



## Fact Sheet – National Environment Protection Measures (NEPMs)

### National Environment Protection Measures (NEPMs)

National Environment Protection Measures (NEPMs) are legal instruments that specify national standards for a variety of environmental issues. They are binding on all Governments that are members of the National Environment Protection Council (NEPC).

NEPC is a Council of Environment Ministers from each state, territory and the Australian government established specifically to make NEPMs and assess and report on their effectiveness.

NEPMs are designed to assist in protecting or managing particular aspects of the environment. They are highly technical documents used for managing issues that can impact on the environment, such as land contamination and air quality.

### What is the Assessment of Site Contamination (ASC) NEPM?

The National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) is used by environmental auditors, site assessors, landowners, developers, industry and regulators when assessing land contamination.

The Site Contamination NEPM provides a very detailed and consistent process for investigating contaminated land and sets national health-based standards for determining the risk of contamination to human and environmental health. Assessments compare levels of contaminants at a particular site with the appropriate levels to protect against human and environmental harm (see below).

### How are the standards derived?

The standards are developed based on scientific understanding of the substances and interactions with the environment. Government agencies nationally, along with industry and academic experts, advise on the development of the standards, providing technical advice and achieving consensus on the appropriate levels.

Due to the thorough nature of the process, the resulting standards are generally very conservative.

### How are results measured?

When soil samples are collected, the results are calibrated using the 'arithmetic mean concentration' to provide an average concentration level of the contaminant. This provides a better estimate of true exposure to soil contamination than just looking at the maximum concentration of individual sample results.

This process follows international standard practice. For example, the US Environmental Protection Agency (EPA) states: "EPA recommends using the average concentration to represent a reasonable estimate of the concentration likely to be contacted over time." (*Guidance Note for Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites*, US EPA, 2002).

A standard has evolved in Australian contaminated land assessment whereby a 95 per cent upper confidence limit (UCL) of the average concentration is applied. Confidence limits tell us how accurate our estimate of the mean is likely to be. Therefore a 95 per cent UCL is a number that one can be 95 per cent confident that the true mean (average) concentration is below that value. The results are then compared against the relevant Health Investigation Level (HIL) to determine whether further investigation is needed or management strategies need to be put in place to reduce the risk of human or environmental harm.

### **What are Health Investigation Levels or HILs?**

Short for Health Investigation Level, HILs are the national health-based levels set in the Site Contamination NEPM for a range of contaminants that trigger the need for further investigation.

In the Site Contamination NEPM there are different HILs determined for the many different contaminants listed. These contaminants include inorganics such as lead and mercury, hydrocarbons such as diesel and petrol, pesticides, herbicides and organics such as chlorinated chemicals used in household plastics.

### **What are HIL A, HIL B, HIL C and HIL D?**

The Health Investigation Levels also vary depending on how the land in question will be used. For example, if the land is used for a private house it will have a lower HIL than land that is used as a car park. This is because there are potentially more accessible exposure pathways to contaminated soil in a private yard compared to for example, a fully paved commercial area.

HIL A – residential land with accessible gardens HIL B – residential land with minimal opportunity for soil access HIL C – public open space HIL D – commercial/industrial
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### **Is the community's health at risk if results are higher than the HIL?**

Not necessarily. Many factors are considered when determining what action, if any, is needed, and the HILs take these into account. They include the possible exposure pathways for particular contaminants and their risk to people's health.

An exposure pathway is the means by which a hazardous substance moves through the environment and comes into contact with people.

For example, the HIL C (public open space) assumes a two-year-old child will play in the area two hours per day, 365 days of the year. It assumes that the child eats 50 milligram of this soil every day, and that 44 per cent of the child's total skin is exposed to the soil and that the soil sticks to the skin long enough to provide the dose.

Where there are isolated samples that are above HILs, but the known exposure pathways are not likely, the human risk may be negligible or zero.

### **More information**

For more information about the NPEC and NEPMs, visit the website of the Australian Government Department of the Environment website <http://www.environment.gov.au/protection/nepc>