

EPA Guidelines

Site contamination

—How to determine actual or potential harm to water that is not trivial resulting from site contamination

Issued December 2008

EPA 839/08: This guideline has been prepared to provide guidance to site contamination auditors, consultants and the public on how to determine if actual or potential harm to water that is not trivial has occurred as a result of site contamination.

Introduction

The *Environment Protection Act 1993* (the EP Act) states that:

site contamination¹ 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 the 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.

This guideline only provides guidance on what the Environment Protection Authority (EPA) considers to be actual or potential harm to water that is not trivial.

¹ Section 5B of the EP Act.

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For more information on the definition of site contamination and trivial refer to *EPA Guideline: Site contamination—What is site contamination*.

Amendments to the EP Act that commenced in December 2007 resulted in a change to the definition of 'water'². The current definition of water is as follows:

- (a) water occurring naturally above or under the ground; or
- (b) water introduced into an aquifer or other area under the ground; or
- (c) an artificially created body of water or stream that is for public use or enjoyment.

This definition of water includes the marine environment, rivers, any water that is disposed of into an aquifer, which includes stormwater disposal via drainage wells, aquifer storage schemes and any wetland areas that are there for public use or enjoyment.

This guideline considers harm to water that is not trivial as a result of site contamination, which includes harm to underground water (groundwater³) that has resulted in site contamination.

What is harm to water that is not trivial?

For site contamination to exist with respect to water, chemical substances must be present on or below the surface of the site above background concentrations (if any), exist as a result of an activity and have resulted in actual or potential harm to water that is not trivial. This activity does not have to have occurred on the site where the actual or potential harm to water has been identified.

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
- above the laboratory limit of reporting using a laboratory method approved by the Authority⁴.

The following provides an overview of typical scenarios for harm to water that is not trivial.

Table 1 Possible scenarios for the determination of harm to water

Scenario for chemical substances in the receiving water (outside of any mixing or attenuation zones)	Site contamination resulting from harm to water that is not trivial exists
Background concentrations of chemical substances greater than the water quality criteria for the appropriate protected environmental value	NO

² Section 3—Interpretation.

³ For the purposes of this guideline underground water will be referred to as groundwater.

⁴ A guideline listing the methods approved by the Authority is to be published in future.

Scenario for chemical substances in the receiving water (outside of any mixing or attenuation zones)	Site contamination resulting from harm to water that is not trivial exists
Background concentrations of chemical substances less than or equal to the water quality criteria for the appropriate protected environmental value	NO
Concentration of chemical substance greater than both the background concentrations and the laboratory limit of reporting and no appropriate water quality criteria exists for that chemical substance	YES
Concentration of chemical substances greater than the background concentration, the laboratory limit of reporting and greater than the water quality criteria for the appropriate protected environmental value	YES
Concentration of chemical substances greater than laboratory limit of reporting and less than the water quality criteria for the appropriate protected environmental value	NO

The EPA considers that harm to water that is not trivial does not exist if concentrations of chemical substances in the receiving waters (outside of any mixing or attenuation zones) are reported below the water quality criteria for the appropriate environmental values.

What is potential harm to water that is not trivial?

Potential harm⁵ is defined in the EP Act and includes risk of harm and future harm. Potential harm to water may occur where an activity is or has been undertaken resulting in unsecured chemical substances remaining in close proximity to water and hence there is a potential for water to be harmed by those chemical substances.

Where there are chemical substances in soils in excess of background concentrations⁶ or where there are chemical substances that are present near water, a qualitative and/or quantitative risk assessment should be undertaken to demonstrate that potential harm to water will not occur. More detail on risk assessment is provided in the EPA guideline: *Site contamination—What is site contamination*.

An example of potential harm to water would be a leaking underground storage tank (UST) containing liquid organic chemical substances (eg petroleum hydrocarbons) located above shallow groundwater. For this example, chemical substances leaking from the UST are only present in the soil and have not yet migrated to groundwater. The risk assessment is likely to conclude that the soils and the UST, if not remediated, represent potential harm to water that is not trivial.

⁵ Section 5(2) of the EP Act.

⁶ Information on background concentrations are explained in the *EPA Guideline: Site contamination—Determination of Background concentrations*.

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Another example of potential harm to water would be where there has been an historic discharge of chemical substances into a surface water environment, and sediments have been impacted by the chemical substances, with some future risk of release of chemical substances from the sediments back into waters.

Difference between responsibilities under the Environment Protection (Water Quality) Policy 2003 and determination of harm under the site contamination provisions of the EP Act

The *Environment Protection (Water Quality) Policy 2003* (Water Quality EPP) outlines obligations with respect to the discharge of certain pollutants into waters and onto land from where they are reasonably likely to enter waters. It does not have retrospective operation and hence the Water Quality EPP cannot be used to deal with historic site contamination that occurred prior to the commencement of the Water Quality EPP in October 2003.

There will be situations whereby the discharge of a pollutant into water may result in harm to water that is not trivial and trigger the definition of site contamination. An example of this would be where a discharge is occurring to a water body that causes concentrations in the receiving waters of a chemical substance above the background concentrations and in excess of the appropriate water quality criteria. However this discharge may also constitute a breach of the Water Quality EPP and may require an exemption from the EPA from the Water Quality EPP and would not be site contamination.

Duty to notify of site contamination of underground water

If there is site contamination that affects or threatens groundwater there is an obligation by the owner, occupier, site contamination auditor or site contamination consultant to notify the EPA⁷ as soon as reasonably practicable after becoming aware of the site contamination unless they have reason to believe that the EPA is already aware of the actual or potential harm to water. This duty to notify only applies to information that first came to the attention of the owner, occupier, site contamination auditor or site contamination consultant after mid-2009⁸, but applies irrespective of when the activity that caused the site contamination occurred. Penalties apply for failing to provide this notification.

For further information on the notification process refer to the *EPA Guideline: Site Contamination—Notification of site contamination that affects or threatens underground water pursuant to section 83A of the Environment Protection Act 1993*.

How will the EPA assess whether remediation is required

If the EPA becomes aware that there is harm to water that is not trivial that is deemed to be site contamination, the EPA may require the appropriate person⁹ to undertake further risk assessment of that water.

⁷ Section 83A of the EP Act.

⁸ This date will be updated to reflect the commencement date of the site contamination provisions.

⁹ Defined in section 3(1) of the EP Act.

Once it has been established that actual or potential harm to water that is not trivial exists, the EPA will review the available information for the site to provide guidance for risk-based remediation.

Refer to the *EPA Guideline: Site contamination—Assessment and remediation of groundwater contamination* for further information.

What happens once harm to water that is not trivial exists?

It is important to note that whilst harm to water may have occurred or be occurring, remediation¹⁰ to address the site contamination may only require ongoing management as per the definition of remediation, and not necessarily clean-up, or restoration to pristine levels, depending on the risk of harm to human health and safety or the environment.

The EPA will make decisions based on the risk to human health and safety and/or the environment from the water, taking into account potential future beneficial uses of the water. For more information on the assessment process and the concept of beneficial use refer to the EPA publication, *Site contamination: Assessment and remediation of groundwater contamination*.

The EP Act¹¹ states that to remediate a site means treat, contain, remove or manage chemical substances on or below the surface of the site so as to—

- (a) eliminate or prevent actual or potential harm to the health or safety of human beings that is not trivial, taking into account current or proposed land uses; and
- (b) eliminate or prevent, as far as reasonably practicable—
 - (i) actual or potential harm to water that is not trivial; and
 - (ii) any other actual or potential environmental harm that is not trivial, taking into account current or proposed land uses.

If there is actual or potential harm to groundwater that is not trivial, the EPA may require the appropriate person undertake further assessment and/or remediation be undertaken in accordance with the EPA publication, *Site contamination: Assessment and remediation of groundwater*. Refer to the guidelines on remediation for more information. The EPA, in considering the type of remediation, will have regard to the Objects of the EP Act¹².

¹⁰ Section 3 of the EP Act.

¹¹ Section 3—Interpretation.

¹² Section 10 of the EP Act.

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:

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The Environment Protection Authority 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.