



Department of
Environment and Conservation

Our environment, our future



Guidelines for managing asbestos at construction and demolition waste recycling facilities



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About this publication

This document has been prepared by the Department of Environment and Conservation (DEC), to clarify the requirements for asbestos management at construction and demolition (C&D) waste recycling facilities.

The document has been reviewed and is supported by the Department of Health and WorkSafe Western Australia.

Please visit the DEC website to obtain the latest version of this document.

It is the responsibility of the proponent to ensure they have a copy of the most recent version of these guidelines.

Document Status Log

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Definitions

“Asbestos” means the asbestiform variety of mineral silicates belonging to the serpentine or amphibole groups of rock-forming minerals and includes actinolite, amosite, anthophyllite, chrysolite, crocidolite, tremolite and any mixture containing 2 or more of those.

“Asbestos containing material (ACM)” - products or materials (including fragments) that contain asbestos in an inert bound matrix such as cement or resin in a sound condition and in a form that cannot pass through a 7mm x 7mm sieve.

“Asbestos fines or fibres (AF)” includes small asbestos fibre bundles, free asbestos fibres and also ACM fragments that can pass through a 7mm x 7mm sieve.

“Clearance certificate” is a certificate or document issued by an independent competent person stating that there is no visible asbestos in the building or structure from which asbestos removal has taken place.

“Competent person” is a person possessing tertiary qualifications such as environmental science, science or engineering and a minimum of 3 years experience working with asbestos.

“Construction and demolition waste (C & D waste)” means materials in the waste stream which arise from construction, refurbishment or demolition activities.

“Enforcement action” for the purposes of these guidelines includes enforcement responses set out in DEC’s Enforcement and Prosecution Policy, 2008 (as amended).

“Fibrous asbestos (FA)” includes friable asbestos material, such as severely weathered ACM and asbestos in the form of loose fibrous material such as insulation products. Friable asbestos is material that is in a degraded condition such that it can be broken or crumbled to a powder form by hand pressure.

“Processing” means the crushing, screening and blending of different materials to create a recycled product.

1. Introduction

Recycling C&D waste is important for reducing the demand for virgin materials, diverting waste from landfill and salvaging valuable resources.

Asbestos is a hazardous material. The health risks increase when people breathe in fibres in the air that are above the normal low background level. The health effects can include mesothelioma, asbestosis and lung cancer. Asbestos and asbestos-containing materials were used extensively in Australian buildings and structures from the 1950s through to 1990.

While regulations and procedures are in place to identify and remove asbestos and asbestos-containing materials (ACM) from buildings prior to demolition, there is still a small risk that some asbestos or ACM will be contained in C&D waste that is directed to recycling facilities. Typically, C&D waste received at recycling facilities is mechanically processed through crushing and screening equipment. If asbestos is present in the C&D waste, these processes can result in the release of asbestos fibres into the air and can also result in the recycled product containing small quantities of asbestos. These in turn can present a potential threat to the health of those who may be exposed to airborne asbestos fibres both on and off the premises and also to those who may come into contact with the recycled product.

These guidelines have been developed to provide guidance on measures that can be used by C&D recycling facilities to manage the risk of asbestos contamination of feedstocks and products to reduce risks to site workers and the wider community.

1.1 Premises Covered

These guidelines apply to any premises licensed under Part V of the *Environmental Protection Act 1986* that accepts, stores and/or processes construction and demolition waste. Typically these are premises falling into Category 13 and 62 of Schedule 1 of the Environmental Protection Regulations 1987 as shown in the table below.

Category number	Description of category	Production or design capacity
13	Crushing of building material: premises on which waste building or demolition material (for example, bricks, stones, or concrete) is crushed or cleaned.	1000 tonnes or more per year
62	Solid waste depot: premises on which waste is stored, or sorted, pending final disposal or re-use.	500 tonnes or more per year

Whilst these guidelines relate specifically to these licensed premises they will also be of value to premises that operate below the production or design capacity threshold levels, to other premises such as landfills who want to ensure the waste they process or bury is free of asbestos and to persons buying or receiving C&D derived recycled products.

1.2 Summary of relevant legislation in Western Australia

The identification and removal of asbestos *inter alia* is regulated by the Health (Asbestos) Regulations 1992 (the Asbestos Regulations) (under review) administered by the Department of Health (DoH) and, in particular, Occupational Health and Safety legislation administered by WorkSafe.

The Occupational Safety and Health Regulations 1996 (the OSH regulations) include requirements for licences to remove friable asbestos and more than 10m² of non-friable asbestos. Further information on the requirements of the OSH regulations can be obtained from

Work Safe at:

<http://www.commerce.wa.gov.au/worksafe/>

Further information on the requirements of the Health (Asbestos) Regulations 1992 can be obtained from DoH at:

http://www.public.health.wa.gov.au/3/1143/2/asbestos_in_the_home.pm:

Under the Environmental Protection (Controlled Waste) Regulations 2004 (Controlled Waste Regulations), asbestos or material containing asbestos must be separated, wrapped in plastic, clearly labelled and disposed of at landfills or waste depots that are licensed to accept asbestos. The person taking the waste to the disposal facility is required to inform the operator of the disposal site if a waste load contains asbestos. The Controlled Waste Regulations impose penalties for non-compliance. Further information can be found on the DEC Asbestos Factsheet which can be obtained at through the following link. The document is also included in Appendix A.

http://www.dec.wa.gov.au/component/option,com_docman/task,doc_details/Itemid,/gid,1437/

The operation of C&D waste recycling facilities and landfills accepting asbestos waste are regulated under Part V of the *Environmental Protection Act 1986* (the Act). Under the Act proponents require a works approval to construct the premises and a licence to undertake the activities. These authorisations principally seek to control the emissions and discharges from the construction of and operational activities at these facilities.

DEC requires proponents to prevent, and where that is not possible, to minimise emissions and discharges to the environment from prescribed premises in line with the principles of the *Environmental Protection Act 1986*. Proponents are required to demonstrate through their works approval and licence applications how this has been achieved and will be achieved throughout the life of the facility.

1.3 Objectives and scope of this guidance

The objectives of these guidelines are to document the procedures DEC expects C&D waste recyclers to implement to:

1. Minimise the risk of asbestos being received and processed at the premises;
2. Minimise the potential risk of asbestos in emissions within and from their recycling premises; and
3. Minimise the potential risk of asbestos contamination in recycled construction and demolition (C&D) materials and products.

Implementing these guidelines is important to ensure the risk of exposure to asbestos to employees at C&D recycling facilities, customers using recycled C&D materials, and the general public is acceptable and minimised.

These guidelines cover procedures associated with the pre-acceptance, receipt, processing and management of C&D waste at recycling facilities. The document also outlines the sampling and testing procedures that should be implemented to verify that recycled products meet product control specifications for asbestos content.

This document is not intended to provide guidance on the occupational health and safety issues associated with C&D waste recycling. Operators of C&D waste recycling facilities should ensure they are aware of their responsibilities under OHS legislation and implement appropriate controls to protect their employees and other persons such as visitors to the premises and truck drivers.

2 Siting of C & D recycling facilities

The Environmental Protection Authority (EPA) has guidance which recommends separation distances between industrial activities and sensitive land uses. These buffers aim to protect sensitive land uses from unacceptable impacts on health and amenity that may result from industrial activities, emissions and infrastructure. The document, titled Guidance for the Assessment of Environmental Factors, Separation Distances between Industrial and Sensitive Land Uses, No. 3, EPA, June 2005 can be obtained through the following link http://www.epa.wa.gov.au/docs/1840_GS3.pdf

This guidance document recommends a separation distance of 1000m between premises that crush or screen C&D waste and sensitive land uses. It is important to note that the separation distance is not intended to represent an absolute separation distance and does not replace the need to demonstrate best practice in the prevention and minimisation of emissions at prescribed premises. It is however, a useful tool to factor into impact assessments.

DEC recognises that in some urban areas it may be difficult to achieve this separation distance. Where the buffer detailed in the EPA guidance document is not achieved at a premises, the proponent should demonstrate through a site specific impact assessment that there will not be any unacceptable impacts on nearby receptors as a result of the recycling activities, taking account of the risk management measures that will apply.

3 Operational Procedures

3.1 Asbestos management plan (AMP)

DEC will require all C&D recycling facilities, through the Part V licensing system of the *Environmental Protection Act 1986*, to have a site specific AMP and to operate in accordance with it.

AMPs must, as a minimum, reflect the standard operating procedures contained within these guidelines and include:

- Identification of where asbestos may be present on the site;
- Standard Operational Procedures (SOPs) and management practices setting out the measures to be adopted in relation to the control of asbestos at each stage of the recycling process;
- Sampling and Analysis Program (SAP);
- Identification of each person with responsibilities under the asbestos management plan and the person's responsibilities;
- Procedures, including a timetable for reviewing and, if necessary, revising the asbestos management plan;
- Monitoring procedures to be implemented at the premises;
- Procedures for detailing incidents or emergencies associated with asbestos and
- Details of compliance and performance audits to be undertaken and periodic reviews of the plan with feedback mechanisms and improvement.

The AMP should form part of the wider Environmental Management System (EMS) that should be implemented at the premises (see section 5.1).

If the AMP is not suitable for use by facility workers for their particular tasks then it will need to be translated into practical SOPs specific to those tasks.

Where an AMP is required on a C&D recycling site to comply with OHS legislation, it is acceptable for one AMP to be developed to address both OHS and DEC requirements.

Where suspect asbestos material is referred to in these Guidelines it should be assumed to be and treated as asbestos unless laboratory analysis of a representative sample demonstrates otherwise.

3.2 Pre-acceptance procedures

C&D recyclers must have suitable systems and procedures in place to ensure they take all reasonable and practicable measures to prevent the acceptance of asbestos and asbestos containing wastes at recycling sites. These should include:

- Advising all customers and potential customers that asbestos or potentially asbestos contaminated material is not accepted at the C&D recycling facility during telephone enquiries and through information included on other documentation such as price lists, brochures and the company website;

- Ensuring a “no asbestos” clause is included in any contracts with C&D waste suppliers;
- Installing a clearly visible sign saying “No Asbestos” is present at the entry to the facility;
- Establishing a system to record the details of loads arriving/received at the site which have been found to contain asbestos.

DEC has a supply of brochures that outline the rules on disposal of asbestos loads that can be handed to customers. Please contact DEC’s Waste Management Branch on (08) 6467 5323 for copies.

3.3 Acceptance procedures

When waste arrives at the recycling facility, acceptance procedures must serve to confirm that the characteristics of the waste are consistent with the waste types permitted by the Part V licence and to determine the risk of the load containing asbestos.

To follow on from the pre-acceptance procedures, all persons bringing waste onto the premises must be asked to sign a declaration or provide a ‘customer warranty’ on a vehicle load specific basis confirming that their load is free from asbestos. The associated documentation should be retained on the premises and be available for DEC to inspect. Where an individual is not prepared to sign this disclaimer or provide such a warranty the load shall be refused entry.

All loads must be visually inspected when they arrive at the recycling site. Where the inspection identifies that the wastes are not permitted by the licence and/or asbestos is visually identified in the load it shall be rejected for acceptance. A record of all rejected loads must be maintained on the premises and be available for DEC to inspect. As a minimum, a record must be made of the waste producer, waste carrier, registration number of the vehicle and the date of rejection.

The risk of a load containing asbestos is related to the type and source of the waste. In general, buildings and structures constructed after 1990 are unlikely to have asbestos containing materials within them, whereas buildings and structures constructed before this date may have been built using asbestos containing materials.

Because large buildings and structures undergo regulated asbestos removal programs and inspections before they are demolished the probability of asbestos being present in the demolition debris should be low. However, a risk of contamination can remain from asbestos formwork embedded or attached to concrete columns that cannot be readily identified through the asbestos clearance certification process and from asbestos piping from reclaimed road, car park areas and water supply systems.

It is also common for mixed waste from unknown sources, particularly those in skip bins or from small-scale demolition or refurbishment activities to contain amounts of asbestos waste. These sources must be considered high risk.

To determine the risk of an incoming load containing asbestos the gatehouse operator shall establish:

- The source of the load including the site location and if possible the age of any building or structure from which the C&D waste originated;

- The content/waste types within the load; and
- The type of load.

Where the source of the load can clearly be determined to be a building or structure constructed after 1990 then the load can be considered to represent a low risk of asbestos contamination and managed as outlined in the following section. Where the waste originates from a building constructed before 1990 or there is uncertainty over this issue, the risks associated with asbestos in the load must be established in line with the Risk Classification Matrix below.

Once classified, each load must be directed to the appropriate area for unloading and further inspection in line with the following sections.

Risk Classification Matrix			
Material Type	Type of load		
	Commercial	Public, utes, cars and trailers*	Skip bins
Clean Concrete (without formwork)	Low	High	High
Clean Brick	Low	High	High
Clean Bitumen / Asphalt	Low	High	High
Mixed Construction waste	High	High	High
Mixed Demolition waste	High	High	High

* if it is possible to view the entire load of incoming C & D material (eg a small trailer with a shallow load, then consideration may be given to classifying these loads as low risk
(Risk Matrix Classification adapted from WorkSafe Victoria 2006 and WMAA 2009)

3.4 Load inspection after acceptance

Each accepted and classified load shall be directed to an unloading area at the site which is appropriately designed and constructed to ensure the waste will not mix with other waste. Where feasible, separate unloading areas shall be provided for low risk and high risk wastes.

All loads shall be dampened prior to unloading and maintained in a dampened state throughout the inspection process. Operators will need to ensure there are adequate facilities on the premises to achieve this.

Low risk load procedure

Loads classified as “low risk”, must be visually inspected while the material is being unloaded to determine whether any asbestos can be identified.

If suspect fibrous asbestos (FA) or asbestos fines/fibres (AF) are detected, the load must be isolated, kept wet and once appropriately contained in accordance with the Asbestos Factsheet in Appendix A, redirected to an appropriately authorised disposal facility. If suspect ACM is identified, the load must be reclassified as “high risk” and continue to be processed in accordance with the high risk procedure below. Where the visual inspection confirms that the

load is clear of suspect ACM, FA and AF, the load may then be added to the waste stockpiles awaiting further processing eg crushing and screening.

High risk load procedure

Loads classified as “high risk” must be unloaded and spread over a sufficiently large area to enable a comprehensive visual inspection of all sides of the material to be undertaken. One method of achieving this is to spread the material to a depth of less than 30cm and to turn over the material with the use of an excavator or similar. Where appropriate, larger sections of concrete should be inverted to permit a visual check for embedded or underlying asbestos product debris.

If suspect FA or AF are detected, the load must be isolated, kept wet and once appropriately contained in accordance with the Asbestos Factsheet in Appendix A, and redirected to an appropriately authorised disposal facility.

Where suspect ACM is identified within a load and is not capable of being easily removed by hand, the load must be rejected and should be isolated, kept wet and once appropriately contained in accordance with the Asbestos Factsheet in Appendix A, and redirected to an appropriately authorised disposal facility.

Where suspected ACM fragments capable of being easily removed by hand are identified in a load, the suspect ACM must be removed from the load and either:

1. Appropriately isolated and covered for asbestos testing. If testing of representative samples confirms the material is ACM it must be redirected to an appropriately authorised disposal facility. If testing confirms the material is not ACM the waste can be added to the stockpile awaiting further processing; or
2. Assumed to be ACM and redirected to an appropriately authorised disposal facility.

All suspected or assumed ACM must be segregated. Material must be clearly labelled, kept secure and sufficiently contained to prevent the release of asbestos including wind blown fibres.

Once all suspected or assumed ACM has been removed from a load in line with the above procedure the residual waste can be added to the stockpile awaiting further processing.

Records must be kept to ensure that the process from receipt of C&D material to the completion of the unloading procedure is auditable and that any loads found to contain suspect asbestos can be traced back to the customer and originating site. Through Part V licence conditions, DEC will require records of loads found to contain asbestos and action taken by the C&D recycler to address this issue with the customer, to be submitted on a regular basis. DEC will take follow up action with customers delivering asbestos containing waste to the premises as necessary.

3.5 Waste Processing Controls

On-going inspections

Once waste has been inspected in line with section 3.4, the risk of asbestos being present is extremely low. However, to further reduce this risk, operators must continue to visually inspect waste at all stages of the recycling process. Suspect asbestos identified at any stage of the process must be handled in accordance with section 3.4 above.

Stockpile Management

Operators must manage the size of their stockpiles such that they can clearly demonstrate that the sampling frequencies set out in section 4.3 of this document (or reduced sampling frequencies where agreed with DEC) are being met. To facilitate this process it is recommended that the size of stockpiles does not exceed 4000 tonnes.

Dust Management

To reduce the risk of fugitive dust emissions that may contain asbestos fibres from any remaining asbestos in the waste being released from operations taking place on C&D recycling facilities, DEC will impose a standard condition on all licences to require operators to *“take all reasonable and practicable measures to prevent and where that is not practicable to minimise emissions of dust from the recycling premises”*. A further condition will be included on licences to require licence holders to *“ensure that visible dust does not cross the premises boundary”*.

DEC may also apply additional conditions to the licence where the risk from the operations requires further management or control.

DEC considers that reasonable and practicable measures to prevent/minimise dust at C&D recycling facilities include:

- Dampening loads prior to or during tipping;
- Undertaking operations inside buildings (with sufficient controls to protect worker health);
- Locating stockpiles away from sensitive receptors and/or orienting them to minimise lift off from the prevailing wind;
- Providing windbreaks for stockpiles or controlling releases by means of sprays, binders or covers;
- Minimising the handling of the waste;
- Enclosing conveyors and minimise drops;
- Installing vents on building and conveying systems;
- Covering vehicles, skips and other storage vessels;
- Regularly dampening roadways;
- Avoiding activities when there are high winds;
- Planting/retaining trees or if practical erecting bunds on site perimeter;
- Sealing roadways; and
- Using a wheel wash.

Operators of C&D recycling facilities must use the above measures as necessary to achieve compliance with their licence conditions.

4 Monitoring and Testing

Monitoring must be undertaken to confirm that risk management measures are effectively meeting their objectives. This shall include qualitative and quantitative monitoring and product testing.

4.1 Qualitative monitoring

Site operatives must undertake visual inspections whilst the facility is operational to ensure that fugitive emissions of dust are being adequately controlled and are not being carried outside of the premises. Where fugitive dust releases are identified their source must be investigated and all reasonable and practicable measures implemented to prevent or minimise the release.

Where risk management measures are ineffective or likely to be ineffective at preventing visible dust crossing the site boundary, for example during adverse weather conditions, waste processing activities must cease until additional measures have been put in place to prevent the discharge or until the adverse weather conditions have passed.

4.2 Quantitative environmental monitoring

On some sites it may be necessary for ambient dust or asbestos fibre air monitoring to be undertaken to provide further confidence in risk management measures. Such monitoring may be required where recycling sites are located in close proximity to sensitive receptors, are within a relevant Environmental Protection Policy area or have a poor compliance history relating to fugitive dust control. Where quantitative dust monitoring is not proposed, the proponent/operator must provide a risk based justification as to why it is not considered necessary at their premises.

Dust monitoring provides a useful surrogate measure to evaluate the potential generation and distribution of airborne dust and asbestos fibres and will normally be sufficient on most sites. Dust monitoring equipment must demonstrate that dust levels are kept as low as reasonably possible. Tapered Element Oscillating Microbalance (TEOM) (or equivalent) equipment is preferred to provide continuous and accurate perimeter air monitoring for community protection. Any site perimeter monitoring for this purpose should be conducted to ensure compliance with the National Environmental Protection Measure (NEPM) ambient air 24 hour PM₁₀ goal of 50 ug/m³.

Where air quality monitoring is required, an air quality monitoring and reporting strategy must be developed by a person suitably experienced in dust/asbestos sampling and exposure assessment and any associated analysis be undertaken by a laboratory accredited by NATA for this purpose.

4.3 Product testing and supply

To ensure that recycled products have been produced to the required specification in relation to asbestos content it is necessary for product testing to be undertaken. The testing procedures detailed in this section have application for the three main recycled products:

1. Recycled drainage rock 20-27mm;

2. Recycled sand, screened to <10mm; and
3. Recycled road-base, <19mm.

The testing must be documented as outlined under Section 5.3.

Product specification

To ensure the health of those using or coming into contact with recycled C&D products is protected, the asbestos content (in any form) of any recycled products must not exceed 0.001% asbestos weight for weight (w/w).

Inspection and sampling requirements

All types of recycled product must be inspected and/or sampled and tested for ACM, FA and AF, as outlined below. Inspections and sampling may be undertaken by staff employed by the licensee as long as they have received the required asbestos training for operational staff set out in section 5.2.

ACM and FA are subject to visual inspection and sampling procedures since they are larger in size (>7mm) and AF (<7mm) is assessed by submitting samples for laboratory analysis.

Recycled products may be sampled from conveyors or stockpiles. Whichever approach is adopted, the operator will need to ensure that they have appropriate systems in place to allow them to identify where in the product stockpiles each sample is from to allow further testing or separation to occur if required.

Stockpile inspection and sampling

In the case of recycled drainage rock and recycled road-base a visual inspection should be undertaken in a systematic grid fashion over the any new stockpile material to identify any suspect asbestos material.

No sampling is required for recycled drainage rock, other than to determine by laboratory analysis if necessary whether a suspect fragment is asbestos.

For recycled road-base and screened sand, sampling is necessary and must be spread evenly over the whole stockpile surface or samples may be taken at regular intervals (as per conveyor sampling) during construction of the stockpile. Suspect asbestos material or areas must be targeted for sampling.

Sampling of road base and screened sand products must occur at a minimum rate of 40 locations per 4000 tonnes or 14 samples per 1000m³ of product.

Conveyor sampling

Sampling of road base and screened sand products must occur at a minimum rate of 1 sample per 70m³ of a product output. Suspect asbestos material or areas must be targeted for sampling.

Sample treatment

Each sample collected must be at least 10 litres in volume and then be divided into 2 size fractions (>7mm and <7mm) in the field by sieving through a 7mm screen or spread out for inspection on a contrasting colour fabric. The >7mm fraction should be examined for any suspect asbestos material and this be retained to calculate the level of contamination.

The <7mm fraction will need to be a minimum 500 ml, be wetted, and submitted for laboratory analysis. This sample size is considered necessary to improve the limit of detection for asbestos in the analysis procedure.

Reduced Sampling Criteria

Once premises have demonstrated that their procedures are able to consistently produce recycled product that meets the product specification and undertake their activities to a high standard, DEC may authorise a reduced product testing rate including down to 5 locations per 4000 tonnes (1 sample per 600m³) of product.

The criteria that DEC will use to consider and determine a reduction in product sampling frequency are:

1. Activities at the premises have been validated through a DEC inspection or audit to comply with these guidelines;
2. DEC has confirmed through an inspection or audit that the conditions of the Part V licence are being met;
3. DEC has not undertaken any enforcement action in relation to the activities at the premises in the last 6 months;
4. Product testing has demonstrated that the product specification has been consistently achieved at the premises for a continuous 6 month period;
5. The presence of mitigating factors such as best practice management measures, high control of source material or use of the product for low risk purposes;
6. The quantity of waste processed in the last 6 months and the different sources/types of material processed at the premises; and
7. DoH has agreed to the reduction in product sampling rate at the premises.

All requests for a reduced product sampling rate must be submitted in writing to the relevant DEC Industry Regulation Regional Leader for the Premises, details of which can be found in the interpretation section of the Part V licence for the Premises.

DEC will refer all requests to the DoH and operators must ensure that all requests include sufficient evidence, particularly in relation to product testing, to support compliance with the above criteria.

Proponents should note however, that despite a premises meeting the above reduced sampling criteria, there may be occasions where a reduced sampling rate is not approved by DEC. This

may occur for example where the site is close to sensitive receptors, contentious and/or there is a need to provide public confidence in the activities at the site.

Where a reduced sampling rate is approved at a premises, DEC will provide written notification of the approval and will continue to closely monitor that premises to ensure it remains compliant with the reduced sampling criteria. DEC's monitoring of the premises will be further supported by the annual process audits required by section 5.1 and the results of the product sampling.

DEC will withdraw the approval to implement a reduced sampling frequency where the reduced sampling criteria are not being met on an on-going basis. Where DEC withdraws approval for a reduced sampling frequency, proponents will be provided with the reasons for the withdrawal.

In the event that approval for a reduced sampling rate is withdrawn by DEC, proponents will be required to make a new reduced sampling frequency request and demonstrate that they have:

1. Implemented appropriate measures to prevent a re-occurrence of the non-compliance that caused the previous agreement for a reduced sampling frequency to be withdrawn; and that
2. The product specification (sampled at the 40 samples per 4000 tonnes rate) has been consistently met for a 6 month period following the implementation of the measures identified in 1. above.

Sample Analysis Method

>7mm sample fractions

Asbestos concentrations (ACM and FA) should be calculated in accordance with the methods detailed in section 4.1.7 of Department of Health (DoH), 2009, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. As detailed in the DoH Guidelines, averaging asbestos levels across the stockpile is not appropriate and asbestos levels within each sample should be reported.

<7mm sample fractions

Each <7mm sample fraction must be analysed for FA and AF.

Asbestos analysis must be undertaken by an independent NATA certified laboratory and comply with Australian *Standard Method for the Qualitative Identification of asbestos in bulk samples* (AS4964–2004) or be demonstrated to be able to achieve the equivalent level of results to this Australian Standard.

AS4964-2004 is currently the only method in Australia that has NATA certification, however the practicable level of detection for this standard polarized light microscopy method (PLM) and dispersion staining (DS) is 0.01%w/w. It is possible however, to measure asbestos contamination at or lower than 0.001%w/w where an increased sample size used, however DEC recognises that any reporting of concentrations below 0.01%w/w will be outside the conditions set by NATA.

Therefore, to determine whether recycled products meet the product specification for asbestos content, samples must be a minimum of 500mL in size. Proponents must adopt one of the following analytical approaches:

1. Detected/non-detected – where any quantity of asbestos is detected by the PLM method it must be assumed, without further analysis, to be in concentrations above the product specification limit of 0.001%w/w. A weight of evidence approach may be adopted i.e. the frequency and occurrence of other positive results in the stockpile can be taken into account, to determine whether the stockpile being assessed is considered to meet the product specification or not; or
2. Where any quantity of asbestos is detected by the PLM method, the sample is subject to further testing in the form of a semi-quantitative method with a lower level of detection for asbestos. A number of laboratories have developed such semi-quantitative methods for the analysis of low levels of asbestos. Techniques include:
 - The extraction and weighing of fibre bundles or fibre cement material from the total sample; and
 - Measuring the width and length (ie volume) of individual fibre by Phase Contrast Microscopy (PCM) and calculating the weight of fibres in the extracted sub-sample.

The use of either of these methods is considered acceptable to DEC.

Whatever analysis methods are adopted by an operator, DEC expects a number of assessment based statements to be included in all laboratory analytical reports. These include:

- Details of the sample size;
- A Statement of Limit of Detection of the analysis;
- Results in relation to asbestos detected or not – note that AS4964-2004 allows for a nil detection if the asbestos is less than a certain concentration and is non-respirable however DEC would consider a positive result to exceed the 0.001% w/w limit;
- Description of any asbestos detected; and
- Estimate of the concentration of asbestos detected if practical to do so.

Interpreting Inspection and Sampling Results

If the visual inspection, sieve sample or analytical results identify asbestos above or possibly above the 0.001%w/w criteria then that stockpile or product process should be deemed potentially contaminated and considered for off-site disposal as asbestos waste, or subject to further actions to remediate it or to demonstrate its acceptability by further assessment. A record should be made of the decision making and action taken eg off-site disposal, further assessment undertaken etc, in relation to that stockpile.

In addition to the above, where asbestos is identified above or possibly above the 0.001%w/w criteria, an investigation into the likely cause for the presence of asbestos in the product should be undertaken and measures implemented to prevent a reoccurrence. A record of the

investigation and its findings together with the details of any preventative measures implemented at the site should be made.

As a guide, in the case of recycled drainage rock identification of a piece of ACM or FA per 10m² of surface would be deemed to exceed the specification for that area, and for the whole stockpile if repeated in 2 or more other separate areas. A single fragment exceedance can be considered an isolated occurrence in the absence of other contamination evidence and the stockpile allowed for beneficial use. If there is multiple contamination only of a localised area then that area can be excavated to the extent of any visible asbestos and then the remainder of the stockpile considered to be suitable for use.

For laboratory analysis it is important that each result be considered on its own merits in regard to the asbestos control specification and that there is no averaging across samples. In the case of a single exceedance at a level less than 0.01% w/w, the stockpile (nominally 4000 tonnes) may not be deemed contaminated if repeat samples of immediately adjacent areas do not demonstrate specification exceedances.

The same approach as indicated in the preceding paragraph can be applied to the results of the >7mm sieve sampling in regard to the recycled sand material and roadbase. In this case a 1cm³ fragment of ACM or FA would be deemed to exceed the specification for a 10L sample.

It should be noted that specification exceedances in regard to different assessment methods for the same type of stockpile should not be viewed in isolation from each other.

Product Supply

Recycled products should only be supplied to customers from stockpiles that have been sampled and tested in accordance with section 4.3 and shown to conform to the product specification.

5 General Management

5.1 Environmental Management System (EMS)

C&D recycling premises must implement an EMS that documents how the activities will be managed to minimize the impact, or the potential to impact, on the environment. The type of EMS implemented may be proportionate to both the scale and the risk that the activities pose to the environment.

As a minimum the EMS must include:

- An Environmental Policy – a public policy endorsed by senior management that seeks, or seeks to surpass compliance with relevant environmental legislation and continuous improvement;
- Objectives and targets – established for aspects of the operations that may impact on the environment and which provide a focus for on-going improvement;
- Procedures, work instructions and controls – provided to implement the Environmental Policy and to ensure the achievement of objectives and targets;
- Audits – planned audits of the EMS should take place to ensure it is effectively meeting its goals. These audits should include audits of compliance with relevant operating procedures, processes, work instructions and controls; and
- Management reviews – to ensure the EMS remains suitable for the business and to set direction for future improvements.

Process Audit

As part of the EMS audit programme, process compliance audits must be conducted at least annually, although the frequency of audits may be increased by DEC through licence conditions if considered necessary at higher risk premises. These audits should be undertaken by a competent person who is not involved with the “day-to-day” operation of the site. This could mean for example that some reviews are conducted by a consultant or a representative of an appropriate industry body. The qualifications of the competent person must be detailed in the audit report.

Such process compliance audits must consider all aspects of the site’s C&D recycling operations and consider whether they are being undertaken in accordance with the agreed AMP (see section 3.1) and these Guidelines. Key areas which the audit should consider include:

- The effectiveness and implementation of pre-acceptance, receipt, classification, unloading, inspection and sampling procedures;
- The effectiveness and results of monitoring including product testing and interpretation of results;
- The effectiveness of personnel training including the staff’s ability to recognise asbestos;
- Records and document retention; and
- The effectiveness of the AMP and degree to which it reflects of site operations.

Outcomes of the reviews must be used to develop improvement strategies and must be made available for inspection by officers from WorkSafe and DoH. Licence conditions will require submission of the audit report and its outcomes to DEC.

5.2 Staff competence, training and safety

There must be sufficient capable staff to manage and operate the premises.

All staff must have:

- Clearly defined roles and responsibilities;
- Defined skills required for their position;
- A record of how they have gained the necessary skills; and
- A record of how these skills are kept up to date.

Staff can gain skills and competence in various ways such as:

- Academic qualifications;
- Professional qualifications;
- Vocational qualifications;
- External training qualification/certification;
- Attendance at external or in-house training courses;
- Those with approved training cascade that training to other staff; and
- Mentoring or “on the job” training.

DEC considers that the training of staff at C&D recycling facilities has not always been detailed enough to provide individuals with sufficient skills and knowledge to identify the wide variety of asbestos materials that they may encounter.

All operational staff at C&D recycling premises must therefore receive appropriate training (including refresher training on a 2 yearly basis) to ensure they clearly understand:

- a) The health hazards associated with asbestos;
- b) The controls used to minimise exposure to asbestos dust and how to use personal protective equipment;
- c) How to visually inspect waste;
- d) How to recognise different types of asbestos and asbestos-containing materials;
- e) Site based procedures relevant to their role such as processes for rejecting loads, classifying loads, unloading and inspecting low and high risk loads, segregating and storing asbestos and asbestos containing materials, record keeping; and
- f) Awareness of environmental and asbestos related legislation relevant to the premises and the conditions of the licence that relate to the tasks that the person performs on the site.

5.3 Record keeping

Records are an important aspect of site operations and there should be a clear and logical system for keeping records at the premises. All records relating to environmental protection need to be retained and may include information relating to:

- Waste accepted and waste dispatched, rejected wastes;
- Emissions or process monitoring results and interpretation;
- Any on or off site environmental effects including pollution incidents and any associated management response;
- Complaints received and management response;
- Maintenance;
- Non-conformances such as emission limit breaches and associated management response;
- Documentation associated with stockpile inspections and sampling results and details of actions taken in regard to stockpiles or material not meeting the asbestos control specification;
- Training records; and
- Audit findings and any improvement strategies.

All records required to be made by these guidelines must be available on site, but may be stored electronically. Records must be made available for inspection by officers from WorkSafe, DoH and DEC on request.

6 Reference documents and further information

Department of Environment and Conservation, 2007, *Asbestos Factsheet*.

Department of Environment and Conservation, 2008, Enforcement and Prosecution Policy.

Department of Health, 2009, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*.

New South Wales Government, Work Cover New South Wales, 2010, *Management of asbestos in recycled construction and demolition waste*.

National Occupational Health And Safety Commission, 2005, *Code Of Practice For The Safe Removal Of Asbestos 2nd Edition [NOHSC:2002(2005)]*.

National Occupational Health And Safety Commission, *Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018(2005)]*

Parsons Brinckerhoff, 2012, *Assessment of procedures for asbestos detection in C&D recycling facilities, Report for the Western Australian Waste Authority*.

Waste Management Association of Australia (WMAA), 2009, *Report for the National Construction and Demolition Waste Division, Asbestos Management Guideline for Construction and Demolition Waste Recycling Facilities*.

Work Safe Victoria, 2007, *Recycling Construction and Demolition Material – Guidance on complying with the Occupational Health and Safety (Asbestos) Regulations 2003*.

Appendix A: Asbestos Factsheet

TRANSPORTATION AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL

The transportation and disposal of asbestos-containing material from commercial, industrial and other activities is regulated by the Environmental Protection (Controlled Waste) Regulations 2004 (Regulations). The Regulations apply obligations on the waste transporter to ensure the waste is safely transported to an approved location.

The Regulations define what is considered to be asbestos containing material for the purposes of the Regulations. This definition includes material which contains 0.001% or more of asbestos fibres weight/weight.

Please note that removal, handling, signage, security and onsite packaging of asbestos contaminated material must be carried out in accordance with the Local Government Authority, Department of Health and WorkSafe requirements. Contact the relevant authority for further information (refer to the end of this factsheet).

TRANSPORTATION OF ASBESTOS-CONTAINING MATERIAL (ACM)

The Regulations require asbestos containing material to be:

1. Separated from other material for disposal where that is reasonably practicable;
2. Wrapped and contained in a manner that prevents asbestos fibres entering the atmosphere during transportation on a road; and
3. Labelled or marked with the words "CAUTION ASBESTOS" in letters no less than 50 millimetres high on the individual packages and the transport container.

Further guidance on the transportation of asbestos containing materials is set out in the Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC:2002(2005)] and the *Health (Asbestos) Regulations (1992 or as amended)*. This Code of Practice recommends that:

- ACM is sealed in heavy duty 200 µm (minimum thickness) polythene plastic and clearly labelled with the appropriate signage warning.
- All drums or bins used to store and dispose of ACM should be in good condition, with lids and rims in good working order. The drums or bins should be lined with polythene plastic (200 µm minimum thickness) and be clearly labelled.
- If a waste skip bin, vehicle tray or similar container is used, the ACM should be double bagged before being placed in to the container or sealed in double-lined, polythene plastic (200 µm minimum thickness), and be clearly labelled. In the case of bulk loads such as contaminated soil an alternative is to double line the vehicle tray with the polythene and completely cover the load with a close fitting durable material such as the double layered polythene or a tarpaulin.

- In the case of ACM in the form of contaminated soil, it needs to be wetted down prior to removal and loading onto vehicle or bin.

DISPOSAL OF MATERIAL CONTAINING ASBESTOS

All material containing asbestos must be disposed at a disposal site appropriately licensed or registered under *Part V* of the *Environmental Protection Act 1986* to accept asbestos waste.

A person who disposes of material containing asbestos other than at a licensed disposal site commits an offence.

Receipts for the disposal of ACM should be retained or passed on to the disposal client to assist any subsequent regulatory investigation.

DUTY TO NOTIFY OTHERS OF THE PRESENCE OF ASBESTOS

A person who takes material containing asbestos to a disposal site **MUST** inform the operator of the facility that the material is, or contains asbestos waste. This notification should be provided in a written form however where notification is verbally provided the disposal site should make a written record of the notification.

PENALTIES FOR NON-COMPLIANCE

Penalties apply for offences committed under the *Environmental Protection Act 1986* and the Environmental Protection (Controlled Waste) Regulations 2004.

DISPOSAL SITES FOR MATERIAL CONTAINING ASBESTOS

For a map of landfills within the Metropolitan area visit the WA Waste Authority website at: www.zerowastewa.com.au/disposal/community/perthlandfills

Please contact the Local Government Authority or the facility on the number provided for more information before visiting the disposal site. In Regional areas contact the Local Government Authority for disposal site locations. Please note this list is subject to change and is only intended as a guide.

COUNCIL OR COMPANY	ADDRESS	SUBURB	POST CODE	PHONE NUMBER	LANDFILL CLASS
Buller Road Refuse Disposal Site	Lot 1701 Buller Rd	Waroona	6215	9733 1277	II
City of Armadale	Hopkinson Rd	Forrestdale	6112	9399 3935	II
City of Canning	Ranford Rd	Canning Vale	6155	9321 0606	II & III
City of Cockburn	Rockingham Rd	Henderson	6166	9411 3444	II
City of Rockingham	Millar Rd	Baldivis	6171	9524 2053	III
City of Stirling	238 Balcatta Rd	Balcatta	6021	9345 8555	Transfer station
Eastern Metro Regional Council	Toodyay Rd (Red Hill)	Gidgegannup	6083	9574 6235	III & IV
Eclipse Resources	Lot 180 Abercrombie Rd	Postans	6167	9381 5600	I
Mindarie Regional Council	1700 Marmion Ave	Mindarie	6030	9306 6300	II
RCG Pty Ltd	Lot 70/717 Hester Ave	Neerabup	6031	9407 5069	I
Shire of Gingin	Lot 10 Cockram Rd	Gingin	6503	9575 2211	II
South Perth Waste Transfer Station	Cnr Hayman Rd Thelma St	Como	6152	9367 2492	Transfer station
Wastestream Management	Ratcliffe Rd	Kwinana	6167	9439 1300	I
West Australian Landfill Services	Lot 200 and Lot 201 Shale Rd	South Cardup	6201	9525 5355	II
Western Metropolitan Regional Council	Cnr Lemnos & Brockway Rd	Shenton	6008	9384 2544	Transfer station

FURTHER INFORMATION AND CONTACTS

Local Government Authority

For information on demolition licence requirements and household queries contact an Environmental Health Officer at your Local Government Authority.

Department of Health

For information on asbestos cement products in your home, asbestos contaminated sites and frequently asked questions on asbestos, visit the Department of Health website at:

www.public.health.wa.gov.au/2/867/2/asbestos.pm or Tel: 9388 4999.

Department of Consumer and Employment Protection – Worksafe

For information about asbestos in the workplace, licensed asbestos removalists and appropriate handling of asbestos including safety wear, visit the Worksafe website at:

www.commerce.wa.gov.au/WorkSafe/Content/Safety_Topics/Asbestos/ or Tel: 1300 307 877.