Development of Health Canada Guidance on Assessing Human Health Risks Associated with Contaminated Sediments
Presentation Outline

• Health Canada (HC) Contaminated Sites Division (CSD) mandate
• Rationale for developing guidance on human exposure to sediments
• General information on the guidance documents (referred to as Technical Advisory Bulletins or TABs)
• Direct Contact TAB: Summary of key content
• Seafood Consumption TAB: Summary of key content
• Status & Path Forward
• Questions
HC CONTAMINATED SITES DIVISION (CSD) MANDATE

- Guidance, training and advice on human health risk assessment to federal departments that manage or own federal contaminated sites.
- Review of NCSCS spreadsheets to confirm site eligibility for FCSAP funding
- CSD provides expert support functions to fulfill Health Canada’s obligations under the Canadian Environmental Assessment Act.
Published Health Canada Guidance Documents

- Part I: PQRA (V2.0)
- Part II: Toxicity Reference Values (V2.0)
- Part III: Guidance on Peer Review of HHRA
- Part VI: Spreadsheet Tool for PQRA
- Part V: DQRA<sub>CHEM</sub> (chemical)
- Part VI: DQRA<sub>RAD</sub> (radiation)
- Part VII: Soil Vapour Intrusion
- Country Foods Supplemental Guidance
- DQRA Peer Review Checklist
- Developing an SOW for PQRA & DQRA


PQRA – preliminary quantitative risk assessment
HHRA – human health risk assessment
DQRA – detailed quantitative risk assessment
SOW – statement of work
Sediment Guidance Under Development

• In response to demand for guidance related to HHRA for contaminated sediments, HC is developing two Technical Advisory Bulletins (TABs) on:
  • Direct contact with contaminants in sediments
  • Seafood consumption (bioaccumulation from sediments)
• TABs intended to be brief, addressing only key issues, referring to other existing guidance where available
Why the need for Human Health Sediment Guidance?

- CCME sediment guidelines are based on risks to ecological receptors only
- No consistent approach for HHRA of contaminated sediments
Why not use soil-based parameters?

- Sediment physico-chemical characteristics can differ from soil (key is moisture content; influences adherence)
- Human exposure duration, exposure pathways and exposure assumptions are different for sediments
Direct Contact TAB

- Guidance on evaluating exposure to sediments via direct contact (i.e., dermal contact, incidental ingestion, inhalation of particulates/volatiles).

- Focus on unique considerations not addressed in other guidance.
Direct Contact TAB – COPC screening

- Currently no Canadian sediment screening guidelines relevant for human health
- COPCs in sediment identified based on comparison with HH-based SQGs & data from reference sites.
- Brief guidance provided on identifying reference sites.
- COPCs regionally elevated and not site-related may be excluded from the HHRA at the discretion of the site owner & risk assessor.
Direct Contact TAB – Conceptual Exposure Model

- The TAB presents generic CEM examples for 3 scenarios:
  - High contact
  - Low contact
  - Worker
Direct Contact TAB – Dermal Adherence

• The TAB presents dermal adherence factors for sediments from the literature for adults and children with guidance on how to apply them.
Direct Contact TAB – Sediment Ingestion

- The TAB presents sediment ingestion rates developed by Wilson and Meridian under contract to Health Canada (a draft manuscript is being prepared for publication).
- Rates are presented for hand-to-mouth contact with exposed sediments (e.g., playing, picnicking at a beach).
- Ingestion rates are presented for various age groups.
- Ingestion rates for suspended sediments are also presented.
Direct Contact TAB: Exposure Duration/Time

• No defaults provided for exposure duration/time.
• These are expected to vary substantially from site to site.
• Site-specific values must be defined by the risk assessor.
Seafood Consumption TAB

- Guidance on evaluating exposure to bioaccumulative & biomagnifying substances in sediments via consumption of seafood
- Seafood includes but is not limited to fish, shellfish, fish or shellfish roe, macroalgae, marine mammals, seabirds and seabird eggs
Seafood Consumption TAB: Bioaccumulative & Biomagnifying Substances

• Pathway relevant for bioaccumulative & biomagnifying substances

• Guidance provided on determining which substances should be considered biomagnifying or bioaccumulative.
Seafood Consumption TAB: COPC screening

• Currently no relevant Canadian sediment screening values exist
• Pathway may be relevant at relatively low sediment COPC concentrations
• Sediment screening based on comparison to reference sites
• Option for screening based on measured tissue concentrations
Seafood Consumption TAB: Exposure Point Concentrations

• Advantages/limitations of measured vs. modelled tissue concentrations
• Key considerations related to tissue sampling for HHRA
• Brief overview related to modelling tissue concentrations
• General guidance related to statistics for defining exposure point concentrations consistent with other HC guidance
Seafood Consumption TAB: Receptor Characteristics

Default receptor characteristics:

• Finfish consumption rates for different age groups and for both the general population and heavy consumers (from HC, 2007)
• Finfish portion sizes for various age groups (from HC, 2007)
• Shellfish portion sizes for various age groups (from HC, 2007)
• Body weights consistent with HC PQRA
Summary of Draft Guidance

Direct Contact TAB:
• Brief guidance on key aspects related to evaluating exposure to sediments via direct contact.
• Includes guidance on COPC screening & CEM development.
• Presents dermal adherence factors and sediment ingestion rates.

Seafood Consumption TAB:
• Brief guidance on key aspects related to evaluating exposure to bioaccumulative/biomagnifying COPCs in sediments via consumption of seafood.
• Includes guidance on COPC screening & identifying EPCs.
• Presents default seafood consumption rates/portion sizes.
Status & Path Forward

• TABs have undergone internal and external peer review
• Peer review comments currently being addressed
• Review by Senior Management required prior to translation and publication
Questions?