

Site contamination—what is site contamination?

Issued January 2009

EPA 830/09: This guideline has been prepared to provide guidance to site contamination consultants and auditors, and the public regarding the definition of site contamination.

Introduction

The *Environment Protection Act 1993* (EP Act) defines site contamination in section 5B as follows:

- (1) For the purposes of this Act, site contamination exists at a site if—
 - (a) chemical substances are present on or below the surface of the site in concentrations above the background concentrations (if any); and
 - (b) the chemical substances have, at least in part, come to be present there as a result of an activity at the site or elsewhere; and
 - (c) the presence of the chemical substances in those concentrations has resulted in—
 - (i) actual or potential harm to the health or safety of human beings that is not trivial, taking into account current or proposed land uses; or
 - (ii) actual or potential harm to water that is not trivial; or
 - (iii) other actual or potential environmental harm that is not trivial, taking into account current or proposed land uses.
- (2) For the purposes of this Act, environmental harm is caused by the presence of chemical substances—
 - (a) whether the harm is a direct or indirect result of the presence of the chemical substances; and
 - (b) whether the harm results from the presence of the chemical substances alone or the combined effects of the presence of the chemical substances and other factors.

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The following sections discuss the key components of the definition of site contamination.

Assessment of chemical substances and background concentrations

The first stage in determining whether or not site contamination exists is to assess whether chemical substances have been added to a site through an activity and whether these substances are above background concentrations.

The assessment (and remediation) of site contamination is a complex and specialised profession, involving a wide range of skills and knowledge. This work is undertaken by site contamination consultants and auditors. The EP Act defines a site contamination consultant¹ as 'a person other than a site contamination auditor who, for fee or reward, assesses the existence or nature or extent of site contamination'.

The Environment Protection Authority (EPA) recommends that only suitably qualified and experienced professionals be used to undertake the assessment or remediation of site contamination².

Professionals undertaking assessment are guided by the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) which, in South Australia, operates as an environment protection policy under the EP Act. The EPA publishes guidelines in relation to assessment of waters.

Section 3 of the EP Act provides that the determination of background concentrations is to be undertaken in accordance with guidelines prepared by the Authority. The *Site contamination: Determination of background concentration* guideline is available from the EPA or its website <www.epa.sa.gov.au>.

Environmental consultants and auditors rely on information being provided to them. All persons have an obligation under section 103ZB of the EP Act not to make false or misleading statements when providing information to a consultant or auditor who prepares a report in relation to site contamination. **There are substantial penalties for not complying with these provisions.** For further information refer to the *EPA Information Sheet: Site contamination—Honesty in reporting (2008)*.

Assessment of actual or potential harm

Site contamination exists where chemical substances are present on or below the surface of a site and result in actual or potential harm to the health or safety of human beings or the environment that is not trivial, taking into account current or proposed land uses. For waters, actual or potential harm does not take into account land use.

The assessment of risk is a specialist profession and should only be undertaken by suitably qualified and experienced professionals. The EPA is unlikely to accept a risk assessment that has not been completed by such professionals.

The EPA recommends that the procedures described in the NEPM be used initially to assess potential harm to the health or safety of human beings or the environment, taking into

¹ S3 (1)–Interpretation

² Refer to *EPA Guidelines: Site contamination—selecting a site contamination consultant (2007)* and *Site contamination—using an environmental auditor (2007)*.

account the land use. The procedures described in the EnHealth 2002 publication titled *Environmental Health Risk Assessment Guidelines for assessing human health risks from environmental hazards* also provide guidance on undertaking human health risk assessment. The Environment Protection and Heritage Council (EPHC) has published guidance on the assessment of risk for waters. Any assessment of risk presented to the EPA will need to be scientifically robust and meet the criteria recommended in the above documents.

The EPA considers that actual harm to water that is not trivial has occurred if chemical substances are in excess of background concentrations and are:

- above the water quality criteria for the appropriate protected environmental value, or where there is no value; or
- above the laboratory limit of reporting using a laboratory method approved by the Authority. Site contamination exists where the actual or potential harm is not trivial (see below)³.

Determination of trivial

The Macquarie Dictionary defines 'trivial' as of little importance, trifling, or insignificant.

A range of factors will need to be considered in determining whether or not the actual or potential harm, that might result from the presence of a chemical substance, is trivial. The volume or concentration of a chemical substance at a site alone is not sufficient to determine whether the impact is trivial as these measures do not take into account nuances in human health or environmental impact.

For example, five litres of a chemical substance spilt on an industrial site could have a very different impact from five litres of the same substance spilt in a pristine and ecologically sensitive environment. Alternatively, for the same land use and the same volume of chemical substance, whether the impact is trivial will depend upon the nature of the chemicals (eg their respective toxicity, physical properties and chemical properties).

Hence, risk assessment is important to decisions relating to site contamination.

In order to make a determination of what is trivial, the factors the EPA will consider include, but are not limited to, the following:

- the toxicity of the substance
- the persistence of the substance (ie how long it remains in the environment)
- the concentration of the substance (above background concentration)
- the quantity of the substance introduced
- the nature and quality of the receiving environment
- the use(s) of the receiving environment (both current and potential future use)
- whether the substance is on land or in water
- the extent of the impact
- the effort required to remediate the substance

³ A guideline listing the methods approved by the Authority is to be published in future.

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- whether or not the substance presents an actual or potential risk to human health
- exposure pathways to humans and the environment
- concentration comparison against threshold concentrations published from recognised sources
- aesthetic impacts (including odours) resulting from the substance.

For soils the EPA considers that the following circumstances are trivial:

- where a chemical substance is present at a concentration that is less than the appropriate NEPM EIL or HIL value; or
- where a chemical substance, measured as a vapour at the surface of a site, is present at a concentration that is less than the relevant concentration published in the *EPA Guideline: Air quality impact assessment using design ground level pollutant concentrations (DGLCs) [2006]*.

Land use

Site contamination risk assessments take into account the current or proposed land use. For human health and the environment, this concept is incorporated into the definition of site contamination.

Chemical substances can exist on a site, but the presence of these substances may or may not be deemed as site contamination, depending on the land use.

This is an important concept. For example, the presence of a chemical substance in soils on an industrial site may be assessed by the EPA not to be site contamination. However the same quantity and concentration of this substance may be assessed to be site contamination, if the land use was changed to a sensitive⁴ land use (for example residential land use).

Section 103ZA of the EP Act⁵ requires site contamination consultants and site contamination auditors to state the land use that they considered when preparing an opinion in relation to site contamination. Failure to do so is an offence⁶.

An auditor may determine in site contamination audit reports that land is suitable for a specified use subject to certain audit conditions. For example, an auditor may determine that land is suitable for a particular use subject to the sealing of an area of the site. If a person were to not comply⁷ with the conditions (eg removal of the sealed surface and subsequent exposure of the underlying soil) then this may constitute a change in the land use and hence trigger site contamination, for the purpose of the EP Act.

⁴ Defined by section 3 of the EP Act.

⁵ S103ZA—Reports by site contamination auditors and consultants.

⁶ Maximum fine of \$8,000.

⁷ See *EPA Information Sheet: Site contamination—Honesty in reporting (2008)*.

FURTHER INFORMATION

Legislation

Legislation may be viewed on the internet at: <www.legislation.sa.gov.au>

Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet 101 Grenfell Street Adelaide SA 5000	Telephone: Facsimile: Internet:	13 23 24 (08) 8204 1909 < shop.service.sa.gov.au >
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For general information please contact:

Environment Protection Authority GPO Box 2607 Adelaide SA 5001	Telephone: Facsimile: Freecall (country): Internet: Email:	(08) 8204 2004 (08) 8124 4670 1800 623 445 < www.epa.sa.gov.au > < epainfo@epa.sa.gov.au >
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The EPA welcomes written comments on and suggestions for improvements to any of its site contamination publications. These should be addressed to the Manager, Site Contamination at the above address.