Summary of major changes

1. Asbestos
2. Health risk assessment and investigation levels
3. Assessing petroleum hydrocarbon contamination
4. Ecological risk assessment and investigation levels

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Summary of major changes

1. Asbestos
2. Health risk assessment and investigation levels
3. **Assessing petroleum hydrocarbon contamination**
4. Ecological risk assessment and investigation levels

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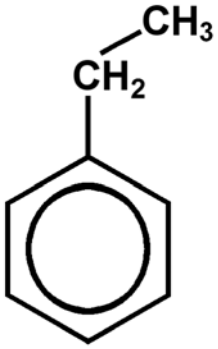
Assessing petroleum hydrocarbons

Site assessment will require consideration of:

1. Health Screening Levels (HSLs)
2. Ecological Screening Levels (ESLs)
3. Management Limits



http://upload.wikimedia.org/wikipedia/commons/0/08/Ethylbenzene.PNG

Schedule B1

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Health Screening Levels

The variation proposes to adopt the HSLs developed by CRC CARE

Four HSL reports -
- Summary
- Technical development
- Application
- Sensitivity Analysis

Toolbox

HSLs apply to exposure via:

- vapour inhalation
- direct soil contact

Soil, groundwater & soil gas:

- limited by maximum solubility in soil porewater or groundwater (petroleum mixtures) or vapour pressure

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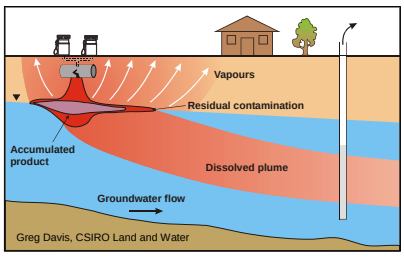
Health Screening Levels

- Johnson and Ettinger vapour intrusion model for vapour transport processes **CSIRO report**
- Australian exposure parameters (reasonable max)
- Site-specific approach if conditions outside range



Checklist - Application report

Schedules B1 and B2 and Toolbox

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Health Screening Levels

- Limitations and uncertainties in approach
- Multiple lines of evidence – indoor air, soil gas, soil & groundwater
- Vapour intrusion assessment framework
  - 30m screen
  - CSM

Schedules B1 & B2 and Toolbox

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Health Screening Levels (HSLs)

- Four land-use settings *note HSL B applies to ground floor residents*
- Representative soil texture: sand/silt/clay
  - Grain size and saturation porosity
- Contamination source depth: soil and groundwater
- Biodegradation factors x10, x100 if certain criteria are met: maximum slab size and O_2 availability (>5%) **CSIRO and Application reports**

Schedule B1 and Toolbox

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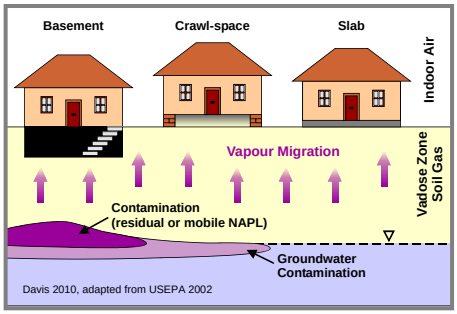
Health Screening Levels (HSLs)

- **Application report**
  - check list
  - basement
- **Sensitivity Analysis report**
  - soil moisture conditions
  - scale factors



Schedule B1 and Toolbox

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Ecological Screening Levels (ESLs)

- Canada-Wide Standard for Petroleum Hydrocarbons in Soil, CCME (2008)
- Three land-use settings
- Soil type – fine and coarse
- Top 3m of soil
- Australian EIL methodology applied where possible

Schedule B1 and Toolbox

NEPC
National Environment Protection Council

Management Limits for petroleum hydrocarbons

- Canada-Wide Standard for Petroleum Hydrocarbons in Soil, CCME (2008)
- Phase separated hydrocarbons, fire and explosion risks, damage to infrastructure and aesthetics
- Residential, POS, commercial and industrial
- Soil type – fine and coarse
- Site-specific depth application

Schedule B1 and Toolbox

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National Environment Protection Council

Hydrocarbon fractions – new ranges

TPH compounds – total recoverable hydrocarbons method without silica gel cleanup step

F1 $C_6 – C_{10}$

F2 $>C_{10} – C_{16}$

F3 $>C_{16} – C_{34}$

F4 $>C_{34}$

Schedule B3 - Analytical methods

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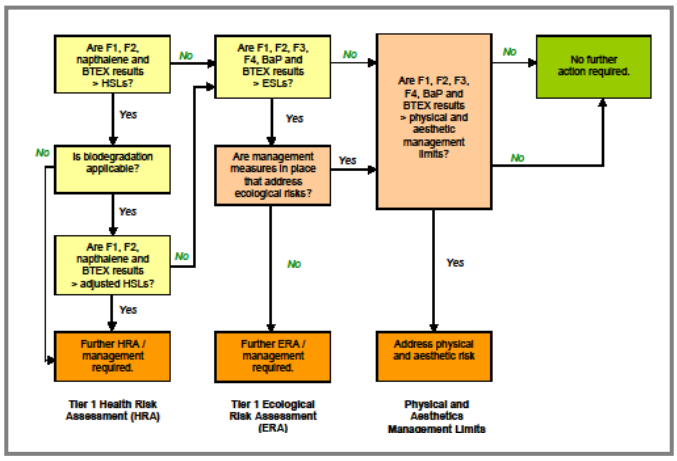
Assessing petroleum hydrocarbons



Worked examples in Schedule B1

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Summary of major changes

1. Asbestos
2. Health risk assessment and investigation levels
3. Assessing petroleum hydrocarbon contamination
4. **Ecological risk assessment and investigation levels**

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Ecological risk assessment and ecological investigation levels

a) Ecological risk assessment framework

b) Ecological investigation levels (EILs) methodology

c) Derivation of EILs for As^{5+}, Cr^{3+}, Cu, DDT, Pb, Naphthalene, Ni and Zn

Schedules B5a, b and c

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EILs methodology developed by CSIRO

Land-use
National parks and areas with high ecological value
Urban residential and public open space
Commercial and industrial

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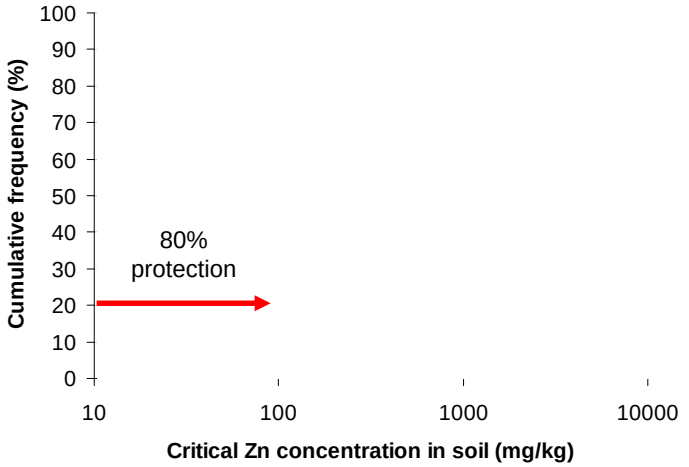
Species sensitivity distribution (SSD)



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EILs methodology

Land-use	Standard protection level	Biomagnification protection level
National parks and areas with high ecological value	99%	99%
Urban residential and public open space	80%	85%
Commercial and industrial	60%	65%

Different levels of protection apply to the various land-uses

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Added risk approach

EIL = Added contaminant limit + ambient background concentration

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Soil parameters can modify contaminant availability and toxic effects

Soil physico-chemical property	Added Contaminant Limits (ACL)				
	Cu	Cr III	Ni	Zn	Pb
pH	✓	-	-	✓	-
CEC	✓	-	✓	✓	-
% Clay	-	✓	-	-	-
Organic Carbon	✓	-	-	-	-
Background concentration	✓	✓	✓	✓	✓

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Calculation of EILs

EIL = soil-specific ACL + ambient background concentration

'Aged' contamination

(leaching & binding to soil)

over 2 years

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	'Aged'
National parks and areas of high conservation value	70	90
Urban residential and public open spaces	130	240
Commercial and industrial	190	350

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Summary EIL availability

Soil physico-chemical property	Added Contaminant Limits				Generic EILs			
	Cu	Cr III	Ni	Zn	Pb	As	DDT	naphthalene
Soil-specific	✓	✓	✓	✓				
Generic soil					✓	✓	✓	✓
fresh	✓	✓	✓	✓	✓	✓	✓	✓
aged	✓	✓	✓	✓	✓	✓		

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Outline

1. Introduction and structure of the NEPM
2. Outline of major changes
3. **Other changes**
4. Making a submission
5. What happens next

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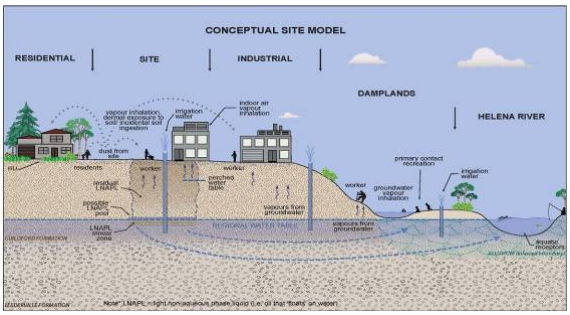
Schedule B2 Site characterisation

- Representative site data
- Conceptual site model and data quality objectives
- Delineation of contamination
- CFT models
- Volatiles
- Asbestos
- Dioxins



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Schedule B3

Laboratory analysis of potentially contaminated soils

- Referenced methods replace 'NEPM' methods
- Equivalent methods (outcome validated)
- New soil contaminants
- TPH revised fractions

http://www.acsenvironmentaltestingltd.co.uk/soil_contamination_analysis.php

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Schedule B6

Risk-based assessment of ground water contamination

NWQMS updates

- ADWG (2004)
- GFMWQ (2000)
- GMRRW (2008)

- Groundwater dependent ecosystems

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Schedule B8

Community engagement and risk communication

- Updated principles and practices
- Emphasises engagement

Invitation to Public Meeting

Assessment of the distribution of tailings in the Northampton and Surrounds areas

RSL Hall, cnr Hampton and Essex Streets, Northampton

7.00 pm, Tuesday 21 September2010

URS Australia Pty Ltd has been commissioned by the Western Australian Government to investigate the distribution of tailings in Northampton, Horrocks, Port Gregory and other locations.

In the past, these tailings – waste material from the Northampton State Battery – have been used as a building material on a few sites in the Shire. The investigation will confirm the location of all sites, and test these sites for any potential impacts to public health or the environment.

The Public Meeting is being held to:

- Inform interested people about the work,
- Obtain information from people who may know of sites where tailings material has been used,
- To address questions about the health and environmental impacts of the tailings.

Representatives from URS Australia, the Shire of Northampton, the Department of Health and Gold Corporation will be present at the Meeting to describe the works being undertaken and to answer any questions.

All residents and interested people are welcome to attend

Further information can be obtained from Don Burnside or Vicki Williams, URS Australia Pty

URS

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Schedule B9

Competencies and acceptance of environmental auditors and related professionals

- Updated and expanded technical competencies

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Outline

1. Introduction and structure of the NEPM
2. Outline of major changes
3. Applying investigation and screening levels
4. Other changes
5. **Making a submission**
6. What happens next

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Making a submission

1. Template on EPHC website

2. Hard copy to NEPC Service Corporation
   a) Post
   b) Fax

3. E-version (preferred) swhitehead@ephc.gov.au

4. Deadline Friday 26 November 2010

Overview of Variation handout and website

NEPC National Environment Protection Council

Outline

1. Introduction and structure of the NEPM

2. Outline of major changes

3. Applying investigation and screening levels

4. Other changes

5. Making a submission

6. What happens next

NEPC National Environment Protection Council

What happens next?

- Summary and Response document on public submissions
- Final draft Variation and Impact Statement
- Submitted to NEPC for consideration

✓ **NEPM as varied, April 2011**

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Acknowledgements

- *Current team members*
  Janet Macmillan, Jack Dempsey, *Greg O'Brien, Elvin Wong, Wendy Boyce, Laura-lee Innes, Anja Freise-Preston (NZ MfE, observer)*
- *Former team members*
  Sharon Clark, Mike Fanning, Chris McAuley
- *NEPC Service Corporation*
  Kerry Scott, Susan Whitehead, Monina Gilbey
- *And many more*
  CRC CARE, CSIRO Land and Water, NSW Environmental Trust, NHMRC, ERM, ERS, enHealth, WA Department of Health, VIC EPA, ELIG, ACLCA, NSW DECCW, WA DEC, SA Department of Health, Department of Health and Ageing , Golder, Coffey, ACHHRA

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Assessment of Site Contamination
NEPM Variation

DISCUSSION SESSION

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