



Toxics Link  
for a toxics-free world

DEALING WITH MERCURY  
IS NO CHILDS PLAY!





↑ Mercury is a heavy metal occurring in several forms, all of which can produce toxic effects.

# MERCURY (QUICKSILVER)

Mercury is a heavy, silvery-white metal which is also the only metal that can be found in liquid and vapour state, under room temperature and pressure.

Mercury has widespread use, but in healthcare set up major mercury releases come from broken/old medical instruments and dental amalgams. Through this, mercury makes way to soil, water or air, where microbes can change it to methyl mercury. This form then enters, bio-accumulates and bio-magnifies up the food chain. Everyone may get affected by mercury toxicity, but the worst affected are the developing organ systems (such as foetal nervous system). Harmful effects that can be passed from mother to foetus include brain damage, mental retardation, blindness, seizures and inability to speak.

## Mercurial Perils

It's essential therefore to understand and know the adverse effects of Mercury on the human system:

- **Adverse effects on nervous system:** Muscle coordination, behavioural changes, mood swings, memory loss, attention deficit, ataxia, impairment of hearing and vision, sensory disturbances, fatigue, autism in children.
- **Increased levels of proteins in the kidney:** Increased plasma creatinine levels
- **Skin allergies:** Result of occupational exposure to liquid mercury or vapour. It may also cause dermatitis (itching, skin redness, rashes and swelling).
- **Problems with Fertility:** Chronic mercury exposure may decrease conception rate and increase abortion rates and still births.
- **Immune system:** Decreased Immunity, multiple sclerosis, autoimmune thyroiditis





# THE OMINOUS ELEMENT

**H**istorically, Mercury has been notorious for being one of the primary causes of diseases such as Minamata, the Madhatter disease, Danbury Shakes, Acrodynia, Hunter Russell Syndrome and the Iraq Episode

## FACTS & FIGURES

**Minamata disease :** Wastewater from a chemical company "Chisso", near Minamata Bay, Japan, discharged its mercury contaminated water directly into the bay. The result was a form of mercury poisoning that is now known as Minamata disease. It took shape of an epidemic and a high proportion of people died and others suffered serious neurological disorders



↑ A victim of the notorious Minamata disease

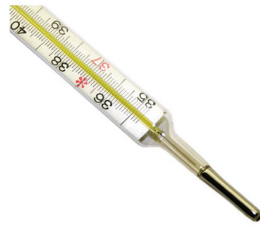


↑ A Minamata patient needs effective and constant care



← Minamata deformed human limbs



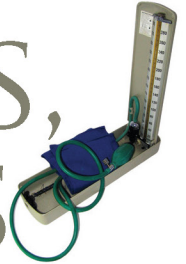


#### FACTS & FIGURES

The main sources of the exposure to mercury are-

- **Inhalation** (80 % of inhaled mercury is absorbed in the blood stream)- mercury vaporises following a mercury spill from instruments like thermometer and sphygmomanometer; during preparation of amalgams; improper disposal of CFLs
- **Ingestion** (90-95% of short chain alkyl mercury forms are absorbed by the Gastrointestinal tract)- exposure is through consumption of fish
- **Dermal** the element can directly pass the skin barrier (on touch) and reach the blood stream.

# NEAR US, CLOSE TO US, DANGEROUS TO US, ALWAYS



**M**ercury thermometers, sphygmomanometers and dental amalgams are a common sight in hospitals, clinics. It is also used in barometers, manometers, float valves, mercury switches, laboratory chemicals and CFLs.

➤ *Compact Fluorescent Lamps (CFLs) are one of the many widely-used devices that use mercury*

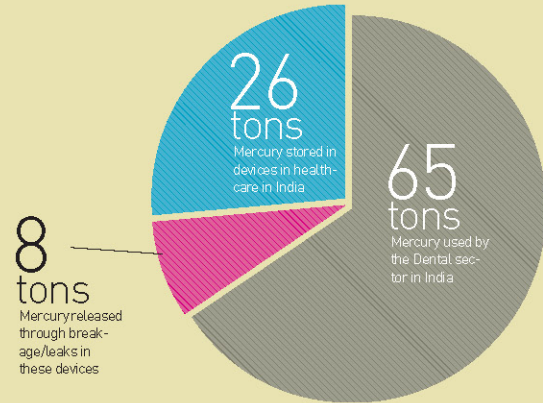


# HEALTHCARE, TAKE CARE!

## FACTS & FIGURES

What causes mercury pollution in our hospitals?

- **Mercury Spills:** A study reports that a 300 bedded hospital with a dental wing can lead to the release of 3 kg of mercury /year  
840 gm /year from the breakage of thermometers  
480gm /year through the breakage/leakage of sphygmomanometers  
1500 gm /year from dental wing
- **Incineration** of bio-medical waste, solid waste disposal (discarded thermometers, BP instruments, dental fillings, CFLs) and waste water.



Thus, the healthcare sector is a major source of global mercury demand and emissions.

## FACTS & FIGURES

USEPA estimates reveal that 1gm of mercury is enough to contaminate a lake of 20 acres. These figures look dangerous when seen in the light of the following figures-

- Clinical Thermometers have 0.6-3gm of mercury
- Sphygmomanometers have around 100-200gms of mercury
- One single dental filling – 0.75 mg of mercury

# THE WHOLE WORLD'S TALKING

**T**he international community has adopted a binding treaty for reducing emissions of mercury.

The Minamata Convention on Mercury, which sets out to control and reduce products and processes using the metal, was approved on Saturday January 19 2013, by representatives of over 140 governments. It will be signed in Japan in September and will enter into force once 50 countries or more will ratify it.

## What about Us?

- DGHS, MOH India issued a guideline on Mercury Phase out in the Healthcare sector in 2010.
- State Directives are discouraging the use of mercury equipment in health care facilities

## FACTS & FIGURES

### GLOBAL

- Sweden banned mercury partially in 1990s and banned all use of mercury in 2009
- National policies for Mercury phase out by Philippines in 2008 & Argentina in 2009
- Taiwan, China completely banned mercury thermometer (2011)
- Uruguay MOH - Phased out thermometer in healthcare sectors & homes
- Nepal preparing for a National Policy; already established model hospitals

### INDIA

- Successful phase out started in Delhi, as it issued an order in 2007
- Punjab and Manipur Pollution Control Board issued a phase out order in 2011 & 2012 respectively
- Hubli-Dhaward Municipal Corporation, Karnataka, issued a phase out order in 2010.



# ALTERNATIVE PRACTICES AND DE-MERCURY-FICATION

Alternative devices that are as efficient and accurate exist and these are also more handy and convenient to use. Hospitals world over have been advised to use these to ensure an environment, which is free of mercury.



↑ Thermometers that do not rely on mercury are slowly replacing the older counterparts.



↑ Modern blood pressure monitors are clinically validated and proven to be accurate.

## FACTS & FIGURES

- Alternative health-care instruments are easily available; these are reliable & valid, accurate & economically feasible also
- Hospitals are relying because of their sturdiness & cost effectiveness;
- HIHT, a 750 bedded Super-speciality hospital has saved 15 Lakh Rupees over the period of five years by shifting to non mercury alternative instruments;
- Composite filling materials are also available to replace traditional amalgam filling in dental sector – Resin based composite material are widely available and are being preferred by the patients due to aesthetic reasons.