# Why Standardize Risk Assessments for Federal Contaminated Sites in Canada?

by

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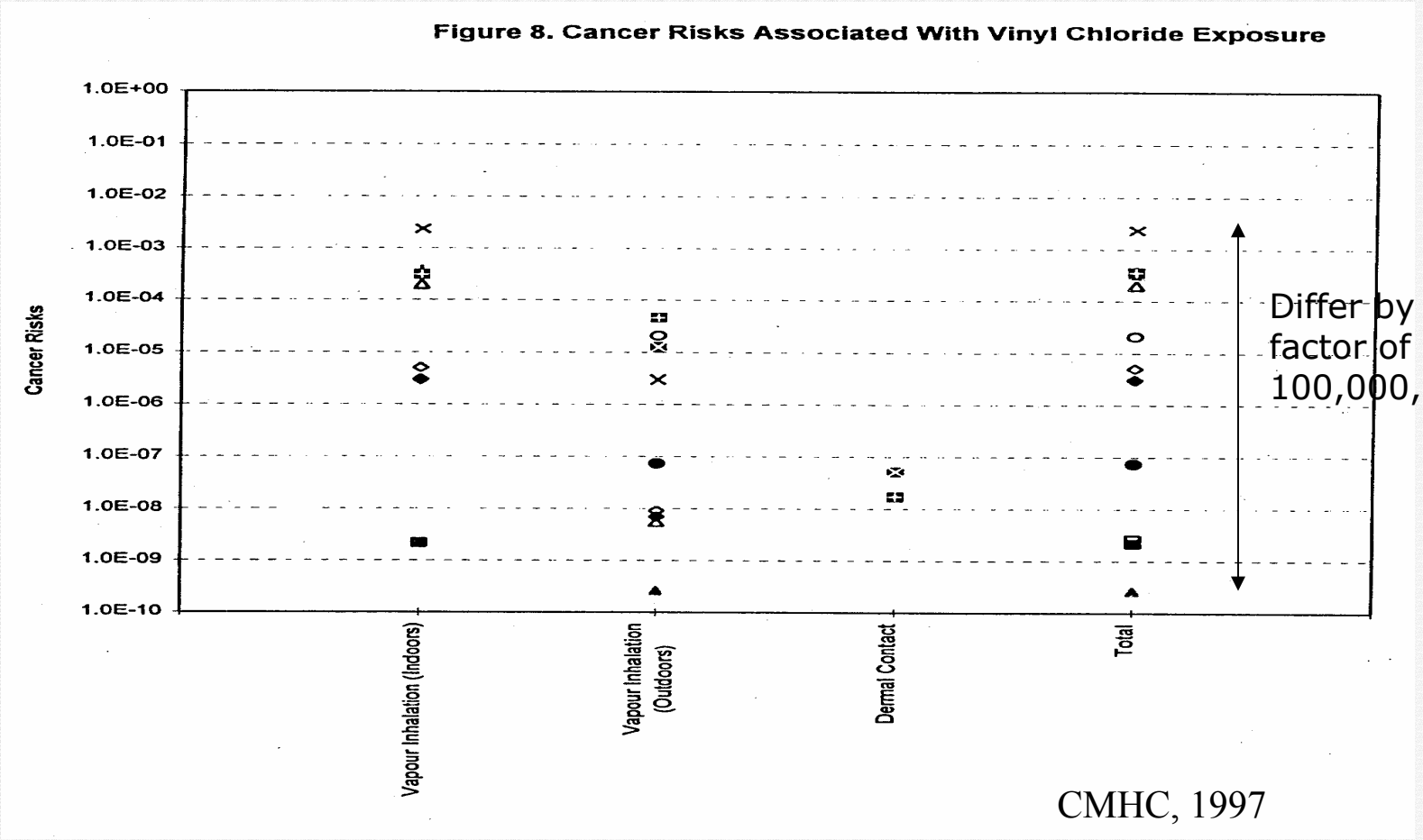
# WHY STANDARDIZE?

- Federal government is assessing and remediating contaminated sites across Canada.
- Standardization will produce clear, consistent and comparable determinations of risk across all sites:
  - Federal government requires that high risk sites be remediated first.
  - Only a consistent approach across all sites will ensure that sites of greatest risk will be consistently identified.

# INTER-CONTRACTOR VARIABILITY IN RISK ESTIMATES



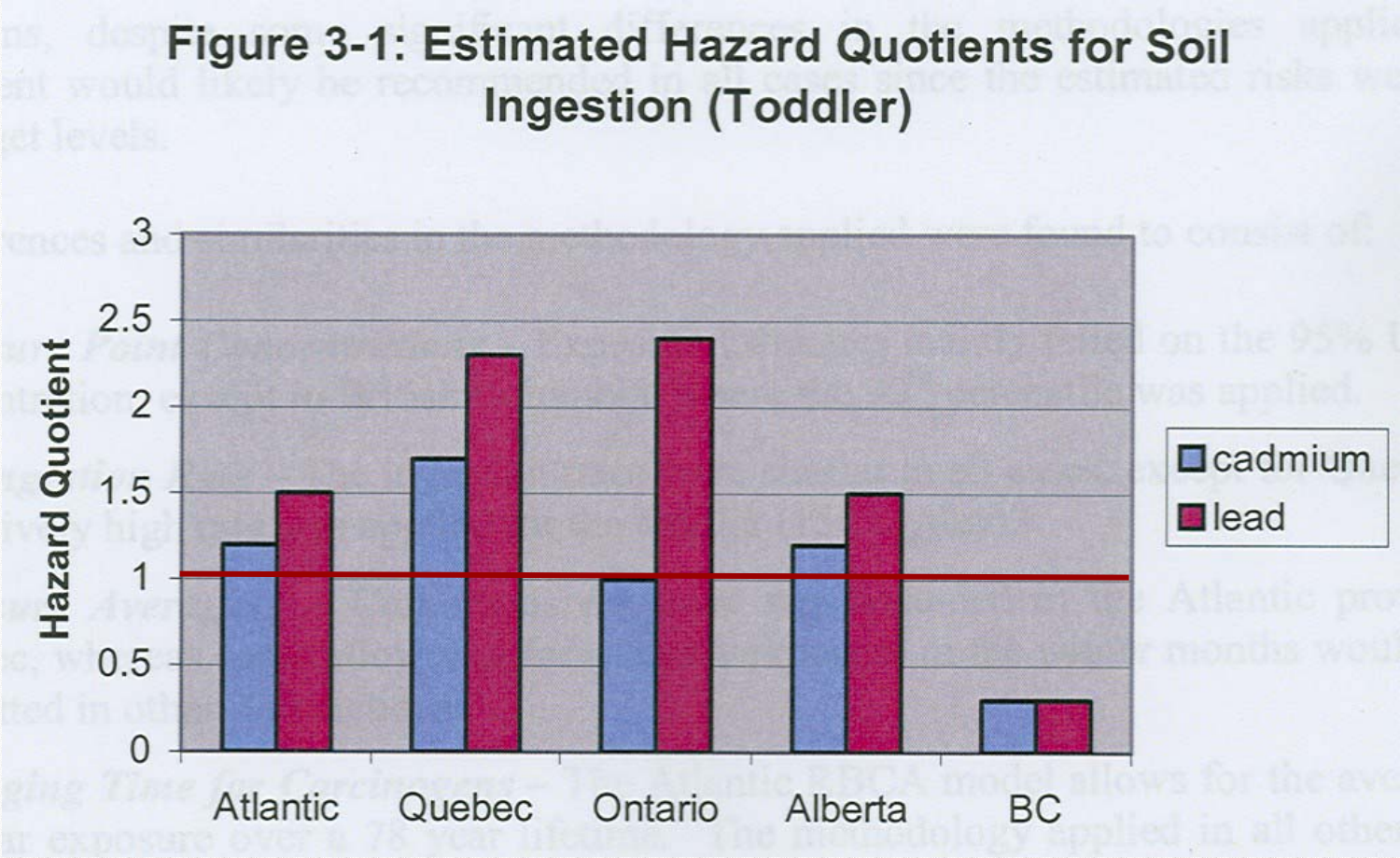
# INTER-PROVINCIAL DIFFERENCES

- Amount of guidance provided.
- Required assumptions:
  - Toxicity reference values
  - Exposure assumptions
- Modelling methodologies.
- Level of essentially negligible risk.

# INTER-PROVINCIAL DIFFERENCES …

| Province | Risk Characterization | | Preferred Source for RELs | Source of Guidance | Models specified | Unique approach for petroleum hydrocarbons? |
|---|---|---|---|---|---|---|
| | Hazard Quotient | Essentially Negligible Cancer Risk | | | | |
| Atlantic provinces | 1.0 | $10^{-5}$ | Health Canada | ASTM RBCA | PIRI software | Yes |
| Ontario | 0.2 | $10^{-6}$ | US EPA; some prov-specific | EPA RAGS | None | Yes |
| BC | 1.0 | $10^{-5}$ | Not specified | EPA RAGS | Groundwater migration | Yes |
| Quebec | 1.0 | $10^{-6}$ | US EPA | Quebec-specific | none | Yes |

# INTER-PROVINCIAL DIFFERENCES …




From Dillon, 2004

# HOW TO STANDARDIZE?

- Receptor characteristics
- Exposure assumptions
- Exposure equations
- Toxicity reference values
- Acceptable risk characterization values

# WHAT TO STANDARDIZE?

**Standardize assumptions and input data**

| Toxicity Reference Values | Receptor Characteristics | Dermal Absorption Factors |
|---|---|---|
| **HC** | **Richardson (1997)** | **OMOE** |
| EPA | HC | RAIS |
| OMOE | EPA | EPA |
| RAIS | MADEP | Hrudey |
| Other | Hawley | |

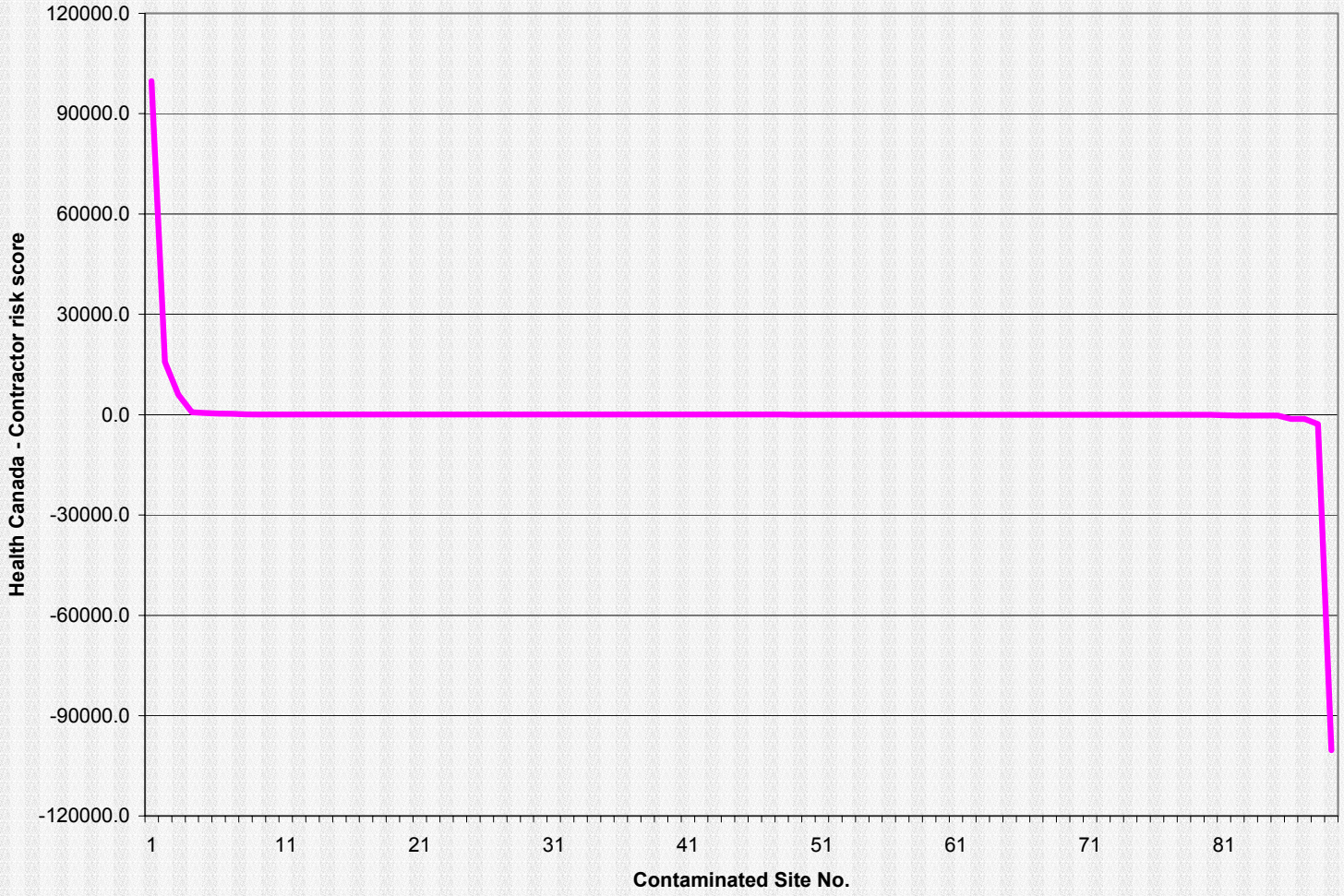
**Red = preferred**

# WHAT TO STANDARDIZE?

**Standardize acceptable risk characterization values**

| Carcinogens | Non-carcinogens |
| --- | --- |
| 1 in 100,000 ($10^{-5}$) | HQ = 0.2 if background EDI not quantified<br><br>HQ = 1.0 if EDI included in total exposure estimate |

# RESULTS OF HC RA STANDARIZATION…



# HEALTH CANADA'S GUIDANCE

- *Federal Contaminated Site Risk Assessment In Canada.*
  - *Part I: Guidance on Human Health Screening Level Risk Assessment (SLRA)*.
    - Includes procedures, report content, preferred receptor physical and behavioural characteristics, dermal absorption factors, etc.
  - *Part II: Health Canada Toxicological Reference Values (TRVs)*.
    - Lists preferred TRVs to use in SLRAs.
  - *Part III: Guidance and Checklist for Peer Review of Human Health Risk assessments*.

# OTHER HEALTH CANADA GUIDANCE IN PREP/PLANNED

- **Pt 4 – HHSLRA Spreadsheet Tool**
- **Pt 5 – Complex SSRA for chemicals & inorganics**
- **Pt 6 – Complex SSRA for radiologicals**
- **Pt 7 – Complex SSRA for biologicals**
- **Pt 8 – Compendium of exposure factors, 2nd Ed.**
- **Pt 9 – Database & guidance on oral bioavailability**
- **Pt 10 – GIS database for Canadian data on background (natural) levels of elements in soils (in association with GSC)**