

**AUSTRALIAN AND NEW ZEALAND GUIDELINES**  
**FOR THE ASSESSMENT AND MANAGEMENT OF**  
**CONTAMINATED SITES**

**Australian and New Zealand Environment and Conservation Council**  
**National Health and Medical Research Council**

**January 1992**



## FOREWORD

Contaminated land has become an increasingly important environmental, health, economic and planning issue in Australia and New Zealand over the past few years.

The environmental implications of chemically contaminated land became an issue in Europe and America some years ago and, in response, these countries have developed a range of approaches to deal with the associated problems.

In the absence of agreed standards or guidelines, an ad hoc approach has been adopted in Australia and New Zealand resulting in variable standards being applied.

To overcome this situation the Australian and New Zealand Environment and Conservation Council (ANZECC) and the National Health and Medical Research Council (NH&MRC) have jointly developed technical guidelines to be used as the basis of a common approach Australia wide.

The guidelines apply to all land regardless of whether it is privately owned or owned by government and draw on current practice and experience in Australia as well as overseas.

The main purpose of the guidelines is to provide a framework for the proper assessment and management of contaminated sites. This should ensure that a consistent standard of site assessment and subsequent management is implemented at all contaminated sites. The adoption of this framework will provide guidance to those responsible for management and assurance to the community that public health and environmental concerns are being addressed.

The guidelines aim to inform and educate government, industry, unions and the general community about the issues and factors to be considered in the assessment and management of contaminated land.

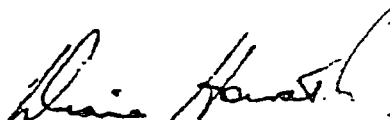
Although the guidelines provide a consistent basis for the development of current and future strategies for managing contaminated sites across Australia and New Zealand, they also provide for site specific approaches.

The guidelines set out the fundamental goals of contaminated site clean-up which in summary, should be to select a socially acceptable and cost effective management strategy which mitigates threats to and provides protection for public health and the environment as well as allowing flexibility in the future use of land.

The guidelines should be viewed as evolving. As more information becomes available, criteria developed and technologies for clean-up improve, the guidelines will be amended and updated accordingly. Continuing consultation with industry, unions, health, community and environmental groups will be undertaken to ensure maintenance of broadly based national support for the protocols and processes set out in the Guidelines.



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## GLOSSARY

<b>Absorptivity</b>	The ability to absorb matter in bulk (for example, water, dissolved chemicals, gases).
<b>ADI</b>	Acceptable daily intake.
<b>Background Levels</b>	Levels of substances or chemicals that are commonly found in the local environment.
<b>Bioaccumulation</b>	The retention and concentration of a substance by an organism.
<b>Biodegradation</b>	Decomposition of substances into more elementary compounds by the action of micro-organisms.
<b>Biomagnification</b>	The serial accumulation of a chemical by organisms in the food chain, with higher concentrations of the substance in each succeeding trophic level.
<b>Biological Monitoring</b>	Measurement of a contaminant or metabolite in body tissue or fluid.
<b>Carcinogen</b>	Cancer causing agent.
<b>Clean-Up</b>	The removal, treatment or containment of soil contaminated with chemicals at unacceptable concentrations.
<b>Contaminated</b>	A condition or state which represents or potentially represents an adverse health or environmental impact because of the presence of potentially hazardous substances.
<b>Demography</b>	The study of the characteristics of human populations such as size, growth rates, density, distribution and vital statistics.
<b>Dermal</b>	Of the skin, through or by the skin.
<b>Environmental Risk Assessment</b>	The process of estimating the potential impact of a chemical or physical agent on a specified ecological system under a specific set of conditions.
<b>Epidemiology</b>	The study of the distribution and determinants of disease frequency in humans.
<b>Exposure</b>	Contact with a chemical, physical or biological agent.
<b>Exposure Assessment</b>	The estimation (qualitative or quantitative) of the magnitude, frequency, duration, route and extent (for example, number of organisms) of exposure to a chemical substance or contaminant.
<b>Hazard</b>	The capacity to produce a particular type of adverse health or environmental effect e.g. one hazard associated with benzene is leukemia.
<b>Health Risk Assessment</b>	The process of estimating the potential impact of a chemical or physical agent on a specified human population system under a specific set of conditions.
<b>Health Risk Management</b>	The process of evaluating alternative actions and selecting options in response to health risk assessments. The decision making will incorporate scientific, social, economic and political information. The process requires value judgements e.g. on the tolerability of risk and reasonableness of costs.

Indicator Chemicals	Readily measured chemicals that can indicate the probable presence of certain classes of chemicals or substances.
Investigation Level	An investigation level is the concentration of a contaminant above which further appropriate investigation and evaluation will be required.
In-situ	The original place or location.
Iwi	Traditional Tribal Units
Metabolite	A substance produced or modified by metabolism in an organism.
Mobility	The ability of particles and substances to move, either by random motion or under the influence of fields or forces.
NOEL	No Observed Effect Level.
Persistence	The ability for a substance to remain unaltered for prolonged periods.
Phytotoxicity	Toxicity of a substance for plants.
Pharmacokinetics	The analysis of the rates of absorption, distribution, metabolism and excretion of chemicals used as drugs. Where the chemicals are toxins, the same process is called toxicokinetics.
Photodegradation	The process in which a substance or chemical is degraded when exposed to light.
Photolabile	A substance or chemical becomes unstable or it readily changes when exposed to light.
Pollution	Degradation or impairment of the purity of the environment by causing a condition which is hazardous to public health, safety, aesthetics or welfare, or to animals, birds, wildlife, fish or aquatic life, or to plants.
Porosity	Property of a solid which contains many small channels or open spaces.
Receptor	An organism, plant or physical structure that receives, may receive or has received environmental exposure to a chemical.
Record Linkage	The process by which data banks may be cross linked to permit further analyses.
Remediation	The clean-up or mitigation of pollution or of contamination of soil by various methods.
Response Level	Response levels apply to a specific site and site assessment and are levels at which some form of response to protect public health and/or the environment with a wide margin of safety is required.
Risk	The probability that an adverse outcome will occur in a person, a group, or an ecological system that is exposed to a particular dose or concentration of a hazardous agent i.e. it depends on both the level of toxicity of hazardous agent and the level of exposure.
Superfund	A system in the United States whereby specific industries contribute to a fund to be used for the clean-up of contaminated land.

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**Teratogenic**

**Producing malformation in embryos.**

**Toxicity**

**The quality or degree of being poisonous or harmful to plant, animal or human life.**

## ABBREVIATIONS

<b>ANZECC</b>	<b>Australian and New Zealand Environment and Conservation Council</b>
<b>AWRC</b>	<b>Australian Water Resources Council</b>
<b>EPAV</b>	<b>Environment Protection Authority, Victoria</b>
<b>NATA</b>	<b>National Association of Testing Authorities, Australia</b>
<b>NHMRC</b>	<b>National Health and Medical Research Council</b>
<b>SEPP</b>	<b>State Environment Protection Policy, Victoria</b>
<b>USEPA</b>	<b>United States Environmental Protection Agency</b>