Mercury (Hg) - Elemental (Quicksilver)

Oral exposure to elemental Hg poses low risk of toxicity. Exposure to vaporized elemental Hg fumes produces respiratory and systemic toxicity.

Toxicity / Risk Assessment (elemental Hg)

The most important route of exposure leading to Hg toxicity is via inhalation of Hg vapour, most commonly from industrial sources

Ingestion of small volumes of elemental Hg from a broken thermometer is considered non-toxic (poor oral absorption)

If damaged GI mucosa is exposed (e.g., broken rectal thermometer), Hg may extravasate into peritoneal space

Dermal exposure to elemental Hg liquid or vapour: low risk

There is no evidence that Hg released from dental amalgam causes clinical toxicity

<u>Clinical features / complications:</u>

Elemental Hg vapour inhalation: symptom onset 1-2 hours

- Respiratory – shortness of breath, cough, pneumonitis, bronchiolitis, necrotizing bronchiolitis, APO, resp. failure
- GI – metallic taste, nausea, vomiting, diarrhoea
- Other - diaphoresis, weakness, visual disturbance, immune cytopenia, pneumomediastinum, pulmonary fibrosis / COPD

Oxidation of elemental Hg to inorganic Hg following large exposures may produce inorganic Hg toxicity

Chronic low-level exposure to elemental Hg fumes may lead to inorganic neurological toxicity (see inorganic Hg guideline)

Investigations – Acute Hg vapour exposure with symptoms: FBC, electrolytes, renal function, CXR

Blood Hg conc. may be useful in the initial days post exposure, before redistribution occurs, and an elevated blood Hg concentration following suspected exposure may provide confirmatory evidence

Measurement of Hg using a 24-hour urine collection is the most useful diagnostic test (for interpretation of urine Hg concentration, see separate *'Mercury Investigations'* guideline)

Management – acute inhalational exposures may require attention to ABC / resp. failure

Decontamination:

Massive oral ingestion of elemental Hg may benefit from WBI (discuss with a clinical toxicologist)

Subcutaneous injection of elemental Hg should lead to surgical excision of Hg deposits

Chelation therapy (discuss all cases with a clinical toxicologist):

DMPS or DMSA are the preferred chelation agents in acute symptomatic Hg exposures and are best commenced within 24 hours. DMSA may be indicated in patients with symptoms of Hg toxicity and raised blood or urine Hg concentrations.

N-acetylcysteine may increase elimination of methylmercury, but is unproven for elemental Hg

Enhanced elimination:

There is no proven role for extracorporeal elimination methods including haemodialysis

Renal replacement modalities (including CVVHD) may be required in cases of renal toxicity

Disposition: observe for at least 6 hours following exposure to elemental Hg fumes

SAFE DISPOSAL OF SPILLED ELEMENTAL MERCURY

Do not vacuum spilled elemental Hg, as this can generate dangerous Hg fumes

https://www.health.vic.gov.au/environmental-health/mercury-spills-and-safe-clean-up

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