



# Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - Summary Update (2018)

## Purpose

This document identifies key recommended practices contained in and referenced to the above Guidelines (the Guidelines). Following the advice in the Guidelines is important for regulatory acceptance of consultant and auditor asbestos site reports, although alternate approaches may be acceptable if adequately justified.

## Regulation

- These Guidelines have the same status as the Department of Water and Environmental Regulation (DWER) [Contaminated Sites Guidelines](#) and should be used in conjunction with the *Assessment and Management of Contaminated Sites* (2014) guidelines, in compliance with the *Contaminated Sites Act 2003* (CS Act). (Section 1.1)

## Asbestos as a soil contaminant

- Asbestos cement products are the most common form of asbestos site contamination in Western Australia. The three separate categories of asbestos contaminants are defined in the Guidelines (Section 1.2.2). Asbestos-Containing Material (ACM) is often referred to as bonded or non-friable material. The Guideline definition of Fibrous Asbestos (FA) includes friable material, such as loose insulation or any material that can be crumbled or broken by hand pressure. Friable asbestos may include material that has become degraded into a friable condition. For example, some products such as textile materials, asbestos insulation board, etc. are likely to degrade following use, removal, handling or weathering. Both ACM and FA can often be detected visually. The final category is Asbestos Fines (AF), which includes any material less than 7mm x 7mm, including AF resulting from degraded, broken, damaged or weathered ACM or FA.

## General Principles and Preliminary Site Investigations

- Asbestos contamination needs to be identified early and handled properly so that disturbance and dissemination do not result in costly delays and extra investigative and remediation effort. (Chapter 2 Preamble)
- Minor contamination of the surface, below investigation levels, requires remediation to comply with the requirement for the top soil to be free of visible asbestos.
- The Guidelines only apply to asbestos contaminated sites – they do not apply to the management of asbestos-containing materials present in buildings, structures, infrastructure, pipelines etc., that are regulated by *Occupational Safety and Health (OSH) Regulations 1996* (Section 1.1 and Department of Health (DOH) Advice).

- Where a site is being developed, all removal work associated with any asbestos-containing structures must be completed in accordance with the *Occupational Safety and Health (OSH) Regulations 1996* (Section 1.1 and Section 4.3 of the NEPM<sup>1</sup>).
- The lead consultant should have 3 years minimum ongoing experience with asbestos soil contamination and relevant qualifications (Section 1.4). Asbestos experience should include knowledge of all applicable public health and occupational health and safety regulation as well as asbestos health risk characterisation (DOH advice). Each report should outline relevant training and experience of at least the supervising consultant (Section 6 Preamble).
- A consultant with considerable asbestos experience may decide, based on appropriate evidence, that a material contains asbestos. If there is any doubt, the material should be assumed to contain asbestos unless shown otherwise by laboratory analysis (bulk identification). (Chapter 4 Preamble).
- A Preliminary Site Investigation (PSI) should include a review of records (e.g. asbestos register, aerial photos showing structures), anecdotal information, local government approvals/plans for structures and a site walkover. (Section 2.2)
- Visual inspection reports need to include comments on the presence or absence of any asbestos materials and the inspection methodology. Persons conducting visual inspections and field investigations must be familiar (through appropriate training and experience) with the range of asbestos products used in Western Australia and their properties (for example: asbestos cement materials, insulation boards, insulating coatings, pipe insulation, textiles, industrial seals and packing material, linoleum backing, etc.). (Chapter 6 Preamble and DOH Advice)
- Any dumped material, uncontrolled fill and structure footprints (including fences, soak wells) should be identified and suspected of containing asbestos materials. Also, existing asbestos containing structures should be noted. (Section 2.2.1)
- Although sampling is normally not required in the PSI, limited field sampling may be undertaken for confirmation of assumptions, such as rough impact delineation or bulk identification to confirm for asbestos presence within a suspect material. (Section 2.3)
- Based on the PSI or other available information, a site that is contaminated may need to be reported to DWER as required by the CS Act. (Chapter 2 Preamble)
- Where a consultant is performing functions under both the OSH Regulations (e.g. post removal/demolition clearance inspections, OSH Management Plan) and CS Act, these functions should be dealt with in accordance with the appropriate regulatory requirements and should be reported separately. Reports may reference each other (DOH advice).
- Small-scale, low-risk asbestos soil contamination on single residential lots can be subject to a simplified investigation and remediation process, involving Local Government Environmental Health Officers. Application elsewhere should be discussed first with the Department of Health (DOH). (Section 1.2.4 and Appendix B)
- Naturally occurring asbestos (e.g. in exposed seams in Karinjini National Park) is not subject to the CS Act but still needs to be managed to protect public health. (Section 1.2.2)

## Detailed Site Investigations

- A full Detailed Site Investigation (DSI) and associated follow up work is not necessary if there are only simple surface impacts or an in situ management approach is adopted and sufficient information is available from the PSI to inform the remediation and management plan (Section 3 Preamble).

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<sup>1</sup> National Environmental Protection (Contaminated Sites) Measure

## Sampling and Analysis

- A sampling plan should be focused on specific data objectives and, where feasible, use visible material as a measure of total asbestos contamination. The sampling should be designed to inform health risk assessment and select soil clean-up levels, where necessary. (Section 3.2 and Section 6.1)
- Focused, judgmental sampling guided by the PSI is preferred over widespread grid sampling (Section 3.2.3).
- Additional sampling methods not introduced by the Guidelines may be acceptable but must be demonstrated to be effective. (Chapter 4 Preamble)
- Sampling refers to both onsite sampling and analysis and sample collection for laboratory analysis and can include surface hand-picking/raking, screening and localised test pits and bore holes. Test pits are preferred to bore holes for buried asbestos as they enable visual examination of a larger area of soil (Section 2.3).
- ACM fragments from asbestos cement sheeting are the most common type of asbestos contamination and can usually be readily detected visually and the % w/w in soil calculated (Section 4.1.7). Unless a significant source of FA and AF is suspected, the bonded ACM concentration should be used as the primary measure of contamination. If AF arises from co-located ACM, DOH considers that this will not exceed 10% of the ACM across the investigation area, even if the ACM is primarily very small pieces. An exception would be ACM damage resulting from power operated tools, such as a circular saw or from the use of a high pressure water cleaner on a roof. (Section 3.2.1)
- Appropriate OSH procedures need to be provided and followed for site investigations and sampling. Protective measures will need to be based on the risk and would need to be more stringent where significant FA or AF are suspected to be present. (DOH Advice)
- To evaluate ACM contamination levels, at least 10L of impacted soil should be sampled. ACM within this sample should be collected (either by separating from soil by screening through a 7mm sieve or by spreading material out on a contrasting surface to pick out suspect material) (Table 5). Suspect ACM should be collected and weighed. Asbestos content is then calculated based on the composition of each type of ACM product found. Asbestos content in commonly used asbestos cement products can be assumed to be 15% (Section 4.1.7).
- When significant FA is present and needs to be quantified, a similar visual bulk assessment approach can be used (onsite sampling) and the %w/w in soil calculated from a representative sample of the FA material. The asbestos content allocation in the equation (Section 4.1.7) will need to be either estimated from the asbestos content known to have been used in the original manufactured product or it can be determined analytically.
- Worked calculation examples are expected to be included in reports to ensure the calculation process is transparent and reproducible. (Section 4.1.7, DOH advice)
- Sampling of AF impacted soil requires a separate representative sample to be collected for analysis by a NATA approved laboratory (Section 4.1). Sampling methodology and objectives should be outlined in reports (Section 6.1). Further information on quantification of AF is available in [Recommended Procedures for Laboratory Analysis of Asbestos in Soil](#).
- Samples collected for laboratory analysis of FA and/or AF should be targeted, based on suspected area of contamination, representative, taken separately to other field samples and AF samples should not be screened in the field (Section 4.1).

## Interpretation of Results and Risk Assessment

- Asbestos is a potential health concern when respirable fibres are released into the air and are inhaled (Section 5.1.2).
- It is often difficult to differentiate between impacted and non-impacted soils and to determine the level of contamination. Interpretation of results should be based on a weight of evidence approach and informed by a comprehensive desk top study and site observations (Section 4.4 and DOH advice).
- In the case of fibre, a few minor detects may be regarded as incidental or background especially if contamination is not suggested or supported by site history or site observations. Document all evidence to support your reasoning and conclusions. (Section 4.4).
- Qualitative human health risk assessment is acceptable and should take account of any risks associated with the remediation options as well as proposed future land-uses. (Section 5.1.3). Risk mitigating factors can include asbestos type and condition, impact depth, soil type, vegetative or hard cover and prevailing moisture content. (DOH advice)
- The levels of asbestos (pure equivalent) in soils which should trigger further investigation and/or management are:
  - 0.01% weight for weight (w/w) asbestos for bonded ACM – Residential use, childcare centres, etc.
  - 0.04 % w/w asbestos for bonded ACM – Residential, minimal soil access e.g. residences having fully and permanently paved yard space
  - 0.02% w/w asbestos for bonded ACM – Parks, public open spaces, playing fields etc.
  - 0.05 % w/w asbestos for bonded ACM – Commercial/Industrial
  - 0.001% w/w asbestos for FA – All site uses
  - 0.001% w/w for AF – All site uses<sup>2</sup>(Section 1.2.4)
- Further information is available at [Recommended Procedures for Laboratory Analysis of Asbestos in Soil](#)
- Conclusions regarding human health risks at a site should be based on the potential for exposure to airborne respirable fibres to occur at above background concentrations. (Section 5.1.2)

## Remediation

- Investigation criteria can be used as generic clean-up goals, or alternatively site-specific clean up goals can be developed. (Section 5.1.3) DOH may be consulted at this stage.
- Important considerations in deciding upon remediation methods include minimisation of: public health risk; soil disturbance; and removal of contaminated material to a licensed landfill (Section 5.2).
- Sampling process undertaken during investigation works, such as hand-picking/raking, tilling and screening if properly performed and validated, may serve as remediation/validation measures (Section 5.2). Careful documentation of these activities with final observations may satisfy effective validation of small-scale contamination. (DOH advice)

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<sup>2</sup> Asbestos content may be determined for identifiable material (ie <7mm asbestos cement fragment), otherwise assume 100% asbestos

- Management in situ of large scale contamination is encouraged by DOH. A surface barrier, Memorial on Title, and recommended buyer brochure (Appendix E) are considered standard control measures. Barrier depth and form will depend on site-specific circumstances. (Sections 5.2.1 and 5.2.3)
- For management in situ, the depth of any clean fill barrier (commonly 0.5 m certified clean fill) should be such that any subsequent construction or installation and maintenance of underground services does not disturb underlying contaminated material. (Section 5.2.1)
- The sustainability of any ongoing management arrangements outlined in site management plans should be demonstrated, including written acceptance of those tasks by the responsible parties. (Section 5.3). These plans should be controlled documents, subject to regular review and auditing. (DOH advice)
- The remediation process should be properly documented and closely monitored by the consultant to ensure that it is effective and poses no risks to the public. (Section 5.2)
- The accessible ground surface (nominally 10cm depth) should be free of all visible ACM and FA at the conclusion of site works. (Section 5.2.2, DOH advice).

## Reporting

- Each asbestos-related report should address historic, current and proposed use of the site in a manner that is comprehensive and largely standalone. (Chapter 6 Preamble)
- The Guidelines should be cited as the primary source of asbestos guidance and the report should fully demonstrate compliance and/or justify differences from them. (Sections 1.1, Chapter 6 Preamble)
- The PSI report needs to comment specifically on the presence or absence of asbestos and on the site inspection procedure used. (Chapter 6 Preamble)
- Any Auditor's report should explicitly comment on the degree of adherence to the Guidelines and justification for differences that supports conclusions. (Chapter 6, DOH/DWER advice)

## For Further Information

- Where the contamination or proposed investigation/ management measures are unusual or complicated, contact the Environmental Health Directorate for advice on (08) 9388 4999 or [contaminatedsites@health.wa.gov.au](mailto:contaminatedsites@health.wa.gov.au), (Section 1.4). Further guidance is available from [http://ww2.health.wa.gov.au/Articles/A\\_E/Asbestos-contaminated-sites](http://ww2.health.wa.gov.au/Articles/A_E/Asbestos-contaminated-sites)
- For information on site contamination in general, contact DWER on 1300 762 982 or visit the following website: <http://www.der.wa.gov.au/contaminatedsites>

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