What is asbestos?
Asbestos is a common name given to naturally occurring fibrous minerals (silicates), which can be divided in two sub-groups: serpentines and amphiboles. Up to 95% of all asbestos applications contain Chrysotile. Chrysotile is the only asbestos mineral in the serpentine group. Today, Chrysotile is still being mined in Russia, Kazakhstan, China, Canada, Brazil, Zambia and South Africa. Due to their physical properties, asbestos fibres have been used in a wide range of building materials, products and in technical equipment. These extremely fibrous minerals resist fire, heat, acids and many chemicals, and are thus also resistant to environmental influences. Other characteristic properties are strength, flexibility and insulating qualities.

Is there an international asbestos ban?
Currently, there is no international asbestos ban. Whereas the amphibole asbestos types are included in the Rotterdam (Annex III) and the Basel Convention (Annex I, III und VIII), Chrysotile asbestos is not specifically listed in any International Convention. In Switzerland, the usage of all asbestos minerals was generally prohibited in 1990. Furthermore, there is an asbestos ban in the EC, however there are some exceptions. Details to the legal situation follow on page 2 of this fact sheet.

Where can you find asbestos?
In the 20th century, asbestos was added to more than 3'500 products. Asbestos containing materials (ACMs) can generally be divided in two categories, asbestos cement (AC) and asbestos insulating boards (AIB), or bonded asbestos (fibres are held tightly within the structure) and unbonded asbestos (fibres can easily be released).

### Asbestos applications

<table>
<thead>
<tr>
<th>Bonded asbestos</th>
<th>Unbonded asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos cement wall panels</td>
<td>Asbestos glazing compounds</td>
</tr>
<tr>
<td>Asbestos cement corrugated sheets</td>
<td>Asbestos chaulking flange</td>
</tr>
<tr>
<td>Asbestos cement roof sheeting</td>
<td>Asbestos block- and clutch pads</td>
</tr>
<tr>
<td>Asbestos cement downpipes/gutters</td>
<td>Asbestos tile cement</td>
</tr>
<tr>
<td>Asbestos cement scabbard tube</td>
<td>Floor adhesive</td>
</tr>
<tr>
<td>Asbestos cement cable and air duct</td>
<td>Asbestos vinyl floor tiles / sheeting</td>
</tr>
<tr>
<td>Asbestos cement containers</td>
<td>Asbestos roofing tar</td>
</tr>
</tbody>
</table>

Unbonded asbestos materials usually contain a higher percentage of asbestos, for example sprayed asbestos, asbestos boards, asbestos cardboards, asbestos insulating board panels, and asbestos ropes. Unbonded asbestos materials release fibres very easily. Small vibrations, ventilation or material deterioration can result in a relevant number of asbestos fibres in the indoor air, and consequently pose a considerable health risk.

---

Contact:
ETI Environmental Technology International Ltd.
Kalchbühlstrasse 18, P.O.Box 176, CH-7407 Chur
Tel. +41 81 253 54 54 / Fax +41 81 253 66 22
info@eti-swiss.com / www.eti-swiss.com

Urs K. Wagner
Christian Gümpel
Evelyn Schneider
wagner@eti-swiss.com
guempel@eti-swiss.com
schneider@eti-swiss.com
What risks and health problems are associated with exposure to asbestos?
Due to the very small size of asbestos, airborne asbestos fibres are inhaled and can pass deep into the lungs. According to today’s knowledge oral intake of asbestos, for example via drinking water, does not pose a risk to human health.

Not the chemistry, but the physical properties of asbestos are the problem. Asbestos fibres break down and become thinner and thinner. These tiny fibres can lodge in the respiratory system and the lungs, and are only partly decomposed.

The risk of developing asbestos-related cancer depends on the amount and duration of exposure. The individual total number of bio-resistant fibres in the lungs determines the likelihood of contracting an asbestos-relating disease. The health risks increase with cumulative dose of asbestos (fibre-years). Thus, exposure to asbestos should be reduced to a minimum.

Exposure to large amounts of asbestos fibres over longer periods, usually during work, can cause lung fibrosis, also called Asbestosis. The period of latency, i.e. the period between exposure and onset of Asbestosis, usually takes 15 years or more.

Another asbestos-related disease is Mesothelioma, a rare form of cancer that often occurs in the thin membrane lining of the lungs, chest and abdomen. The period of latency is 20 to 40 years. Lung cancer causes the largest number of deaths related to asbestos exposure.

Are there any specific regulations?
Switzerland: Application of spray asbestos was prohibited in the 1970s. A general asbestos ban, prohibiting all types of asbestos, followed in 1990. Swiss legislation stipulates that unbonded asbestos materials must be reported and removed. Necessary precautions and removal techniques are clearly regulated in asbestos guidelines and fact sheets.

EC: The usage and sale of asbestos has been prohibited in the EC since 2005. This ban does also include Chrysotile. Furthermore, EC legislation lays down the limit values for asbestos exposure in the workplace.

Worldwide: There are national asbestos bans in some countries, for example in Australia. However, these bans hardly ever include all asbestos applications.

International Conventions: Asbestos and asbestos wastes are mentioned in Annex I und III of the Basel Convention. Consequently, transfrontier movements of asbestos are only permitted after prior consent of the exporting, importing and transit countries. Different asbestos minerals are listed in the Rotterdam Convention, however, the most common type Chrysotile is missing.

Countries with national asbestos ban

<table>
<thead>
<tr>
<th>Algeria</th>
<th>Czech Republic</th>
<th>Iceland</th>
<th>Malta</th>
<th>Saudi Arabia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Denmark</td>
<td>Ireland</td>
<td>Mongolia</td>
<td>Seychelles</td>
</tr>
<tr>
<td>Australia</td>
<td>Egypt</td>
<td>Israel</td>
<td>Mozambique</td>
<td>Slovakia</td>
</tr>
<tr>
<td>Austria</td>
<td>Estonia</td>
<td>Italy</td>
<td>Netherlands</td>
<td>Slovenia</td>
</tr>
<tr>
<td>Bahrain</td>
<td>Finland</td>
<td>Japan</td>
<td>New Caledonia</td>
<td>South Africa</td>
</tr>
<tr>
<td>Belgium</td>
<td>France</td>
<td>Jordan</td>
<td>Norway</td>
<td>Spain</td>
</tr>
<tr>
<td>Brunei</td>
<td>Gabon</td>
<td>Korea (South)</td>
<td>Oman</td>
<td>Sweden</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Germany</td>
<td>Kuwait</td>
<td>Poland</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Chile</td>
<td>Greece</td>
<td>Latvia</td>
<td>Portugal</td>
<td>Turkey</td>
</tr>
<tr>
<td>Croatia</td>
<td>Honduras</td>
<td>Lithuania</td>
<td>Qatar</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Hungary</td>
<td>Luxembourg</td>
<td>Romania</td>
<td>Uruguay</td>
</tr>
</tbody>
</table>

Source: International Ban asbestos Secretariat
What are the thresholds?

**Switzerland**: In Switzerland the limit values for asbestos in the workplace are set at 0.01 respirable asbestos fibres per ml of air (= 10'000 respirable asbestos fibres per m$^3$ of air). With regards to residential buildings, however, there are no legal limit values for asbestos in indoor air. The Swiss Federal Office of Public Health recommends keeping asbestos contamination as low as possible. Concentrations above 1'000 respirable asbestos fibres per cubic meter (m$^3$) of air shall not be tolerated.

**Germany**: In Germany the concentration of asbestos fibres in indoor air after the removal of asbestos containing materials must not exceed 500 fibres/m$^3$.

**EC**: The limit value in the workplace is 0.1 respirable asbestos fibres per cm$^3$ of air, which corresponds to 100'000 respirable asbestos fibres per m$^3$ of air.

What is the situation like in reality?

To this day, asbestos is still being mined, produced, added to numerous products and sold and exported to many countries. Estimated production is up to 4'000'000 tonnes per year. China, Russia and India count among the major users. In many countries, economic reasons still prevail over efforts to cease asbestos production.

Laws and regulations prohibiting asbestos types like Amosite and Crocidolite, but deliberately excluding Chrysotile, will hardly solve the global asbestos problem. During COP 5 of the Rotterdam Convention in June 2011 Chrysotile was once again not added to the banned chemicals list due to strong political opposition.

There are countries with comprehensive and liable laws and guidelines regulating the proper removal and disposal of asbestos containing materials; whereas other countries are mining asbestos by means of heavy duty equipment.

Due to the long documented history of asbestos and its adverse health effects, this sharp contrast between the countries is hard to follow and understand.

![Sprayed Asbestos removal in Switzerland](source: ETI)

![Asbestos mine in Russia](source: www.bbc.co.uk)

How can we get asbestos under control?

The usage and/or disposal of many hazardous substances and chemicals are regulated in International Conventions. In order to be able to control asbestos in a similar way, all types of asbestos minerals must be added to the International Conventions. A worldwide general asbestos ban must be aimed at.

Due to the fact that many industries, countries and private stakeholders are still unaware of the risks posed by asbestos, awareness raising activities must be undertaken. In particular, the adverse health effects of Chrysotile are still greatly underestimated.

Furthermore, limit values must be defined on an international scale, and reporting and removal obligation for particularly dangerous asbestos applications must be introduced.

In countries with national asbestos ban, the proper methods and procedures for the removal and environmentally sound disposal of asbestos must be clearly stipulated in specific guidelines.
Survey to removal!
Only a step-by-step approach and careful planning will guarantee an expert and sustainable removal and disposal of asbestos containing materials.

**Step-by-step approach**

1. **Survey**
   - Site visit
   - Sampling

2. **Analysis**
   - Analysis
   - Results
   - Interpretation of results
   - Report

3. **Immediate measures (if necessary)**
   - e.g. Removal of particulary dangerous applications

4. **Planning**
   - Definition of goals
   - Definition of methods
   - Definition of precautions
   - Adherence to guidelines

5. **Removal**
   - Removal
   - Cleaning
   - Disposal

6. **Check effectiveness**
   - Indoor air measurements
   - Inspection
   - Approval

Particularly when removing high-risk unbonded asbestos containing materials, it must be ensured that only qualified and licensed contractors will work on these materials.

A key-element is the definition and supervision of appropriate precautions for the environment and the workers.

Where unbonded asbestos applications have been removed, or bonded asbestos products have been broken, cut, damaged or disturbed, indoor air measurements must be carried out before using the rooms again. Only such measurements will allow an assessment of the effectiveness of the works and measures, and indicate the remaining number of fibres in the air.

Asbestos containing materials which cannot be removed (yet), must be clearly labelled as such.

**Indoor air measurement after Clean up**

**Labelling of asbestos containing materials**

Where can you get more information?

**Switzerland:**
http://www.forum-asbest.ch/index_fa.htm
www.eti-swiss.com

**EC:**

**International:**
http://ibasecretariat.org/
http://www.greenpeace.org/international/