Asbestos in Emergencies:

Safer Handling and Breaking the Cycle

shelter centre

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Disaster Waste Recovery

“ …the elimination of the future use of asbestos and the identification and proper management of asbestos currently in place are the most effective means to protect workers from asbestos exposure and to prevent future asbestos-related diseases and deaths. ”

ILO, Resolution on Asbestos, June 2006

“ …the most efficient way to eliminate asbestos-related diseases is to stop the use of all types of asbestos” and to “take measures to prevent exposure to asbestos in place and during asbestos removal. ”

WHO, Elimination of asbestos-related diseases, September 2006

AIM

This booklet is a simple and practical guide for transitional settlement and reconstruction practitioners. It aims to provide basic background information on asbestos and its associated health risks. It provides key recommendations for minimising the risks of dealing with asbestos in post-disaster transitional settlement and reconstruction operations and suggests further reading sources for more in-depth technical information.

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This booklet can be downloaded from www. proactnetwork.org
and www.sheltercentre.org

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CONTENTS

“Minimising the risk associated with dealing with existing asbestos products from damaged buildings and avoiding the use of asbestos products for reconstruction can help avoid additional harm being caused to affected populations.”

1. INTRODUCTION

Asbestos has been widely used in the construction industry around the world due to its heat resistant and insulating properties. It is often found in its various forms during humanitarian response operations following conflicts and natural disasters, particularly during search and rescue operations in damaged buildings, clean-up of debris, and transitional settlement and reconstruction activities.

All forms of asbestos, including chrysotile, are classified as known human carcinogens by the International Agency for Research on Cancer (IARC). According to global estimates, an estimated 100,000 people die of asbestos-related diseases each year. Its use has consequently been banned in over 40 countries worldwide.

However, booming construction industries' need for cheap materials, the lack of alternatives and lack of awareness of the health risks account for a shift of asbestos consumption to the developing world, where there is little or no control legislation.

The safe use of asbestos does not exist and there is no known acceptable safe exposure limit.

The main difficulties faced by transitional settlement and reconstruction specialists in post-disaster operations in the field come under two separate categories.

a) Safer Handling

Existing asbestos products that are broken and damaged during a disaster pose a major health threat. Countries where asbestos has been banned have strict procedures involving specialists with specific safety equipment and controlled disposal sites. In the developing world, disaster clean-up is mostly undertaken by affected communities. Those participating in the clean-up risk exposure through lack of awareness, lack of specialist advice, equipment and facilities. Identification of asbestos and implementation of proper handling procedures is unlikely to take place. Adequate disposal facilities are often unavailable.

Transitional settlement and reconstruction specialists in the field will unavoidably be faced with the reality of dealing with asbestos *in-situ*. They may have to work with teams of unskilled labourers who have little or no awareness of the associated risks of working with damaged asbestos products.

b) Breaking the Cycle

Construction materials such as roofing sheets frequently contain asbestos. Many such products are commonly used in some countries. Use of new asbestos products perpetuates the problem for workers and the public in the long-term. The presence of asbestos, however, may not be easy to detect as companies have been known to issue fake certificates. Testing facilities are not always available.

Transitional settlement and reconstruction specialists may have to respond to urgent needs, with limited time and budgetary resources. They are likely to come under pressure to use asbestos-containing materials, often considered locally to be the best available option. They are occasionally even promoted politically.

This booklet aims to address the issues highlighted above and provide practical advice for transitional settlement and reconstruction specialists and other humanitarian workers confronted with the issue of asbestos. Minimising the risk associated with dealing with existing asbestos products from damaged buildings and avoiding the use of asbestos products for reconstruction will help avoid additional harm being caused to affected populations.

Case Study 1 - The Maldives

Following the South Asian tsunami in 2004, approximately 290,000 cubic metres of demolition waste were generated, combined with an estimated 50,000 cubic metres of existing household and other waste.

Tsunami-damaged asbestos-cement roofing sheets and ceiling boards were identified. Clean-up teams were not removing or separating damaged pieces of asbestos-cement from building rubble. Some roof sheets had been salvaged and stacked for re-use while others had been manually crushed into small fragments. In some cases, attempts had been made to burn it.

There are no regulations or guidelines in place in the Maldives for the import or safe disposal of asbestos-containing materials. This appears to be due to lack of adequate public awareness of asbestos and its risks, in government, trade groups or among the general public.

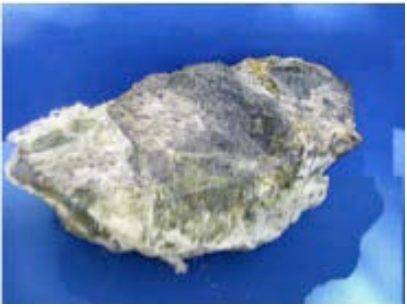
Case Study 2 - Kosovo

Following the cessation of hostilities in 2000, reconstruction efforts in Kosovo began with the clearance of damaged buildings and infrastructure. Demolition work included numerous industrial and private buildings which contained asbestos in both the roofing sheets as well as lagging for pipe insulation.

As part of its demolition support to Kosovo, the Danish funded WDR (Waste Demolition Recycling) team established an asbestos removal team which included:

- six Kosovar asbestos operatives trained specifically in asbestos removal;
- the necessary Personal Protective Equipment for use in asbestos removal;
- the necessary asbestos removal equipment such as containers, a generator powered air pump for creating negative air pressure in the sealed working area, as well as tenting material to create a safe working area; and
- a specially designed welfare container with showers and decontamination zone for the personnel to use on-site.

The asbestos removal team supported various international NGOs, the UN and local authorities in the safe removal of the asbestos which was then disposed of at designated landfill cells in Kosovo.



Chrysotile asbestos

Asbestos fibres

2. KEY ASBESTOS FACTS

2.1. TYPES OF ASBESTOS

Asbestos is a naturally occurring rock-based fibrous mineral. It has the following properties, which have made it valuable in the manufacturing and construction industries:

- high mechanical strength;
- good electrical insulator;
- chemically inert; and
- good thermal and acoustic insulator

The most common types of asbestos are described below:

- **Chrysotile** (white asbestos) has a very good resistance to alkalis. It is the most common type of asbestos, accounting for over 90 per cent of asbestos mined annually. It is most frequently found in asbestos-cement products such as roofing sheets.
- **Amosite** (brown asbestos) has a very good resistance to high temperature and is used in thermal insulation products and ceiling tiles.

- **Crocidolite** (blue asbestos) has a high bulk volume which made it suitable for use in sprayed insulation.

2.2. FRIABLE AND NON-FRIABLE ASBESTOS

Friable asbestos is any asbestos material that can easily be crumbled or pulverised to powder by hand. Common examples are ceiling sheets, various types of plaster and sprayed or fluff thermal insulation for water pipes.

Friable asbestos presents very serious health risks as asbestos fibres are loose and easily released into the air. Breathing these fibres causes serious lung diseases. Loose fibres are so small that they are not normally visible and are not stopped by dust masks alone.

Non-friable asbestos contains a binder or a hardening agent such as cement, asphalt or vinyl. Examples include cement roofing sheets, asphalt roofing shingles and vinyl asbestos floor tiles.

Undisturbed, non-friable asbestos products have been used with no apparent adverse health effects. The danger is that when disturbed or damaged (for example during an earthquake, subsequent demolition, repairs or construction work) it can release fibres and pose the same hazard as friable asbestos. Burning non-friable asbestos products also releases dangerous fibres into the air.

> ***“Friable asbestos is any asbestos material that can easily be crumbled or pulverised to powder by hand.”***

> ***“Non-friable asbestos contains a binder or a hardening agent such as cement.”***

“ Inhalation of asbestos fibres has been shown to cause the following diseases :

- abestosis
- lung cancer
- mesothelioma.

”

“ There is no known safe level of exposure to asbestos and even low level exposure is likely to increase cancer risk. ”

2.3. HEALTH RISKS

Health problems were first linked to asbestos in the 1910s. The first officially recorded death due to pulmonary asbestosis was in 1924. The IARC has classified asbestos as being carcinogenic for humans.

The World Health Organisation (WHO) has assessed the effect of exposure to asbestos on human health. Inhalation of asbestos fibres has been shown to cause the following diseases.

Abestosis: a chronic chest disease that is caused by inhalation of high concentrations of asbestos fibres. The fibres damage cell membranes in the lungs. The condition can develop 10 to 20 years after exposure.

Lung cancer: asbestos is one of a large number of agents linked to the development of lung cancer. Workers exposed to asbestos and who smoke or have been exposed to second-hand smoke run a much greater risk of getting lung cancer. The risk of lung cancer appears to be greatest when asbestosis is also present.

Mesothelioma: a cancer of the lung lining. It can result from even low level exposures to asbestos. This type of cancer can take 30 to 45 years to develop, after initial exposure to asbestos. It is an aggressive cancer and is extremely painful. Mesothelioma can lead to death within a few months and sufferers rarely live longer than 12-18 months. There is no effective treatment currently available. To date, chemotherapy and radiotherapy have not proved useful.

All types of asbestos have been classified as carcinogenic but experiments have shown that chrysotile asbestos is a weaker carcinogen than fibres of other types of asbestos such as crocidolite and amosite. This leads to claims that chrysotile asbestos is acceptable for use in construction where no feasible alternative materials are available and appropriate safety measures are followed.

However, there is no known safe level of exposure to asbestos and even low level exposure is likely to increase cancer risk.

“Corrugated asbestos-cement roof sheets are still commonly used and widely available for sale in developing countries.”

2.4. COMMON USES OF ASBESTOS

Some of the most commonly encountered types of asbestos materials are listed below.

Asbestos-Cement Roofing Sheets

Asbestos-cement products include such items as roof sheeting, wall sheeting, roof tiles and pipes. They account for approximately 90 per cent of all asbestos-containing products worldwide.

Corrugated asbestos-cement roof sheets are still commonly used and widely available for sale in developing countries. They are used for roofing and walls for homes, factories, schools and sheds. The sheets are generally cut on-site

Millions of homes, factories, schools or sheds and shelters continue to use asbestos. Cutting these sheets to size and drilling holes to receive ‘J’ bolts to help secure the sheets to roof framing is usually done on-site.

The handling and disposal of corrugated asbestos-cement roofing sheets can release asbestos fibres and thus presents a health hazard. Their use should be avoided in new construction. Alternative materials should be investigated and used. Where existing roofing sheets are damaged, only handle and dispose of them with a specialist and properly equipped and trained team.

Asbestos-Cement Water Pipes

Asbestos-cement pipes have been widely used for drinking water distribution. Today, however, few countries still install asbestos-cement pipes.

From numerous studies, there appears to be no concern for the health of consumers receiving water and no programmes exist to specifically replace asbestos-cement pipes for this reason. However, should the pipes become damaged with time, or during a natural disaster, their handling, disposal or replacement could release asbestos fibres and cause health risks.

Asbestos Ceilings and Floors

Asbestos insulating boards have typically been used for ceiling boards and false walls. Asbestos vinyl floor tiles are also common. Bituminous tar paste was widely used to glue down linoleum tiles, particularly in commercial buildings and hospitals built in the 1970s.

Asbestos Fire and Sound Insulation

Asbestos has been sprayed in buildings for sound-proofing and fire-proofing in developed countries. In the late 1950s, it became virtually standard practice for large buildings, hospitals and schools to have sprayed asbestos on steel columns, beams and roofing sheets. This form of asbestos is highly friable and highly dangerous if damaged or in poor condition, and has a high asbestos content of around 85 per cent.

Asbestos Thermal Insulation

Since the 1950s asbestos insultation was commonly used for insulating boilers, hot water tanks and hot water and steam pipes. It can be sprayed or used as loose fibres, also known as fluff form. It can also be used as a cloth wrap for other non-asbestos insulating products. Insulation of this type is highly friable and dangerous and can contain over 90 per cent asbestos.

Asbestos Artex

Asbestos containing artex was used widely as a coating in residential and office blocks, schools, hosiptals and nursing homes in Europe.

Asbestos containing paints, sealants and adhesives was also common. The asbestos content of such products can vary as they were generally hand mixed on-site before being applied.

Other Common Types of Asbestos-Containing Materials

Other common asbestos-containing materials (ACMs) include:

- bitumen-bound asbestos material in roofing felt;
- thermal insulation on pipes, boilers, furnaces, ducts and as a cloth type material in gaskets;
- acoustic insulation in false ceilings and walls, especially in schools, hospitals, residential tower blocks and public areas;
- heat resistant textiles – cloth, padding, pipe wrap, fire blankets, fireproof clothing, oven gloves, safety curtains and blankets; and
- electrical switchboards, insulators and fittings; and asbestos reinforced plastics, toilet cisterns, baths, and car battery cases.

“The United Nations High Commissioner for Refugees has clearly stressed that materials containing asbestos should not be specified, used or recommended in its operations.”

2.5. LEGISLATION GUIDELINES AND RECOMMENDATIONS

The United Nations High Commissioner for Refugees (UNHCR) has clearly stated that materials containing asbestos should not be specified, used or recommended in its operations.

Asbestos is now banned in over 40 countries worldwide, although exemptions for minor uses are permitted in some of these countries.

Several guidelines on the safe handling, transport and disposal of asbestos-containing materials exist although most assume that specialist resources exist in-country, which is not always the case. These are summarised in this document and included in the annexes.

The WHO recommends that “the most efficient way to eliminate asbestos-related diseases is to stop the use of all types of asbestos” and to “take measures to prevent exposure to asbestos in place and during asbestos removal”.

The International Labour Organisation (ILO) states that “the elimination of the future use of asbestos and the identification and proper management of asbestos currently in place are the most effective means to protect workers from asbestos exposure and to prevent future asbestos-related diseases and deaths”.

The International Programme on Chemical Safety (IPCS) Environmental Health Criteria No. 203, which is an ILO/WHO/United Nations Environment Programme (UNEP) joint programme, recommends that safer substitutes should be used whenever possible.

Donors have placed limitations on the use of asbestos. For example, the World Bank Group has stopped financing projects involving the use of asbestos. Likewise, the Swedish International Development Agency (SIDA) permits the use of high quality, chrysotile asbestos-cement tiles provided that no feasible alternatives are available and that appropriate safety measures are available.

Responsibly designed transitional settlement and reconstruction programmes should take the above recommendations into account and take all reasonable steps to ensure that affected communities are aware of the risks, that asbestos handling is carried out by adequately trained personnel, and avoid using asbestos-containing materials in new construction projects.

Case Study 3 – Sichuan, China 2008

On 12 May 2008, an earthquake in Sichuan, China, destroyed many buildings including hospitals, schools, government offices and private homes. The external walls, roofs, window awnings and bathrooms in many of these buildings had been made using asbestos-cement sheets – commonly known as "fibro" or "fibro cement". The earthquake broke the fibro into many small pieces, releasing fine fibres of asbestos at the broken edges.

During clean-up operations, there is the risk of liberating substantial quantities of asbestos fibres, particularly if heavy plants and equipment are used to demolish damaged structures and load rubble into vehicles. These asbestos fibres were a significant risk to public health.

The WHO and UNEP provided a guideline on how to control the risk of the clean-up and to safely dispose of asbestos waste in the areas affected by the earthquake.

“Identifying asbestos-containing materials is an important first step in minimising health risks.”

“Certification does not guarantee that a product will be asbestos-free as fake certificates are common.”

“The second step in minimising health risks is to ensure that people are aware of the risks and know what to do.”

3. SAFER HANDLING - ASBESTOS IN-SITU

Even in an emergency setting – under difficult conditions with little or no existing asbestos control, legislation or local awareness – transitional settlement and reconstruction specialists can take a few key steps that will contribute towards minimising health risks.

1. Identify the locations of asbestos-containing materials and assess the risks.
2. Ensure that people are adequately informed of the risks and methods of best practice.
3. Minimise the disturbance of asbestos-containing materials.
4. Minimise the extent to which people have contact with asbestos.
5. Ensure that waste is securely stored and adequately labeled.

3.1. ASBESTOS IDENTIFICATION

Identifying ACMs is an important first step in minimising health risks.

Post disaster Clear-up

The normal procedure for asbestos identification in clean-up operations is for trained personnel to inspect and test the materials and to determine the hazard and best course of action. This, however, may not always be possible in a disaster or conflict situation given the lack of facilities, shortage of trained personnel and the scale of the damage.

The safest step is to seek information on local construction practices and, if in doubt, to assume that the debris does contain asbestos. This is normally the case in urban settings, given the prevalent international use of asbestos.

Transitional Settlement and Reconstruction

The use of new asbestos products perpetuates the problem for workers and the public in the long-term and should be avoided. When buying new materials such as roofing sheets, ask suppliers for certification. Certification, however, does not guarantee that a product will be asbestos-free as fake certificates are common. It is advisable to send a carefully collected and wrapped sample of the material to the nearest reliable laboratory for confirmation, while also investigating alternative materials. This is the only reliable way to confirm whether a material is asbestos-free and to ensure that reconstruction activities do not contribute to the problem in the long-term.

3.2. AWARENESS AND TRAINING

A second step in minimising health risks is to ensure that people are aware of the risks and know what to do.

Public Awareness

Following a disaster or emergency, should there be suspected ACMs in the damaged buildings and debris, a public awareness campaign disseminated with the support of local and regional authorities will help raise awareness of the issue.

The campaign should be aimed at relevant representatives of the general population and provide simple and easy to understand information that describes:

- what asbestos is;
- where it might be found;

“A key message of the campaign should be that ACMs should only be handled and disposed of by trained and experienced people.”

- what the hazards are; and
- that only trained personnel with adequate protective equipment should access suspect sites and/or handle asbestos-containing material.

Worker training

In addition to the above information, worker training should include:

- risk assessment;
- required Personal Protection Equipment; and
- control measures for asbestos during handling and disposal.

3.3. ASBESTOS HANDLING

Reducing health risks of asbestos handling is based on two principles:

- minimise the disturbance of ACMs; and
- minimise the extent to which people have contact with ACMs

In most post-disaster situations, ACMs have already been disturbed and dealing with them is a reality. Once they have been identified and a public awareness campaign launched, consider the following steps to minimise the extent of contact with asbestos.

SAFER HANDLING OF ASBESTOS IN-SITU KEY POINTS

1 Provide protective equipment and training

As a minimum, provide workers with gloves, goggles, disposable clothing or replacement clothing and dust masks. Dispose of contaminated clothing and protective equipment in the same way as other asbestos-containing materials. Provide washing facilities for workers and training to all involved.

2 If possible, don't disturb it, break it or cut it

This can release asbestos dust which contains hazardous fibres.

3 Don't burn it

Never burn suspected ACMs as this releases dangerous fibres into the air.

4 Wet it

If it is necessary to move, saw or break up the materials, keep them thoroughly wet to reduce the amount of airborne fibres. Work only in well-ventilated areas. Take particular care with friable materials. Clean any contaminated surfaces by wetting the area or using damps cloths. Never dust or sweep as this propels fibres into the air.

5 Cover it

If you are keeping it, coat it with watered down paint or glue. If you are disposing of it, keep piles of ACMs covered with plastic sheets until they can be disposed of. Always wet the materials before moving.

6 Wrap it up

Store asbestos-containing waste in sealable containers until it can be disposed of safely. Use metal or plastic drums or strong polyethylene bags. If using bags put one bag inside another and seal with strong tape. Label the containers in the local language and include a hazard warning before disposal (see Appendix 1).

“Asbestos waste should not be disposed of with other wastes. It should be enclosed in a sealable container and disposed of at separate facilities.”

3.4. ASBESTOS DISPOSAL

If asbestos is improperly disposed of, it can cause additional health risks. Exposed and visible materials may be re-used by scavengers who are not aware of the risks. Children may play with the debris. Insufficient covering or erosion control may expose the waste and increase the likelihood of asbestos fibres contaminating both air and water.

Asbestos waste should not be disposed of with other wastes. It should be enclosed in a sealable container and disposed of at separate facilities. In countries where asbestos use is regulated, there will be special or hazardous waste disposal facilities.

If special facilities are unavailable, asbestos waste should be sealed in triple lined bags and disposed of at a secured waste site and kept separate from other types of waste. Work with the local government to identify a suitable and safe site and ensure that a record is kept of the location.

SELECTING AND CREATING AN ASBESTOS DISPOSAL SITE KEY POINTS

1 Site

In collaboration with the local government, locate a site where adequate cover material is available, access is good and controllable and where the waste cannot be exposed by water or wind erosion, slope failure, further disasters or re-excavation.

2 Vehicles

Clearly label vehicles transporting asbestos waste (see Appendix 1) and ensure they are operated by trained personnel.

3 Emission protection

During and after the disposal of asbestos waste, make sure no visible emissions occur and cover waste with at least 15cm of compacted non-asbestos-containing material within 24 hours of disposal.

4 Barriers

If no natural barriers exist around the site to deter access, install fencing, trenches or other barriers to prevent unauthorised access to the designated area.

5 Warning signs

Post warning signs at the entrance of the site and around the perimeter (see Appendix 1).

6 Closure

Final closure of an area containing asbestos waste requires at least an additional 75cm of compacted non-asbestos material to provide a 1m final cover. This must be done within 90 days of the last deposition.

“The most efficient way to eliminate asbestos-related diseases is to stop the future use of all types of asbestos.”

4. BREAKING THE CYCLE - AVOIDING ASBESTOS USE

Many donors recommend avoiding the use of asbestos-containing materials for construction, reconstruction and rehabilitation.

It is essential that agencies avoid the use of asbestos-containing materials in transitional settlement and reconstruction programmes, as this is the only way of breaking the cycle and eliminating asbestos-related diseases.

Sometimes, however, it may not be easy to avoid the use of asbestos-containing materials as it is still widely marketed in many countries. In some situations, ACMs may be part of the building culture and local suppliers may also promote the products. They may be the most commonly available products on the market and are generally cheaper than the alternatives, if alternatives are in fact locally available.

Along with rising awareness of asbestos products, fake certification has also become common. Some companies will readily provide certificates stating that their product is asbestos-free while subsequent lab testing proves the contrary.

Some alternative materials are listed in Appendix 2. Their suitability and availability will be location and context specific. Enquire on the local market and share information with contractors and local NGOs.

SELECTING MATERIALS FOR RECONSTRUCTION KEY POINTS

1 Legislation

Check existing national asbestos legislation. Is asbestos banned?

2 Local practices

Enquire about local construction practices and pay particular attention to roofing sheets. Are asbestos-containing materials commonly used?

3 Certification

Ask suppliers for certification but be aware that fake certification is common.

4 Testing

If in doubt, send a carefully extracted and properly wrapped sample to an approved laboratory for testing.

5 Alternatives

Seek alternative materials (see Appendix 2) and liaise with the Emergency Shelter Cluster and other agencies to find a suitable solution.

6 Remember

It is essential that agencies avoid the use of asbestos-containing materials in transitional settlement and reconstruction programmes.

5. RECOMMENDATIONS

There are a few simple steps that transitional settlement and reconstruction specialists can take to ensure safer handling of ACMs after disasters and to avoid re-introducing new ACMs.

Check existing national legislation.

Convince the general public and the government that it is actually a problem, through immediate, simple and effective communication materials.

Develop and disseminate a clear, concise and unified public message, which includes:

- **do not disturb it;**
- **wet it;**
- **do not break or cut it;**
- **wrap it up;**
- **cover it; and**
- **bury it where it will never be disturbed.**

Ensure a minimum standard of clean-up behaviour is agreed amongst the Shelter and Health clusters and that the message is shared amongst all agencies.

Work out what minimum safety practices can actually be undertaken by agencies and the community.

Work with government to identify safe dumping sites.

Identify and agree on rules for transport and delivery to dump sites.

Break the cycle: avoid using new asbestos-containing materials in transitional settlement and reconstruction programmes.

6. CONCLUSION

Hazardous asbestos waste can be generated by a disaster and during search and rescue operations, clean-up operations, demolition and transitional settlement and reconstruction activities.

Humanitarian organisations involved in any of the above activities need to recognise the risks associated with the handling of asbestos materials and protect people working with them after a disaster. They also must avoid purchasing new asbestos-containing materials for transitional settlement and reconstruction programmes as this perpetuates the problem.

Although asbestos may not be regulated in certain countries where disasters occur, there is a need and a moral duty to adhere to recognised health standards.

Minimising the risk associated with dealing with existing asbestos products from damaged buildings and avoiding the use of asbestos products for reconstruction will help avoid additional harm being caused to affected populations.

Transitional settlement and reconstruction specialists can and should take simple measures that will help minimise asbestos-related health risks.

This booklet provides only basic guidance and key points. Links to further references are provided to cope with immediate needs in the field.

“Transitional settlement and reconstruction specialists can and should take simple measures that will help minimise asbestos-related health risks.”

“Humanitarian organisations must avoid purchasing new asbestos-containing materials for transitional settlement and reconstruction programmes as this perpetuates the problem.”

APPENDIX 1

STANDARD ABESTOS LABELLING AND SIGNS

These are examples of standard labelling text for post-disaster handling and disposal activities. Check local standards and ensure that labels are translated into local languages.

Asbestos labelling for bags or containers

CAUTION

CONTAINS ASBESTOS FIBRES

AVOID OPENING OR BREAKING CONTAINER

BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

Asbestos disposal site

ASBESTOS WASTE DISPOSAL SITE

DO NOT CREATE DUST

BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

AUTHORISED PERSONNEL ONLY

Vehicles transporting asbestos

DANGER

ASBESTOS DUST HAZARD

CANCER AND LUNG DISEASE HAZARD

AUTHORISED PERSONNEL ONLY

APPENDIX 2

ALTERNATIVE MATERIALS

This is a short and non-exhaustive list of potential alternatives to asbestos-containing materials in transitional settlement and reconstruction activities. The availability and suitability of materials will be location and context specific.

Alternatives to asbestos-cement roofing sheets

PVA and cellulose fiber-cement

Polypropylene and cellulose fiber-cement

Bamboo fiber-cement (Taiheyo cement)

Clay roofing tiles

Galvanized iron roofing (zinc-coated steel)

Alternatives to asbestos-cement pipes

Cast iron and ductile iron pipe

High-density polyethylene (HDPE) pipe

Pre-stressed (metal reinforced) concrete pipe

Clay pipe

APPENDIX 3 WHO LETTER

Past letters between UNHCR and WHO highlighting the type of asbestos-related request that frequently arise from field activities.

WORLD HEALTH ORGANIZATION ORGANISATION MONDIALE DE LA SANTE

Téléphone Central/Exchange:
Direct:
Email:

In reply please refer to: C18/445/3(6)
Prière de rappeler la référence:

Director, Division of Operational Support
United Nations High Commissioner for Refugees
Case postale 2500
CH-1211 Genéve 2

Your reference: EESS/GF/03/067 OPS 06-03
Votre référence:

22 October 2003

Dear

Thank you for your letter of 3 October 2003 to Dr J.-W. Lee, who has asked me to reply on his behalf.

The World Health Organization has on several occasions assessed the effects on human health of exposure to asbestos and different asbestos-like fibres. The most important of these effects, when asbestos fibres are inhaled, are a restrictive, and eventually fatal, pulmonary disease, asbestosis, and cancer of the lung and pleural linings (mesothelioma). It is also possible, but not equally well proven that inhaled asbestos fibres induce other types of cancers, such as mesothelioma of the pleura, and cancer of the larynx, and of the kidney. As the development of asbestosis usually requires many years of rather extensive exposure, the main concern in this instance is cancer, notably cancer of the lung and pleural mesothelioma.

While all asbestos types share qualitatively the propensity of causing cancer, different types of asbestos may have different potencies to induce cancer; animal experimentation indicates that chrysotile asbestos, a serpentine mineral, is a weaker carcinogen than fibres of the amphibole character (such as crocidolite, amosite and anthophyllite). Tobacco smoking greatly enhances the lung cancer risk among asbestos-exposed people.

Available information on asbestos-induced health effects when exposure occurs other than by inhalation, for example, in drinking water, is much less limited, and carcinogenesis in humans has not been demonstrated in these other exposure scenarios.

The mechanism of the induction of cancer by asbestos is not fully elucidated, but there are indications that effects on the genome may be involved. This is consistent with the finding that no safe level of exposure to asbestos has been demonstrated, i.e. there is no threshold for asbestos-induced carcinogenesis. Even low level exposure is likely to increase cancer risk, albeit to a limited extent.

In view of the above, which also represents a scientific consensus world-wide, the World Health Organization in 1999 made the following recommendations:

Prohibit and enforce the prohibition of production and use of amphibole asbestos fibres and products containing them.

Prohibit and enforce the prohibition of production and use of chrysotile fibres and products containing them or restrict chrysotile to essential uses in which no safer alternatives are available.

WHO is aware that under strictly controlled conditions, asbestos materials, including asbestos (chrysotile) cement sheets have been used without apparent adverse effects on health. However, while the exposure to asbestos from asbestos cement sheets as these stay in place undisturbed will be small, working on them, especially cutting, drilling, grinding, stripping, maintenance, demolition, will unavoidably lead to inhalation exposure - noting also that refugee camps may not provide ideal working conditions or supervision of work to guarantee safe working habits. Furthermore, asbestos material once put into place, does not disappear but rather remains in place for long periods of time - and there is very seldom any way to make sure that during this very long service time the material will not be worked upon in a fashion that releases fibres into the air and causes exposure to unsuspecting people.

Furthermore, asbestos is not irreplaceable as roofing material; other, and less dangerous, materials can be used for this purpose.

In summary, **the World Health Organization does not recommend the use of asbestos cement for roofing.**

I hope this is of assistance to you in your difficult task.

Yours sincerely,

Assistant Director-General
Sustainable Development and
Healthy Environments

UNHCR
United Nations High Commissioner for Refugees
Haut Commissariat des Nations Unies pour les réfugiés

UNHCR

Case postale 2500
CH-1211 Genève 2

Tel.:
Fax:
Email:

03 October 2003

Notre/Our code: EESS/GF/03/067
OPS-06-03

Re: **Use of Asbestos Cement Sheets in Construction of Shelter for Refugees**

Dear

As you are aware, UNHCR is mandated to provide international protection and seek durable solutions for refugees. In all stages of the refugee situation from emergency, care and maintenance, local settlement, repatriation and reintegration, we assist refugees and persons of concern to UNHCR with provision of construction materials to build shelters on a self-help basis. In so doing, normally the entire family, comprising women and children, physically participate in the construction activities including direct handling of the roofing sheets.

In one such programme in the Russian Federation, our office has been requested to approve the use of asbestos cement sheets as roofing material for construction of refugee houses. As WHO is the lead agency on health related matters, we would like to know in scientific terms, if the use of asbestos based products by refugees will pose any health risk to them. We would highly appreciate if your advice on the usage of asbestos based products in a refugee setting, as mentioned above, could be shared with us at your earliest convenience.

Your cooperation in this matter is highly appreciated

Yours Sincerely,

Director,
Division of Operational Support

Director-General
World Health Organization
Geneva

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WHO/UNEP (2008) Technical Note by the Country Offices in Beijing Asbestos - Hazards and safe practices for clean-up after earthquake

SIDA (2002) SIDA's Policy for Green Procurement – For Co-operating Partners

World Bank Group (2009) Good Practice Note: Occupational and Community Health Issues

USEFUL WEBSITES

Disaster Waste Recovery: http://www.disasterwaste.org/

International Ban Asbestos Secretariat: http://www.ibasecretariat.org/

Shelter Centre and Shelter Library: http://www.sheltercentre.org/

US Environmental Protection Agency, Asbestos page:
http://www.epa.gov/asbestos/

WHO Occupational Health Publications, Asbestos:
http://www.who.int/occupational_health/publications/asbestosrelateddiseases.pdf

The Control of Asbestos Regulations 2006 (UK):
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