en.wikipedia.org/wiki/Riebeckite#/media/File:Krokydolith_-_Mineralogisches_Museum_Bonn_\(7385\).jpg](https://en.wikipedia.org/wiki/Riebeckite#/media/File:Krokydolith_-_Mineralogisches_Museum_Bonn_(7385).jpg)
4. **Amosite** (fibrous grunerite), South Dakota. Public domain. <https://en.wikipedia.org/wiki/Grunerite>
5. **Actinolite** (acicular form) with calcite, Portugal. Didier Descouens (own work) [CC BY-SA 4.0](#) (via Wikimedia Commons). <https://commons.wikimedia.org/wiki/File:ActinolitePortugual.jpg>
6. **Tremolite**, France. Didier Descouens (own work) [CC BY-SA 4.0](#) (via Wikimedia Commons). <https://commons.wikimedia.org/wiki/File:Tr%C3%A9molite-Bar%C3%A8ge.jpg>
7. **Talc**. Small piece of the hydrated magnesium silicate mineral. Stock photo.
8. **Talc**, Vermont, USA. Flickr, sdixclifford [CC BY 2.0](#) <https://www.flickr.com/photos/30486689@N08/3561500792>
9. **Talc**. Deer Lake Peridotite. Flickr, James St. John [CC BY 2.0](#) <https://www.flickr.com/photos/jsigeology/8281241057>
10. **Talc** rock, Texas, USA. Flickr, James St. John [CC BY 2.0](#) <https://www.flickr.com/photos/jsigeology/15068551025>
11. **Serpentinite**, Vermont, USA. Flickr, James St. John [CC BY 2.0](#) <https://www.flickr.com/photos/47445767@N05/16940796272/>
12. **Serpentinite**, Michigan, USA. Flickr, James St. John [CC BY 2.0](#) <https://www.flickr.com/photos/47445767@N05/16755884589/>
13. **Tiger Eye**. © Peter Turnbull. Reproduced with permission.

¹ AIOH. 2008. *AIOH Position Paper on Asbestos*. Victoria, Australia. http://www.aioh.org.au/downloads/documents/PositionPapers/AIOH_AsbestosPositionPaper.pdf

² 'Talc powder' mesothelioma.com website. <http://www.mesothelioma.com/asbestos-exposure/products/talc-powder/> (Accessed 25/09/2015)

³ IARC. Monograph. Asbestos <http://monographs.iarc.fr/ENG/Monographs/vol100C/mono100C-11.pdf>

Appendix A

Useful websites

Asbestos safety and eradication agency website <https://www.asbestossafety.gov.au/>

'Key 'DOS and DON'TS' for handling asbestos materials', Department of Health website, <http://www.health.gov.au/internet/publications/publishing.nsf/Content/asbestos-toc~asbestos-key-handle> (6 March 2013)

Model codes of practice:

'Model Code of Practice - How to Safely Remove Asbestos' Safe Work Australia website, <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/safely-remove-asbestos-cop> (23 December 2013)

'Model Code of Practice - How to Manage and Control Asbestos in the Workplace', Safe Work Australia website, <http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/manage-control-asbestos-cop> (7 December 2011)

Education Department safety management plans/procedures

Science ASSIST provides these links as a service. Please check with your educational authority that you are accessing the latest version.

ACT: Chief Minister, Treasury and Economic Development Directorate, 2010. *ACT Asbestos Management Review – 2010*, ACT CMD website http://www.cmd.act.gov.au/_data/assets/pdf_file/0011/235991/asbestosreview.pdf (1 September 2010)

New South Wales: NSW Department of Education and Training, 2008. *Asbestos Management Plan Asset Management Directorate*, NSW DET website, <https://www.det.nsw.edu.au/media/documents/about-us/supplying-to-us/asbestos-register/asbestosmanplan.pdf> (September 2008)

Northern Territory: Northern Territory Government *Asbestos Alert. Stop. Think Asbestos. Seek Advice. Information for schools*, NT DET website http://www.education.nt.gov.au/_data/assets/pdf_file/0008/11141/AsbestosSchoolHandbook.pdf (Accessed November 2015)

Queensland: 'Asbestos management in department-owned facilities', Education Queensland website <http://education.qld.gov.au/asbestos/> (4 March 2015)

South Australia: South Australian Department for Education and Child Development, 2012. *Asbestos Management Procedure*, DECD website http://www.decd.sa.gov.au/docs/documents/1/Asbestos_Management_Proce.pdf (March 2014)

Tasmania: Tasmanian Department of Education, 2014. *Asbestos Management Plan*, DoE website, <https://www.education.tas.gov.au/documentcentre/Documents/Asbestos-Management-Plan-July-2014.pdf> (1 July 2014)

Victoria: Victorian Department of Education and Training, 2015. *School Asbestos Management Plan*. Template. DET website, <http://www.education.vic.gov.au/Documents/school/principals/management/asbestosmgtplan.docx> (June 2015)

Western Australia: 'Management of Asbestos Containing Materials in Schools and Other Workplaces' WA Department of Education website, <http://det.wa.edu.au/policies/detcms/policy-planning-and-accountability/policies-framework/policies/management-of-asbestos-containing-materials-in-schools-and-other-workplaces.en?cat-id=3458001> (1 August 2007)

History of reviews

Date	Version Number	Notes
16 Nov 2015	Version 1.0	
17 Nov 2015	Version 1.1	Hyperlink added to the tables to direct the reader to instructions for removal of specimens further in the document.
20 Nov 2015	Version 1.2	p4 Amended note on Serpentine to remove all specimens p7 Added step 8 good laboratory hygiene p7 Added detail for thickness of plastic bag