

# Cutting, Handling & Disposal of Asbestos Cement (AC) Pipe Guidelines

Revision 1, June 2014

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## 1 DISCLAIMER, COPYRIGHT, ACKNOWLEDGEMENTS

# 1.1 Warning and Disclaimer

The Queensland Water Directorate (*qldwater*) is a business unit of the Institute of Public Works Engineering Australasia (Queensland). *qldwater* has sought to ensure that the information in this edition of the guidelines is current at the time of publication. However, users of the guidelines should note the following:

- qldwater does not guarantee the accuracy, currency or completeness of information contained in the guidelines;
- in specific matters, users of the guidelines should independently inform themselves of current best practice procedures, any changes to the information in these guidelines and the most appropriate manner of addressing the matter;
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# 1.2 Copyright

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## 1.3 Acknowledgements

The Queensland Water Directorate (*qldwater*) would like to thank the numerous people who provided assistance and information during the original production of these guidelines. The 2014 update was requested by members following numerous regulatory changes. The update was conducted by *qldwater*, supported by review from members of its Technical Reference Group, with particular thanks to Rockhampton Regional Council.

# 2 USING THESE GUIDELINES

The Queensland Water Directorate (*qldwater*) is pleased to present the Cutting, Handling and Disposal of Asbestos Cement (AC) Pipe Guidelines to its member organisations. The guidelines seek to offer assistance to members to minimise the risks associated with managing asbestos to their employees and communities.

*qldwater* strongly urges Local Authorities to develop and implement practices to address risks associated with the cutting, handling and disposal of AC pipes to comply with the Queensland legislative requirements.

Depending on the circumstances, cut or broken sections, pieces and whole lengths of AC pipe, the subject of repair or maintenance, should be removed from the site as allowed for in these Guidelines.

These Guidelines have been developed to align and comply with relevant National and Queensland legislation and codes of practice. These are listed in section 6 (Relevant Legislation, Standards and Codes). The *How to Manage Asbestos in the Workplace Code of Practice 2011 (Queensland)* provides particularly useful practical guidance.



These guidelines describe specifically the cutting and handling of bonded asbestos as asbestos cement (AC) pipes. The cutting, handling and removal of small sections of AC pipe (less than 10 m<sup>2</sup>) does not require a licence from Workplace Health and Safety Queensland, as the asbestos is considered to be bonded, not friable, and provided wet-cut methods are used.

Asbestos cement pipes usually have a black exterior; however, all fibre cement pipes should be treated as if they were asbestos cement pipes. This is necessary to remove any risk of accidental exposure.

If the AC pipe to be worked on is friable (e.g. pipes are damaged) or a large amount of AC pipe must be removed (more than 10m²), then a licensed removal business must be engaged to perform the work. Asbestos Pipes should never be dry cut at any stage during removal / disposal.

Please contact Workplace Health and Safety Queensland (1300 369 915) if unsure.

## 3 POLICY STATEMENT TEMPLATE

\_\_\_\_, being the Water Service Provider:

- Recognises that:
  - It has Asbestos Cement (AC) pipes as part of its water supply distribution network.
  - Asbestos products are classified as a hazardous material.
  - There can be serious health risks to workers handling AC pipes.
  - The Australian Government (via Safe Work Australia) and the Queensland Government (via Workplace Health and Safety Queensland) control exposure to asbestos.
- Accepts that it has a Duty of Care:
  - To protect its employees, contractors and the community from real or potential hazards.
  - To protect public health.
  - To maintain its AC pipes.
  - To minimise exposure to hazards from working with AC pipes.
  - To dispose of waste AC materials safely.
- Directs that procedures be put in place that:
  - Identify existing and potential hazards.
  - Provide for appropriate training for relevant employees.
  - Provide for the use of a Safe Work Methods Statement (SWMS) for cutting, handling and disposal of AC pipes.
  - Provide for consultation and education of employees and service providers.
  - Observes legislative/ licensing requirements for the safe removal and disposal of AC materials.

## Accordingly,

- All legislative requirements for licensing will be observed.
- No further AC pipelines shall be installed in new or existing developments, or when undertaking repairs.
- Existing AC pipelines in use are to be left undisturbed in the ground wherever possible (including GPS-plotted and/or marked on plans, and added to any asbestos registers and management plans).
- All relevant operators and contractors are required to have appropriate training prior to handling AC pipes.



- Removal of friable AC pipes, or more than 10m<sup>2</sup> of AC pipe, or dry-cutting of AC pipes is to be conducted by a licensed contractor.
- All plumbing and drainage work shall comply with the provisions of the relevant legislation, standards and codes referred to herein, and these Guidelines.
- A copy of the register of AC pipes (operational, abandoned, damaged) will be made available to third parties upon request.
- A register will be maintained of all identified AC pipes.
- Destructive pipe renewal methods such as pipe cracking will not be permitted on AC pipes.
- Where destructive pipe renewal methods are used, a register will be maintained as a record of disturbed AC pipe.
- Where AC pipes are abandoned, a register will be maintained as a record of all identified and abandoned/disused AC pipes (including GPS-plotted and/or marked on plans, and added to any asbestos registers and management plans).

## 4 WHAT IS THE RISK IN HANDLING AC PIPES?

#### 4.1 The Risk

Exposure to asbestos fibres can cause serious health risks. The major risks from asbestos come from inhaling the fibres.

Asbestos is composed of long silky fibres that contain hundreds of thousands of smaller fibres. These fibres can be subdivided further into microscopic filaments that will float in the air for several hours. Asbestos fibres can easily penetrate body tissues and can cause disabling and fatal diseases following exposure.

Asbestos that is tightly bound with another material, such as Portland cement, is considered non-friable and will only release fibres if sanded, cut, broken, drilled or machined. Hence workers may become exposed to asbestos fibres unless proper precautions are taken during the handling, maintenance or repair of AC pipes.

AC pipes contain Chrysotile-cement made by adding 10-15% Chrysotile fibre to a mixture of Portland cement and water. It is a highly cost-effective material with high tensile strength and excellent compression resistance. It can withstand alkalis, corrosion, heat, electrical conductivity and harsh weather. The reinforcing properties of Chrysotile fibre greatly increase durability of, and permit the manufacture of thinner and lighter pipes.

In Australia, AC pipes manufactured until the mid-1980's consisted mainly of Chrysotile from Canada, blended with Amosite from Africa and Crocidolite from Australia. The asbestos content varied from 12% for non-pressure pipes to 15% for pressure pipes, with the blend varying to meet different specifications.

The following factors are to be taken into account when assessing the extent of the risk.

#### Types of Asbestos

The word asbestos is derived from a Greek word that means inextinguishable or indestructible.

Asbestos is a generic name given to six fibrous materials that have been used in commercial products. The six types of asbestos are Chrysotile, Crocidolite, Amosite, Anthophyllite, Tremolite and Actinolite asbestos. Three have been used for commercial applications:

 Chrysotile, or white asbestos, comes mainly from Thetford Mines, Black Lake, Asbestos (Quebec, Canada), Belvidere Mine (Vermont, USA), Coalinga (California, USA), Cana Brava



(Brazil), Pano Amiandes (Cyprus), Bazhenovo (Russia), Barraba (New South Wales, Australia) and Barberton (Transvaal, South Africa). It is white-grey in colour and found in serpentine rock. Chrysotile accounts for approximately 95% of the asbestos used in commercial products.

- Amosite, or brown asbestos, comes from southern Africa. It is hard to wet and therefore hard to control.
- Crocidolite, or blue asbestos or blue mud, comes from southern Africa and Australia. It is used in high temperature applications around pipes.

The six types of asbestos are divided into two main categories: amphibole and serpentine asbestos.

- The amphibole fibres used commercially (Amphiboles: the term referring to the nature of their geologic formation, includes Amosite and Crocidolite) are extremely hazardous. Due to their chemical structure and straight, needle like fibres, amphiboles are very dusty, as well as highly bio-persistent. Once in the human body, they can remain indefinitely in the lung tissues, and may cause cancer, mesothelioma and asbestosis.
- Chrysotile, the most common serpentine fibre, is considerably less hazardous than amphibole varieties. Silky in texture, with curly fibres, serpentine asbestos is unlikely to remain suspended in the air. Thus, less of it is inhaled, and it does not stay in the lungs very long. The human immune system can eliminate these fibres fairly quickly. The appearance of lung cancer linked to Chrysotile is a threshold phenomenon, meaning that there is an exposure level below which the health risk, if any, is so low as to be undetectable. Very few cases of mesothelioma are attributable to Chrysotile, despite extensive exposure of thousands of workers in the past.

Types of Asbestos Containing Materials

Queensland legislation refers to asbestos or asbestos containing material (ACM). ACM is any material, object, product, or debris that contains asbestos. Asbestos cement sheeting and piping are common forms of ACM.

These guidelines focus on procedures for safe handling and removal of ACM.

## 4.2 Exposure Standards

Workplace exposure standards are set in Australia by Safework Australia and published in the Hazardous Substances Information System (HSIS). These standards have been adopted throughout Australia by each State's occupational health and safety authority and include guidance on the use of airborne contaminants including asbestos, or the removal of asbestos products.

The exposure standard sets out the time-weighted average (TWA) fibre concentration of the air breathed by the worker throughout a working shift, as calculated from one or more measurements taken over a defined sampling period.

The standard limits the TWA airborne concentrations for asbestos to:

- Chrysotile: 1 fibre per millilitre (f/mL) (but see below for mixtures of asbestos);
- Crocidolite: 0.1 f/mL (P);
- Amosite: 0.1 f/mL:
- Other forms of asbestos: 0.1 f/mL; and
- Any mixture of these, or where the composition is unknown: 0.1 f/mL.



These values may be reviewed from time to time; therefore the most recent version available at <a href="http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/workplace-exposure-standards">http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/workplace-exposure-standards</a> should be consulted for any variations.

In addition to the above standards, the following should be noted:

- Field testing may not be practical for the proposed operations:
  - Normal laboratory testing requires samples drawn from the site and tested at the laboratory remote from the site.
  - Available laser equipment for use on site may provide only an overstated background reading and may be prohibitively expensive.
- The import and use of Chrysotile and Chrysotile products in Australia was prohibited from 31 December, 2003.
- There are no known current uses in Australia of the other three forms of asbestos: actinolite, anthophyllite and tremolite.

## 4.3 Consequences of exposure

Although exposure to asbestos is potentially hazardous, health risks can be minimised. In most cases the fibres are released only if the asbestos containing material (ACM) is disturbed. Intact and undisturbed asbestos materials, such as AC pipes, do not pose a health risk. The mere presence of asbestos does not mean that the health of people working with asbestos is endangered. When ACM is properly managed, release of fibres into the air is prevented or controlled, and the risk of asbestos-related disease can be reduced to a negligible level. However, asbestos materials can become hazardous when they release fibres into the air due to damage, disturbance, or deterioration over time.

The historical increase in the use of asbestos resulted in a dramatic rise in asbestos-related diseases among workers. At first, asbestos was not regarded as a health hazard because it has no taste or odour, often could not be seen and caused no immediate health damaging effects. Health problems however, have developed over time in exposed workers. It was not until the 1950s that asbestos received widespread attention as a potential health hazard. The diseases associated with asbestos did not appear for 20-40 years after the initial exposure, making it very difficult to confirm asbestos as the cause. However, overwhelming evidence now exists that exposure to airborne asbestos fibres is linked to several diseases.

Exposure to asbestos can cause disabling respiratory disease and several types of cancer.

Asbestos has been shown to cause asbestosis which is a form of fibrosis, lung cancer, mesothelioma of the pleura or the peritoneum, and cancer of the stomach and colon. The majority of people who died from asbestos exposure were exposed to very high concentrations of asbestos fibres at work and had little or no protection. These employees worked with asbestos regularly and for long periods of time.

Three major diseases related to asbestos are:

- Asbestosis this is a progressive scarring of lung tissue, which results in breathlessness, which may lead to disability and in some cases early death.
- Mesothelioma is a cancer of the lining of the chest cavity.
- Lung Cancer Risk is related to the amount of fibre inhaled. The most common cause of lung cancer is smoking. However, exposure to tobacco smoke and asbestos has been shown to lead to higher incidence of lung cancer than is caused by either agent alone.

The main routes of exposure are inhalation and ingestion. Asbestos fibres cannot penetrate the skin



The most dangerous exposure to asbestos is from inhaling airborne fibres. The body's defences can trap and expel many of the particles. However, as the level of asbestos fibres increase many fibres bypass these defences and become embedded in the lungs. The fibres are not broken down by the body and can remain in body tissue indefinitely.

Asbestos is harmless in solution (water), as the problem is not ingesting the fibres, but inhaling them.

Although measurement of asbestos fibres in drinking water is technically difficult, research has indicated that most waters, whether or not distributed through AC pipes, contain asbestos fibres. This is because asbestos is widely found in the environment as a consequence of natural dissolution of asbestos-containing minerals. AC pipes can give rise to an increase in the numbers of asbestos fibres in drinking water, particularly when first installed. The risks to health from ingestion of asbestos fibres in food and drinking water have been extensively studied by both epidemiology and by experiments in laboratory animals.

Most epidemiological studies found no association with any specific gastrointestinal cancers, although a small number of studies did find a weak positive association. The studies are considered the most comprehensive to date but did not provide evidence for a link between asbestos in drinking water and cancer.

There is potential for exposure to asbestos fibres in drinking water by the inhalation of aerosol droplets or from fibres that are trapped on clothing during washing and which are subsequently released into the atmosphere. This has been studied and except in an extreme case there was no measurable increase in the number of fibres in the indoor atmosphere of houses. In addition, the fibres in drinking water consist almost entirely of short fibres, which are considered to contribute little or no risk to public health.

The World Health Organisation considered asbestos in drinking water arising from AC pipe in their 1993 edition of the Guidelines for Drinking Water Quality (The section on "Chemicals not of health significance at typical concentrations", details chemicals that pose negligible health risk at the concentrations found in drinking water, give Asbestos as an example).

These guidelines state "Although well studied, there has been little convincing evidence of the carcinogenicity of ingested asbestos in epidemiological studies of populations with drinking water supplies containing high concentrations of asbestos. Moreover in extensive studies in laboratory species, asbestos has not consistently increased the incidence of tumours of the gastrointestinal tract. There is therefore no consistent evidence that ingested asbestos is hazardous to health and thus it is concluded that there was no need to establish a health-based quideline value for asbestos in drinking water."

The Australian Drinking Water Guidelines (ADWG) 2011 concludes "Data are insufficient to determine a guideline value for asbestos in drinking water."

# 5 TYPICAL HAZARDS WHEN WORKING WITH AC PIPES

The following routine activities have been identified as potential hazards by exposing employees to asbestos when handling AC pipes.

- Asbestos dust will be generated if not constantly wet when cutting.
- Ripping of plastic bags used for the disposal of AC pipe off-cuts and other contaminated items will allow the drying of AC pipe particles, therefore exposing a risk from asbestos fibres
- Contact with mechanical plant and equipment may result in:
  - Excessive deposition of asbestos on plant, equipment and personnel.
  - Drying of asbestos slurry on plant and equipment.



- Falling debris from mechanical plants.
- Projectile pieces from cutting.
- Asbestos slurry created by cutting may become hazardous if located where particles can later become airborne once drying occurs.
- If not managed properly, asbestos fibres can be transported from the workplace to other areas, which could expose individuals to asbestos fibres.

# 6 RELEVANT LEGISLATION, STANDARDS AND CODES

The following provides authority to Service Providers and reference:

- Workplace Health and Safety Regulation 2011 (Queensland) (especially Chapter 8 -[Asbestos].
- Workplace Health and Safety Act 2011 (Queensland)
- Workers' Compensation and Rehabilitation Act 2003 and Workers' Compensation and Rehabilitation Regulation 2003 (Queensland)
- How to Manage and Control Asbestos in the Workplace Code of Practice (2011) (Queensland).
- How to Manage Work Health and Safety Risks Code of Practice (2011) (Queensland).
- Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)].
- Code of Practice for the Safe Removal of Asbestos 2ND EDITION [NOHSC:2002 (2005)]
- Hazardous Substances Information System (HSIS) (Worksafe Australia)
- Australian Standard AS 2919 Industrial Clothing.
- Australian Standard AS 3544 Industrial Vacuum Cleaners for Particulates Hazardous to Health.
- Australian Standard AS 4260 High Efficiency Particulate Air Filters Classification, Construction and Performance.
- Australian Standard AS/NZS 1715 Selection, use and maintenance of respiratory protective devices.
- Australian Standard AS/NZS 2210.1 Occupational protective footwear Guide to selection, care and use.
- Australian Standard AS/NZS 2210.9 Occupational protective footwear Additional specifications.
- Australian Standard AS/NZS 2161.1 Occupational protective gloves Selection, use and maintenance.
- Australian Drinking Water Guidelines (NHMRC 2011).
- Environmental Protection Act 1994 (Queensland)
- Environmental Protection Regulation 2008 (Queensland), especially Chapter 3, Environmentally Relevant Activities
- Guidelines for Drinking Water Quality (3rd ed. WHO, Geneva, 2008).
- Service Providers' Policies and Procedures.



#### 7 SERVICE PROVIDERS' RESPONSIBILITIES FOR MANAGING AC PIPES

Chrysotile, Amosite and Crocidolite have all been used in AC water pipes in Australia.

The following sections describe documents the Service Provider should or must develop as they are responsible for a workplace that contains ACM. Before any works are conducted on AC pipes (or any ACM), Service Provider must ensure the following documents (sections 7.1, 7.2, 7.4, 7.5) are reviewed by those affected by the works (including those conducting the works and those in the vicinity of the works).

Service Providers must ensure, so far as is reasonably practicable, that all asbestos or ACM at the workplace is identified by a competent person or assume its presence. A competent person is someone who has acquired knowledge and skills to carry out the task through training, a qualification or experience.

While a more specific definition under Queensland Legislation for a competent person is to undertake identification is not overt, guidance is available from the Department of Justice and Attorney General web site for clearance inspections and the same principles should apply:

"The WHS Regulation does not require a written clearance certificate following the removal of less than 10 square metres of non-friable asbestos or following the completion of asbestos related work.

However, before reoccupation of the area, decontamination of dust and debris is still required. The minimum requirements for a competent person checking for evidence that the work area and vicinity is free of visible dust and debris is a person who has acquired through training, qualifications and experience the knowledge and skills to carry out the task.

Therefore, a suitable person should have:

- working knowledge of the asbestos removal industry, the asbestos management code and asbestos removal code
- the ability to identify what is, or what may be, asbestos containing material
- the ability to thoroughly inspect the area for suspected material."

There have been a number of legislative changes from 2012 impacting the licensing, supervisory and training arrangements for workers who undertake asbestos removal. All changes will be enacted by 31 December 2014. The transitional arrangements are complex and available at <a href="http://www.deir.qld.gov.au/workplace/subjects/asbestos/transition/index.htm#nonfriable">http://www.deir.qld.gov.au/workplace/subjects/asbestos/transition/index.htm#nonfriable</a>. This summary focuses on requirements to be in place by 31 December 2014:

# A Class Requirements

- Service Providers undertaking disposal of friable asbestos will need to hold a Class A asbestos removal licence, issued by Workplace Health and Safety Queensland (by 31 Dec 2014, but conditional on all supervisors completing appropriate training below) and obtain a Certified WHS Management System.
- All supervisors responsible for removal of friable asbestos must have completed the VET course "Supervise Asbestos Removal" (by 31 Dec 2013).
- All workers removing friable asbestos must have completed the VET course "Remove Friable Asbestos" (by 31 Dec 2013).

## B Class Requirements

- Licences are held by individuals who are directly involved in the removal of **bonded** ACM, greater than 10m<sup>2</sup>.
- All supervisors responsible for Class B removal work must have completed the VET course "Supervise Asbestos Removal" (by 31 Dec 2014).



(Workers needing to complete the VET course CPCCDE3014A Remove non-friable asbestos are encouraged to book a place in a course as soon as possible to ensure they obtain certification of their competency before the transition period expires at the end of 2014).

Air monitoring, clearance inspections and certificates

- Under the WHS Regulation 2011, an independent licensed asbestos assessor is required to carry out these functions connected with class A asbestos removal work. The asbestos assessor must hold an asbestos assessor licence issued under the WHS Regulation 2011.
- Under the WHS Regulation 2011, an independent competent person is required to carry out a clearance inspection and issue a clearance certificate following Class B asbestos removal work. Until 31 Dec 2014, this is "a person who has acquired through training, qualifications and experience the knowledge and skills to carry out the task." From 1 Jan 2015, this person must have acquired through training or experience the knowledge and skills of relevant asbestos removal industry practice; and hold either a certificate for the VET course for an asbestos assessor (CPCCBC5014A Conduct asbestos assessment associated with removal) or a tertiary qualification in occupational health and safety (OHS), occupational hygiene, science, building, construction or environmental health.

# 7.1 Asbestos Management Plan (from Workplace Health and Safety Regulation)

An asbestos management plan must be written in relation to identified or assumed asbestos or ACM, and for naturally occurring asbestos at a workplace. The asbestos management plan must include:

- the identification of the asbestos or ACM (e.g. a reference or link to the asbestos register and location of signs and labels)
- decisions and reasons about management of asbestos such as safe work procedures and control measures
- procedures for dealing with accidents, incidents or emergencies in relation to asbestos or ACM
- workers carrying out work involving asbestos (e.g. consultation, information and training responsibilities).

The plan must be readily accessible to workers and others at the workplace, kept up to date, and be reviewed at least once every five years or sooner if:

- a control measure or the register is reviewed
- asbestos is removed from, or disturbed, sealed or enclosed
- the plan is no longer adequate for managing asbestos or ACM at the workplace
- a health and safety representative requests a review in certain circumstances.

There are transitional provisions to phase-in requirements for asbestos management plans where these are new for Service Providers. If an asbestos management plan was not required under the repealed WHS Regulation 2008, a person has until 1 January 2015 to comply with requirements about asbestos management plans in Part 8.3 of the WHS Regulation 2011. Requirements for an asbestos management plan where naturally occurring asbestos is identified or likely to be present at the workplace commenced on 1 January 2014.



## 7.2 Register of Asbestos/ ACM

A person with management or control of a workplace must ensure an asbestos register is prepared and kept at the workplace. The asbestos register must record any asbestos or ACM identified at the workplace or likely to be present from time to time.

Prior to "demolition or refurbishment work" starting, the Service Provider must provide a copy of the register to the person carrying out the work.

An asbestos register template is included as part of the relevant <a href="Code of Practice">Code of Practice</a> (Appendices C and D).

The register of ACM, including any risk assessments, should be reviewed every 12 months or earlier if a risk assessment indicates the need for reassessment or if any ACM has been disturbed or removed. A visual inspection of identified ACM should be undertaken as part of any review.

# 7.3 Warning signs and labels

Any areas of a workplace which contain ACM, including plant, equipment and components, must be signposted with warning signs to ensure that the asbestos is not unknowingly disturbed without the correct precautions being taken. These signs should be placed at all of the main entrances to the work areas where asbestos is present.

All identified or presumed ACM — or their enclosures if the ACM are inaccessible — should be clearly labelled. Where it is not practical to label the ACM, prominent warning signs should be located in suitable places.

All warning signs and labels should comply with Australian Standard 1319 Safety Signs for the Occupational Environment, and must identify the material as containing asbestos.

# 7.4 Risk Assessment

A risk assessment should be performed for every AC pipe cutting or handling job.

The purpose of this risk assessment is to allow informed decisions to be made about general requirements for control measures, induction and training, air monitoring and health surveillance.

The risk assessment procedure should follow the guidelines described in the *Risk Management Code of Practice 2007 (Queensland)*. This Code of Practice recommends 5-step processes for undertaking risk assessments generally. The *Code of Practice for the Management and Control of Asbestos in Workplaces* (NOHSC: 2018 (2005) includes recommendations for risk assessments relating to ACM.

The risk assessment should take account of the identification information in the register of ACM, including:

- the condition of the ACM (e.g. whether they are friable or bonded and stable, and whether they liable to damage or deterioration);
- the likelihood of exposure;
- whether the nature or location of any work to be carried out is likely to disturb the ACM.

The results of the risk assessment should be noted in the register of ACM (see section 7.2), and included in the asbestos management plan if one exists (see section 7.1).



#### 7.5 Safe Work Methods Statement

Using the results of the risk assessment, a Safe Work Methods Statement should be prepared for every AC pipe cutting or handling job. The WMS will describe the specific control measures and any other safety procedures to be used.

Service Providers should develop a SWMS template, such as the example included in Appendix A. This WMS template should provide for:

- Leaving as much as possible of asbestos cement pipes undisturbed in the ground.
- All operators working with AC pipe, particularly during repairs, being required to wear all appropriate PPE.
- Avoid cutting AC pipe (particularly at high speeds). If the pipe has to be cut:
  - Use a hydraulic cutting device or a hinged pipe cutter.
  - The pipe should be continuously sprayed with water, sealant or emulsion spray during the cutting phase (refer to Section 8.2, 8.7).
  - Or if a tapping is required to an existing AC pipe, it should be done wherever possible as an under-pressure tapping (refer to Section 8.7.3).
- No reuse of AC pipe.
- If there is a high risk that workers may be exposed to asbestos fibres, such as when removing severely damage AC piping, then a risk assessment should be carried out to determine if a certified asbestos removalist business should be engaged to perform this work.

Section 8.2, Safety considerations, provides some specific instructions that should be included in the WMS.

# 7.6 Education and Training

New and current employees and service providers who are involved in handling or working with AC pipes should be trained and retrained in accordance with assessed risk in all aspects of asbestos handling under the supervision of an experienced employee.

This should include:

- Identification, containment/removal, disposal and use of PPE associated with handling or working with AC pipes.
- Training and education of other personnel involved in removal of AC pipe.
- Selection of PPE, including a guide to appropriate respiratory protection.
- General hygiene requirements for handling AC pipe, including personal decontamination.
- Vehicle licences (or Certificates of Competency) for trucks, backhoes, front-end loaders.

## 7.7 Health Monitoring

A Service Provider must ensure health monitoring is provided to a worker if they are carrying out licensed asbestos removal work, other ongoing asbestos removal work or asbestos-related work and are at risk of exposure to asbestos when carrying out the work (commencing 1 Jan 2015).

# 8 PROCEDURES FOR WORKING WITH AC PIPES

8.1 SWMS Responsibilities: Service Providers, Workers, Supervisor, Contractor



Service Providers, workers, supervisors and contractors all bear responsibility to ensure the Safe Work Methods Statement (SWMS) is properly used.

#### Service Provider

- Ensure that only safe work methods and practices are used.
- Compile and make available records of the location of AC pipes and fittings laid or held in storage.
- Ensure that employees and other persons contracted to carry out asbestos work are informed of the dangers (i.e. risks) involved and of any precautions that should be taken in connection with the work.
- Ensure that employees and others in the workplace are informed when asbestos work is being carried out.
- Identify, and implement measures to prevent the uncontrolled disturbance of AC pipe while construction/maintenance work is being carried out.
- Ensure the procedures are in place for:
  - The cleaning of premises at which AC pipes are handled.
  - The laundering and cleaning of PPE used when AC pipes are handled.
- Ensure that no AC pipe is reused in connection with the carrying out of construction/maintenance work.
- Ensure that no high-pressure water or abrasive blasting processes are used to clean the surface of AC pipes.
- Ensure that persons entering an area where AC pipe is to be handled, unless an assessment of the risk indicates that it is unnecessary, wear appropriate PPE and, in all cases, minimise disturbance of the AC pipe.

#### Worker

- Ensure that only safe work methods and practices are used.
- Wash hands immediately after cutting/handling asbestos pipes.
- Comply with authorised instructions issued in accordance with these Guidelines.

#### Supervisor

- Only safe work methods and practices are used and detailed in a SWMS.
- External contractors including plumbers adhere to adopted procedures at all times.
- Employees have undergone relevant training and are issued with suitable instructions, which familiarise the employee with the requirements to be followed.
- These procedures are complied with and that all PPE is available.
- Safety checks have been completed on site.
- First aid kits, fire extinguishers and all safety gear are in good order.

#### Contractor

- Ensure that only safe work methods and practices are used.
- Comply with the requirements of this Guideline.

## 8.2 Safety Considerations

The following activities should be considered when developing the WMS:

• The need to wet down materials at all times:



- Availability of water for spraying asbestos cutting tools.
- A container of water carried by each vehicle working in the field and/or a hose used to keep exposed AC surfaces wet at all times.
- Use of dedicated asbestos cutting plant & equipment, or meticulous clean down of plant and tools so used.
- Use of any approved type of hand tools.
- If using non electric power tools, they should be used in conjunction with water at all times.
- The need to work in well-ventilated areas.
- The need to use air monitoring equipment when air ventilation is not good.
- Meet all confined spaces requirements.
- Use of plastic drop sheets to collect off-cuts, debris and coarse dust.
- Place waste removed from site into lined bins or plastic bags as described in Section 8.8.
- The need for immediate sealing of bags containing AC pipe to prevent dryings.
- The availability and need to wear appropriate PPE at all times, including, but not limited to:
  - Clothing; Disposable coveralls with hood.
  - Approved respiratory protection when appropriate, particularly in confined spaces;
     Employees should wear a half facemask fitted with a P1 filter suitable for the facemask.
- Vehicle and pedestrian control and safety requirements.
  - The need for a clear distance around the working plant of at least 3 metres by all personnel not involved in the cutting process.
  - Keep worksite clear of all construction vehicles, equipment and materials.
  - Restrict access by all non-approved persons to the worksite by defining the work area (e.g. barricades).

## 8.3 Unacceptable Work Practices for AC Pipe

The following work practices are regarded as unacceptable:

- The use of 'quick cut' saws.
- The use of high-speed, abrasive disk sanders used for shaping or bevelling AC pipes.
- The use of rasps generally without maintaining a wet work surface.
- The use of any electrically powered device.
- Dry sweeping of AC waste.
- Any work on AC pipe without the use of appropriate PPE.

# 8.4 Preparation

Preparation works should consider the following:

- Review the risk assessment and Safe Work Methods Statements for the works.
- Identification Before commencing work the pipe material should be identified. AC
  materials should be assessed for general condition and additional hazard
  controls. Reference should be made to the AC pipe register and if necessary
  update the record. If material identification is in doubt, seek verification from
  the supervisor.



- Asbestos Work Log Workers should log the start and finish times of asbestos work activity. The log should record/reference the approved Safe Work Methods Statement and work practices used.
- Access The work area should be defined and restricted from public access and, if possible, performed when there is a minimum of people present.
- Containment Cover the area (soil) under the pipe to be worked on, with plastic sheeting to capture any waste asbestos.
- **Disposal** Asbestos waste and associated materials must be disposed of in a safe manner. There are two main options:
  - Asbestos waste is double-wrapped in 0.2 mm thick plastic bags or sheeting, sealed with tape and labelled "double wrapped" and transported to a landfill site that accepts asbestos. Note, there are also laws surrounding the transport of asbestos, with different rules applied to <250kg and >250kg loads. Details are available at <a href="https://www.deir.qld.gov.au/asbestos/law/transport-disposal.htm">www.deir.qld.gov.au/asbestos/law/transport-disposal.htm</a>
  - Asbestos waste is placed into a plastic-lined industrial skip that may have been provided by a waste contractor with a regulated waste transport registration certificate.
- Decontamination Transporting asbestos fibres from the workplace to the home or to a
  place outside of the workplace is a real risk and could expose individuals to
  asbestos fibres (Refer to Section 8.6 for more detail).
- PPE Ensure the recommended PPE is provided. The type of PPE required depends on the
  activity being performed and the risk of exposure to air borne asbestos fibres.
  The higher the risk, the higher the level of PPE

# 8.5 Personal Protective Equipment

Workers working with AC pipes should always wear appropriate PPE. The type of PPE required will depend on the nature of the work and the risk of being exposed to asbestos fibres. The risk assessment will determine which PPE should be used. Typical PPE includes disposable overalls with a hood, disposable cotton gloves and a P2 valved disposable respirator.

There are a wide range of respirators to choose from, however whichever type used, it must meet the requirements of AS/NZS 1716 Respiratory Protective Devices.

It is essential that the decision on the type of respiratory equipment to be used is determined by a person that has a clear understanding of the risks involved in the work and correct uses of respiratory equipment.

## 8.6 Personal Decontamination

Transporting asbestos fibres from the workplace to the home or other area outside of the workplace is a real risk to human health. To avoid this, disposable garments should be worn wherever possible. Disposable garments should be treated as asbestos waste and disposed of in the same manner as AC pipes (refer to Section 8.8). Respiratory equipment must be worn during the disposal of these garments.

The use of cotton overalls should be avoided. However, if used these overalls must be decontaminated after completing the work. This will involve thoroughly vacuuming to remove asbestos fibres using an industrial vacuum cleaner and HEPA filter. Respiratory equipment must be worn during the decontamination procedure. The vacuum cleaner cannot be a domestic cleaner but must comply with the requirements of AS 3544 *Industrial Vacuum Cleaners for Particulates Hazardous to Health.* In addition, the HEPA filter must comply with AS 4260 *High Efficiency Particulate Air Filters - Classification, Construction and Performance.* 



If garments are bagged for washing, then the contents should be wetted before removing from the bag. Contaminated clothing must be washed separately from other clothing. The clothing should not be laundered at an employee's home or domestic laundry. Service Providers should identify whether a laundry capable and qualified to launder asbestos contaminated clothing is located in the area. The bag containing the garments should be disposed of immediately or if reusable it should be laundered with the garments.

If the clothes are heavily contaminated with asbestos fibres, then these should be disposed of as asbestos waste.

#### 8.7 Work Procedures

## Pipe Replacement

- Broken AC pipe should be replaced in full lengths of alternative pipe material unless the situation prohibits otherwise.
- To avoid cutting, the entire length of AC pipe may be removed by excavating back past the jointing collars and the collars split/broken/cut using accepted procedures.
  - It is preferable for smaller diameter AC pipes that the collar of the pipe may be wrapped in rags, the collar split with a hammer, hammer and chisel or a handsaw used. If this procedure is used, the pipe and fittings should be kept wet with water, to eliminate dust.
  - Where hand tools are ineffective (e.g. on larger couplings) it may be necessary to use a 'hinged pipe cutter or hydraulic saw with continuous water feed, sealant or emulsion spray to minimise airborne fibres.
- The new piece of pipe (other than AC pipe) may be installed using appropriate gibault joints.
- Broken AC pipe and collars should be disposed of in accordance with Section 8.8.
- A program to replace all AC mains with alternate materials (e.g. DICL or uPVC pipes) may be appropriate where the pipes are generally old and account for a small proportion of the reticulation. Replacement is not mandatory however should be dealt with as a matter of course.

## Cut-ins

- A cut-in is made to install a valve, tee, cross-hydrant, scour or any other fitting.
- Cut-ins should be performed by replacing full lengths, unless the situation prohibits otherwise.
- When it is necessary to cut a pipe between collars owing to space or other onsite constraints, pipes should not be cut using any method which may create dust, i.e. use a wet-method.
- The options for cutting AC pipe are as follows:
  - Use a chain or hinged pipe cutter (not an abrasive cutter) so that no dust is created (pipe in good condition). Also known as a snap cutter or "squeeze-andpop", it should be used to produce a smooth square-cut end using hydraulic pressure applied by a manually operated pump. The pipe should be kept wet with water. (Preferred method).
  - Use a hydraulic saw with continuous water flow, sealant or emulsion spray for larger diameter pipes. (Other safety considerations may need to be assessed and taken into account prior to adopting this method).
  - Use a non-powered handsaw. The pipe should be kept wet with water.



WARNING: High-speed abrasive power and pneumatic tools such as angle grinders, sanders and saws and high-speed drills *must never* be used.

## **Tappings**

The options for tapping into an AC pipe are as follows:

- The manual or power-driven equipment for pressure tapping, or "wet" tapping, is attached to the pipe with a chain yoke. A combination boring-and-insert bar drills and taps the pipe wall and inserts a corporation stop or pipe plug. The tool's pressure chamber protects against water leakage and catches AC debris, making this a virtually dust-free operation. To remove AC debris that entered the pipeline, provisions should be made for flushing or use of tapping equipment with positive purge or "blow-off" features.
- The non-pressure tapping, or "dry" tapping equipment is attached to the pipe or coupling with a chain yoke. Separate drills and taps or a combination tool is used to drill and tap the pipe wall. Corporation stops or other connections may then be affixed to the pipe. AC pipe debris should be removed from the pipe's interior. Flush with water, wet mop, or vacuum using a High Efficiency Particulate Air (HEPA) filter. Compressed air should not be used to dry sweep or blow out any debris. Note that the vacuum cleaner cannot be a domestic cleaner but must comply with the requirements of AS 3544 Industrial Vacuum Cleaners for Particulates Hazardous to Health. Also, the HEPA filter must comply with AS 4260 High Efficiency Particulate Air Filters Classification, Construction and Performance.

#### Drilling

- Tape both the point to be drilled and the exit point with a strong adhesive tape. This will prevent the edges of the hole from crumbling;
- Cover the entrance and exit points with a thick paste such as wall paper paste and let dry before drilling;
- After drilling use wet rags to clean the surface and dispose of the rags as asbestos waste.

## 8.8 Disposal

Asbestos waste and associated waste materials (i.e. rags, clothing, particulate masks, disposable garments) may be disposed at an approved facility by directly placing the material into polyethylene lined bins and sealed, or double bagged using heavy duty (0.2mm thick) polyethylene bags and sealed. The polyethylene bags should be half filled and have the maximum dimensions of 1,200 mm by 900 mm. Bins and bags should be identified with the following warning statement: "Caution Asbestos, Avoid Creating Dust, Serious Inhalation Health Hazard". Note that disposal of AC piping wastes can be carried out by a person who is not a certified asbestos removalist provided that the material is less than 10 square metres of bonded asbestos.

The location of the disposal site for AC pipe waste should be recorded as per landfill licence conditions.

Before disposing of the AC pipe waste, arrangements should be made with the disposal facility to ensure the asbestos waste is covered on the same day it is received. The local disposal facility may require prior notice and this should be checked.

The asbestos waste should:

- Be unloaded in such a manner as to avoid the creation of dust.
- Not be compacted before it is covered.



Not come into contact with any earthmoving equipment at any time.

AC waste pipe is not to be used as road making material. It is illegal to reuse any asbestos products.

#### 9 TRANSPORTATION AND STORAGE

#### 9.1 Asbestos Waste

Employees and Services Providers need to be aware of Workplace Health and Safety Queensland, Queensland Department of Environment and Heritage Protection documents and National Code of Practice for the Safe Removal of Asbestos 2<sup>nd</sup> (NOHSC:2002(2005) or requirements and special conditions as referenced in Section 6 and as may be varied from time to time.

## Transportation

Asbestos waste should only be transported, after it has been suitably wrapped or bagged, in a vehicle which prevents any spillage or dispersal of the waste.

Any vehicle used to transport any type of asbestos waste should be cleaned before leaving the landfill site at which the waste is disposed of so as to ensure that all residual asbestos waste is removed from the vehicle. Vehicles which transport over 10m<sup>2</sup> of material may need to be registered as a waste carrying vehicle.

All plastic bags are to be correctly identified and proper handling techniques adopted.

#### Storage

Where necessary, placement of bags containing asbestos pipe should be placed onto designated pallets in a secure, signposted area, awaiting removal and disposal noting the provision in 7.2.

## 9.2 Asbestos Affected Cutting Tools and Equipment

All tools and equipment should be washed down after use and prior to being removed from the excavation, wherever possible. Otherwise, affected tools and equipment are to be placed immediately into designated boxes.

At the earliest opportunity, affected tools and equipment should be washed down in a designated wash down area, and returned to their boxes.

# 10 GLOSSARY OF TERMS

Term	Abbreviation	Definition
Australian Drinking Water Guidelines	ADWG	The principle reference guide for water quality in Australia.
Asbestos Cement	AC	A mix of Chrysotile (white) asbestos tightly bound with Portland cement and water.
Asbestos Containing Materials	ACM	A range of materials containing any of the six different types of asbestos.
Bonded Asbestos		Asbestos in a bonded matrix (e.g. AC pipe).



Term	Abbreviation	Definition
Friable Asbestos		Material containing asbestos that can be crumbled (e.g. buried asbestos material).
Naturally Occurring Asbestos	NOA	Usually found in soil. Work involving asbestos-contaminated soil is not prohibited as long as a competent person has determined the soil does not contain any visible ACM or friable asbestos.
Personal Protective Equipment	PPE	A range of personal clothing and equipment including, but not limited to, half mask respirators fitted with disposable particulate filters, disposable coveralls, gloves and wet weather gear.
Plumber/ Trained Employee		A person licensed and/or accredited in QLD to undertake a particular plumbing task or the appropriate Service Provider staff member.
Quick Cut Saw		The generic term for an abrasive disc type cutter with a continuous flow of water.
Safe Work Methods Statements	SWMS	That document endorsed by the Service Provider detailing the work methods and practices to be used for a specific task (in this case the cutting, handling and disposal of AC pipe).
Worksafe Australia		The National Authority that sets the standards for occupational exposure to asbestos.





#### APPENDIX A EXAMPLE PROCEDURE

- 1.0 This procedure applies to all tasks where asbestos cement pipes need to be cut.
- 2.0 Revision Information
- 2.1 This procedure has been reviewed and should be read in full.

#### 3.0 References

[insert your references here]

#### 4.0 Definitions

4.1 A-C products Asbestos cement products where the asbestos is bound within the cemented substance.

#### 5.0 Procedure

- 5.1 Authorisations and responsibilities
- 5.1.1 It is the responsibility of the supervising tradesperson to ensure that this procedure is followed closely when cutting A-C piping.
- 5.2 Asbestos cement pipes usually have a black exterior, however, all fibre cement pipes shall be treated as if they were asbestos cement pipes. This is necessary to remove any risk of accidental exposure.
- 5.3 The following personal protective equipment must be worn by all employees within 3 metres of the A-C cutting point:
  - 5.3.1 Disposable P2 filtered respirator as a minimum.
  - 5.3.2 Hearing protection if required.
  - 5.3.3 Safety boots. (steel capped rubber)
  - 5.3.4 Disposable overalls with hood.
  - 5.3.5 Disposable cotton gloves.
- 5.4 The following equipment is authorized for use to cut A-C piping:
  - 5.4.1 A Hinged pipe cutter must only be used.
  - 5.4.2 WARNING: High speed abrasive power or pneumatic tools such as angle grinders, sanders, saws and high speed drills must never be used.
- 5.5 All employees not assisting with the task of cutting A-C pipe must stand clear of the cutting area.
- 5.6 A constant stream of water must be fed onto the Hinged pipe cutter while cutting is in progress. This will be achieved by using the 200ltr spray tank with a 12 volt electric motor attachment, which is available at the store.
- 5.7 No Personal Protective Equipment is to be removed until the cutting task is complete.
- 5.8 The following personal hygiene must be adhered to:
  - 5.8.1 The Hinged pipe cutter must be wiped down with a damp cloth on completion of the task.
  - 5.8.2 All tools used must be rinsed thoroughly to ensure all residues are removed.
  - 5.8.3 The goggles/safety glasses must be rinsed down in the excavation.
  - 5.8.4 The employee's rubber safety boots must be rinsed down in the excavation.
- 5.9 The A-C material and other contaminated material must be collected for disposal as soon as possible. This includes items such as:
  - 5.9.1 The disposable overalls used



- 5.9.2 A-C piping removed from the excavation
- 5.9.3 The disposable P2 filtered respirator.
- 5.9.4 The disposable cotton gloves.
- 5.9.5 Sludge from the bottom of the excavation containing the A-C cuttings.
- 5.9.6 Material used to wipe down the Hinged pipe cutter.
- 5.10 No items listed in 5.9 above or any parts thereof are to be recycled or reused.
- 5.11 The material is to be disposed of in the following manner:
  - 5.11.1 All material and contaminated items collected must be encapsulated in a double wrap of black plastic sheets or in designated asbestos plastic bags as soon as possible.
  - 5.11.2 The packaging is to be secured with duct tape and all open ends taped down and sealed off.
  - 5.11.3 The package is to be marked clearly with the following:
  - "Caution Asbestos, Serious Inhalation Health Hazard, Avoid Creating Dust"
  - 5.11.4 The package is to be taken to an approved Council Landfill and the Landfill Supervisor / Manager advised of the contents.
  - 5.11.5 The package is to be disposed of in accordance with the Landfill Supervisor's / Managers instructions.
  - 5.11.6 The Refuse Tip supervisor must be advised 24 hours prior to disposing the asbestos waste material at the refuse tip.





#### APPENDIX B ADVICE FROM WHSQ

DEPARTMENT OF JUSTICE AND ATTORNEY-GENERAL

ABN 13 846 673 994

Office of Fair and Safe Work Queensland - Advisory Services

Freecall: WHSQ 1300 369 915 Electrical Licensing 1300 362 320 Electrical Safety 1300 650 662 Phone:

Interstate 07-32474711

Website: www.worksafe.qld.gov.au

Our Reference: 48958

Date: 17 March 2014

To: Dave Cameron

Dear Dave,

Thank you for your email regarding the cutting, handling and removal of small sections of AC pipe.

The information contained in your inquiry is still appropriate.

A 'class A' asbestos removal licence is for businesses removing any amount of friable asbestos (material that contains asbestos and is in a powder form or that can be crumbled, pulverised or reduced to a powder by hand pressure when dry).

A 'class B' asbestos removal licence only covers work for the removal of more than ten square metres of non-friable asbestos or any asbestos contaminated dust or debris associated with the removal of more than ten square metres of non-friable asbestos. The licence does not authorise the removal of friable asbestos. Non-friable asbestos materials include asbestos cement sheeting, often called fibro, used in many Queensland buildings before 1990. The sheeting was used for cladding, roofs and fences and can often be found as backing boards in wet areas like kitchens and bathrooms.

If you have any further enquiries, please contact Advisory Services on the numbers listed above.

Yours faithfully

Information Services Officer
Advisory Services
Office of Fair and Safe Work Queensland
Department of Justice and Attorney-General

The most important reason for making your workplace safe, is not at work at all.

Work safe. Home safe.