

MCP Standards: Spring 2000 Revisions

Goals:

- Updating Science
- Simplifying Regs/Process
- Increasing Consistency
- Correcting Past Work

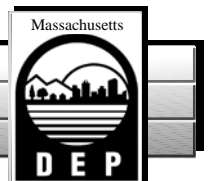


Major Revision Areas

- Updating Toxicity Values
- Adding New Chemicals
- Revisions to Groundwater Standards
- Revisions to Soil Standards
- Updating Reportable Concentrations and Upper Concentration Limits
- Minor text changes

Updating Toxicity Values

- Spreadsheet handout lists toxicity values and physical constants used in standard development process
- ORS staff will review EPA's databases (IRIS, HEAST, etc...) to insure current values are incorporated.



Adding New Chemicals

	MCP	ShortForm
Currently	112	49
Proposed	120	120

New: Asbestos, carbon disulfide, copper,
1,4-dioxane, manganese, HMX,
RDX, 1,3-butadiene



GW-1 Groundwater

Method 1

Method 3 (ShortForm)

Currently

1. Adopt MMCLs & ORS Guidelines, where they exist, otherwise...
2. Calculate GW-1 standards using standard EPA/MCL approach

1. Compare EPC's to MMCLs (standards), AND (must do both)
2. Calculate Receptor risks, considering
 - Ingestion
 - Inhalation
 - Dermal

Proposed

1. Adopt MMCLs & ORS Guidelines, where they exist, otherwise...
2. Calculate GW-1 Standards considering
 - Ingestion
 - Inhalation
 - Dermal

1. Compare EPC's to MMCLs (standards), AND (must do both)
2. Calculate Receptor risks, considering
 - Ingestion
 - Inhalation
 - Dermal



GW-2 Groundwater

Method 1

Method 3 (ShortForm)

Currently

1. Target indoor air levels: ELCR = $1E-06$, HI=0.2, “background” or Practical Quantitation Limit
2. Back-calculate using generic model to groundwater standard, using $\alpha = 0.0005$, $d = 0.1$

1. Calculate Receptor risk from either measured or modeled indoor air concentration

Proposed

1. Target indoor air levels: ELCR = $1E-06$, HI=0.2, “background” or Practical Quantitation Limit
2. **Back-calculate using chemical-specific modeling.**
 $0.0000078 < \alpha < 0.009$,
 $d = 1$

1. Calculate Receptor risk from either measured or modeled indoor air concentration



GW-3 Groundwater

Method 1

Method 3 (ShortForm)

Currently

1. Identify target surface water standard: AWQC, LOEL
2. Apply 10x dilution factor to go from surface water to groundwater

- Not Considered. Method 3 requires site-specific ecological risk characterization, including Stage I Screening and Stage II Comprehensive Eco Risk Characterization

Proposed

1. Identify target surface water standard: AWQC (**hardness adjusted, fish consumption values**), AQUIRE, Tier II data (Great Lakes)
2. Apply 10x dilution factor to go from surface water to groundwater

- Not Considered. Method 3 requires site-specific ecological risk characterization, including Stage I Screening (**list of possible values broader than Method 1/GW3 target levels**) and Stage II Comprehensive Eco Risk Characterization



Simplifying Soil Calculations

Method 1

Method 3 (ShortForm)

Currently

1. Standards calculated using year-by-year exposure estimates, normalized to body weight
2. Ingestion & dermal exposures are combined to calculate standards

1. Residential exposure calculated using year-by-year estimates, normalized to body weight
2. Ingestion & dermal exposures are combined to calculate Receptor risk

Proposed

1. Standards calculated using average exposure estimates for specified age groups (e.g., 1-8, 9-18, 19-30)
2. Ingestion, dermal & **inhalation** exposures are combined to calculate standards

1. Exposure calculated using average exposure for specified age groups (e.g., 1-8, 9-18, 19-30)
2. Ingestion, dermal & **inhalation** exposures are combined to calculate Receptor risk



Dermal Adherence

Method 1

Method 3 (ShortForm)

Currently

1. Standards calculated using default skin-soil adherence of 0.51 mg/cm^2

1. Residential exposure calculated using default dermal adherence of 0.51 mg/cm^2

Proposed

1. Standards calculated using receptor-specific skin-soil adherence factors
 $0.03 < AF < 1.0$

1. Exposure calculated using receptor-specific skin-soil adherence factors
 $0.03 < AF < 1.0$

2. Factors are weighted by (and specific to) body parts exposed to soil

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S-1: Homegrown Vegetables

Method 1

Method 3 (ShortForm)

Currently

1. Not Considered

1. Chemical-specific, produce-specific Uptake Factors, combined with
2. Produce-specific Intakes, to calculate
3. A “Market Basket” – a weighted average to give a total exposure

Proposed

1. Chemical-specific Uptake Factors (median across produce types), combined with
2. Total homegrown produce intake (not veggie-specific)
 - 25% of total vegetable intake
 - same percentage for adult & child

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2. Total homegrown produce intake (not veggie-specific)
 - 25% of total vegetable intake
 - same percentage for adult & child



Soil: Leaching to Groundwater

Method 1

Method 3 (ShortForm)

Currently

1. Model “borrowed” from Oregon, modified for Mass. climate
2. Eight chemicals modeled for “typical” site. Results extrapolated to other chemicals
3. Regression equation used to calculate Dilution Attenuation Factors (DAFs)
4. DAFs used to calculate standards

1. Calculate Receptor risk from either measured or modeled groundwater concentration

Proposed

1. All but least mobile chemicals modeled individually
2. “Typical” site described as a distribution of parameters (Monte Carlo approach)
3. Chemical-specific DAFs calculated
4. DAFs used to calculate standards

1. Calculate Receptor risk from either measured or modeled groundwater concentration

