

NATIONAL STANDARDS

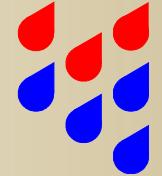
WHY DO THEY DIFFER SO MUCH BETWEEN COUNTRIES?

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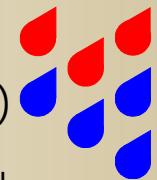




Why my interest ?

- Napier seminar Feb 2008
- RC's
- Incorporate EPA
- Make comparisons easy
- Requires research in SQS
- Why the differences?





Risk level

Very High Risk – urgent action required 'now'

High Risk – action required

Medium Risk - action to protect human health

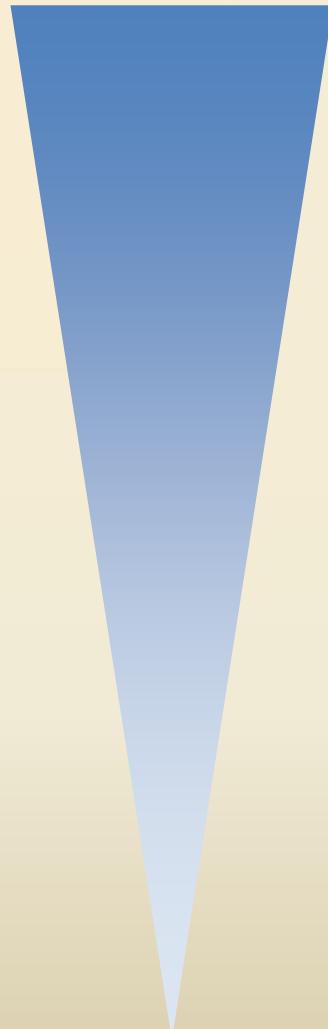
Medium Risk - action to protect eco-systems

Low Risk- possible long term effect on human health

Low Risk – possible long term effect of eco-systems

Negligible risk
Long term objective

concentration



Various nomenclature (illustration only)

Seriously contaminated

Urgency level

Unacceptable risk level – Ceiling value

I-level
Intervention level

Potentially unacceptable risk

Investigation level

preliminary remediation goals

Warning risk level

T-level
(50% of I-level)

Further investigation level

Trigger level

Risk-based remediation level

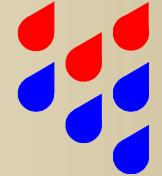
Eco-trigger levels

Precaution level

Background A-level

Target values

S-level,

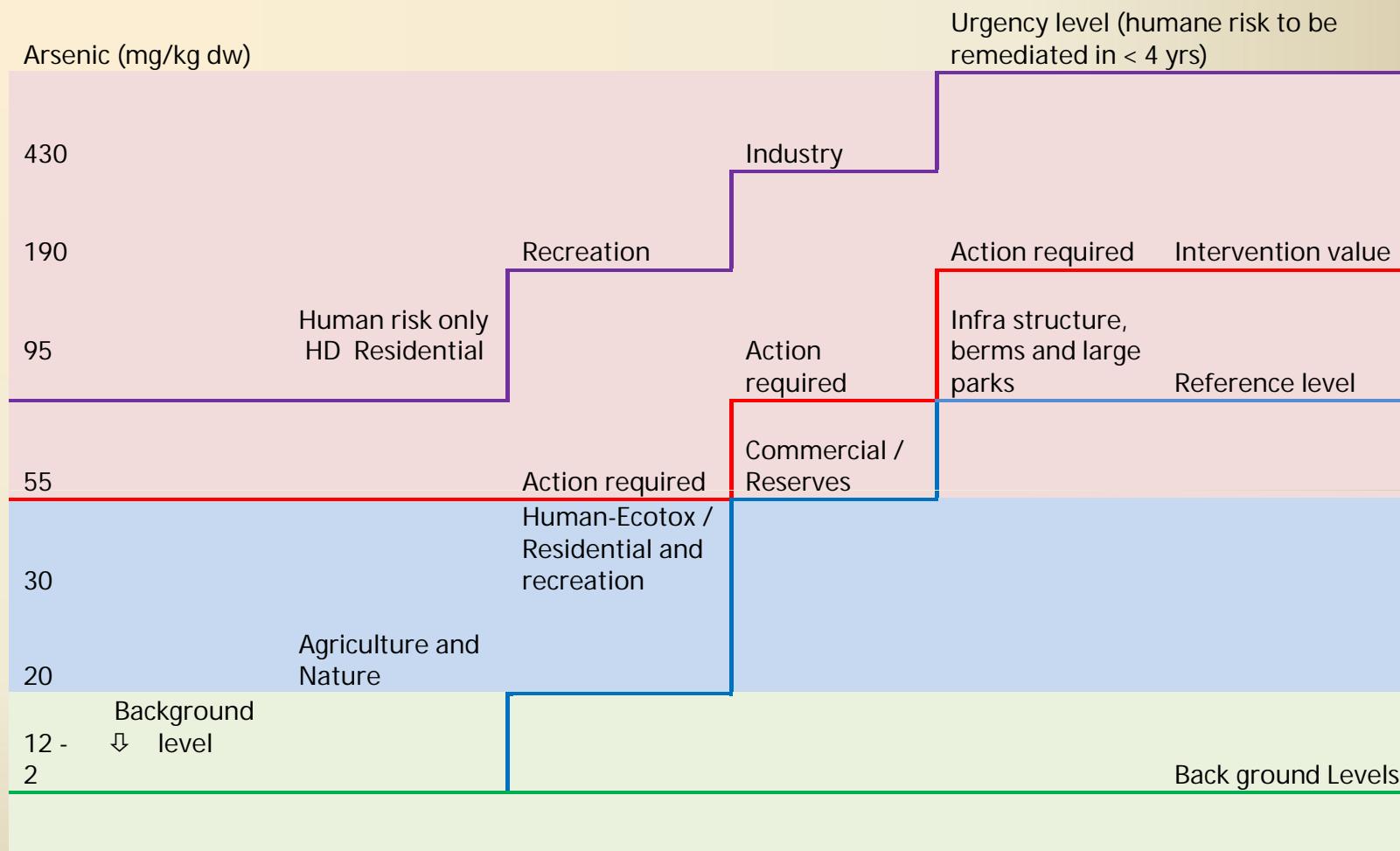
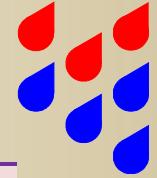


Land Use Related

- Denser population: more strict
- Eco-toxicity more important if less nature left
- Often more legal levels than guideline levels (e.g. $\frac{1}{2}$ Intervention level = further inv. level)
- Soil classes determines re-use
- Urgency levels
- Final decision: POLITICAL



hybrid classification system



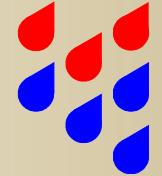
Legend shading

When moving soil:

Consent required, special conditions apply

Consent required, common Rule 48 (c) conditions apply

No Consent required, notification compulsory



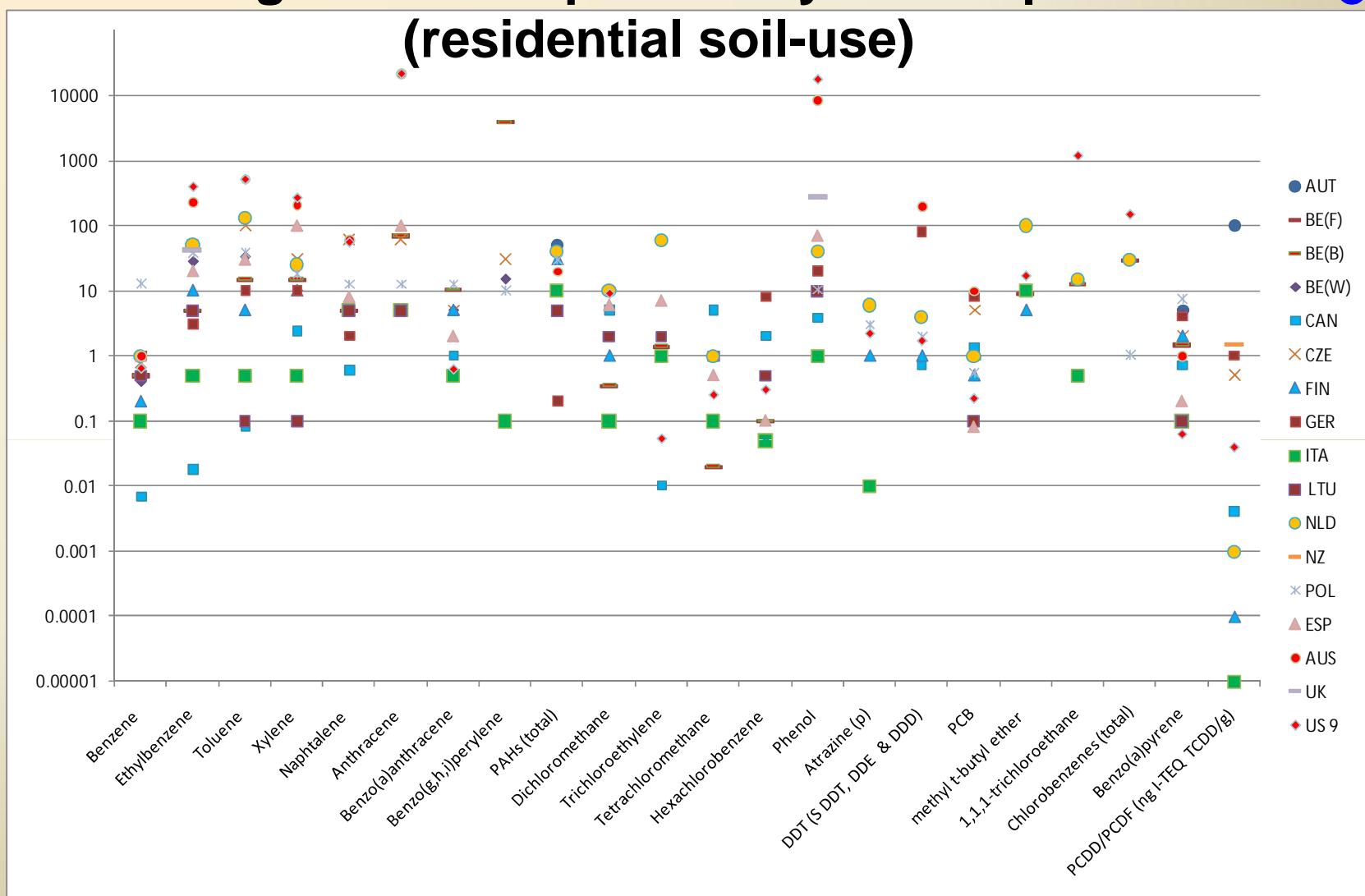
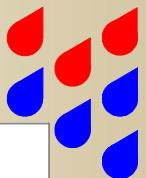
Further differences

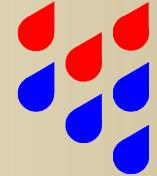
- Legal framework
- Methodology
- Environment
 - compartmentisation
- Methods of analysis
- Soil corrections
- Variations up to 7 orders of magnitude

Makes you wonder if a value of 40 is 'significant' in relation to a guideline value of 30



Screening values for potentially unacceptable risk (residential soil-use)





Main country differences

- US (reg 9) and Australia very high
 - medium group variation about 2 o.o.m.
 - Italy, Germany, Canada low
-
-
- Different system:
 - Japan 'demi water TCLP'
 - Denmark 'eco-tox testing' (by authorities)



MfE CLM g/l no. 2

Env. guideline data base

results for DDT

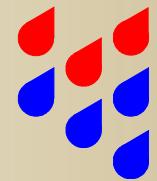
[Quit](#)[Instructions](#)[G O !](#)

Compounds

- Polycyclic aromatic hydrocarbons - halogenated compounds
- Pesticides - pesticides other than c

Results (click to display more details)

Document	Rank Name	Contaminant	Data	Landuse/Purpo:
Contaminated sites NEPM	International risk-based	DDT	200 mg/kg	Residential
Contaminated sites NEPM	International risk-based	DDT	800 mg/kg	Residential
Dutch 2000	International risk-based	DDT	0.01 mg/kg	Residential
Dutch 2000	International risk-based	DDT	4 mg/kg	Residential
US EPA Federal	International risk-based	DDT	2 mg/kg	Residential
US EPA Federal	International risk-based	DDT	32 mg/kg	Groundwater pu
US EPA Federal	International risk-based	DDT	2 mg/kg	Groundwater pu
US EPA Federal	International risk-based	DDT	8 mg/kg	Commercial/In
US EPA Federal	International risk-based	DDT	17 mg/kg	Commercial/In
US EPA Region 6	International risk-based	DDT	16.8 mg/kg	Industrial
US EPA Region 6	International risk-based	DDT	7.8 mg/kg	Industrial
US EPA Region 6	International risk-based	DDT	4.72 mg/kg	Industrial

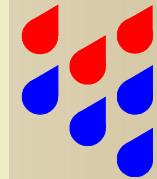


Contaminant	Data	Landuse/Purpose
DDT	200 mg/kg	Residential
DDT	800 mg/kg	Residential
DDT	0.01 mg/kg	Residential
DDT	4 mg/kg	Residential
DDT	2 mg/kg	Residential
	...	



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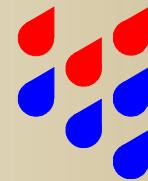
Arsenic - Soil

EPA recommended reference values compared to other guideline values and standards (all in mg/kg dw):

NZ guideline ME240, (1997) ⁱⁱ derived / adopted	Canada	Netherlands: reference values ^{iii iv} / Intervention value	US EPA Region 9 ^v / Hawaii ^{vi}	Japan Environmental Quality Standards for Soil Pollution ^{vii}	Australia NEPM
Residential 50% produce	12	20 / 55	0.062 / 20		20 (E)
Residential 10% produce	12	27 / 55	0.062 / 20		100 (H)
Residential 0% produce - high density residential	12	- / 55	0.062 / 20		400 (H)
Children's play areas playgrounds / kindergartens	12	27 / 55			
Vegetable gardens	12	27 / 55			



Arsenic ⁱ	EPA recommended reference values	NZ guideline ME240, (1997) ⁱⁱ derived / adopted	Canada	Netherlands: reference values ^{iii iv} / Intervention value	US EPA Region 9 ^v / Hawaii ^{vi}	Japan Environmental Quality Standards for Soil Pollution ^{vii}	Australia NEPM	Korea ^{viii} precaution level / regulatory level	Austria ^{ix} trigger level / Intervention level	Belgium ^x	Czech republic ^x 2M HNO ₃ / aqua regia extr.	Denmark ecotox	Germany ^{xii xiii}	UK ^{xiv}	France ^{xv} SSDV ^{xvi} /FIV	Spain
Residential 50% produce	20	8.1 / 30 (H)	12	20 / 55	0.062 / 20		20 (E)	4 / 10	20 / 50	27 / 45		10	50	20 / 7	19 / 37	
Residential 10% produce	20	30 / 30 (H)	12	27 / 55	0.062 / 20		100 (H)	4 / 10	20 / 50	27 / 45		10	50	20 / 7	19 / 37	
Residential 0% produce - high density residential	20	100 (H)	12	- / 55	0.062 / 20		400 (H)		20 / 50	27 / 110		10	50	100	19 / 37	
Children's play areas playgrounds / kindergartens	20		12	27 / 55					20 / 50	27 / 45		10	25		19 / 37	
Vegetable gardens	20		12	27 / 55					20	27 / 45		10	200 / 50	20	19 / 37	
Agriculture (no residence)	20	4.2 / 30 (H)	12	20 / 55		15			20	27 / 45	4.5 / 30	10	200 / 50	20	19 / 37	
Nature	20			20 / 55					20	19 / 45		10	50		19 / 37	
Parks with nature values, sport, recreation	20		12	27 / 55			200 (H)	16/40	20 / 50	27 / 200			125		19 / 37	
Other green, berms, industry, infrastructure	95	500 (H)		76 / 55	0.25		500 (H)	16/40		27 / 300			140	500 / 100 ^{xvii}	19 / 120	
To protect																

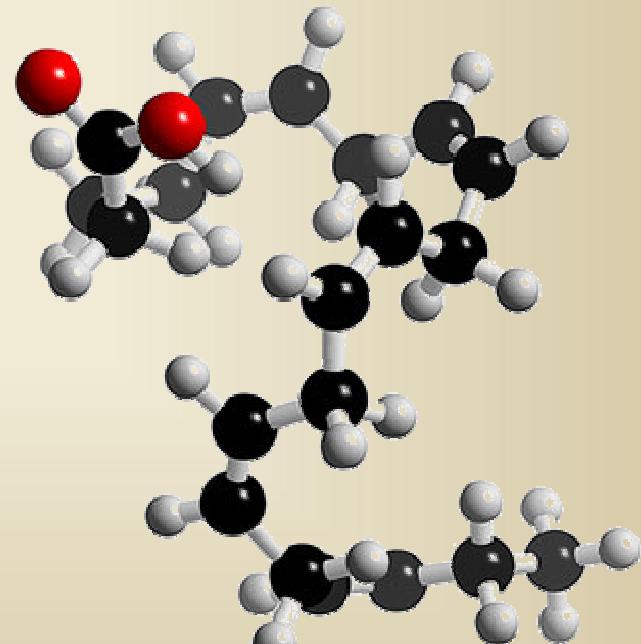


Guideline values - too simplistic

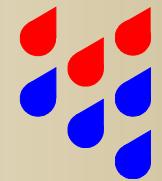
- How to deal with complex molecules ?
 - Semi harmful ?
 - Mixtures ?
 - Breakdown products ?

Solution :

→ ‘back to’ toxicity tests



EPA omega-3 f/a



Questions - Discussion



www.EPA.org.nz