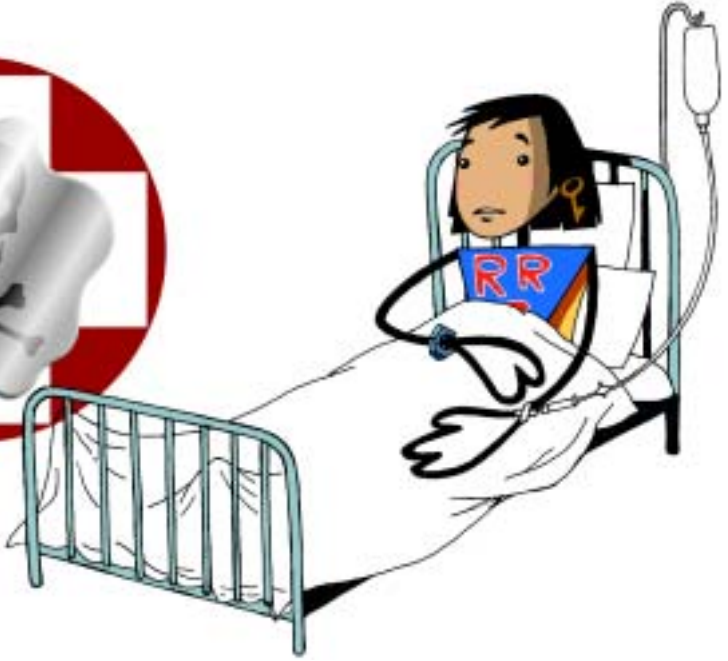


# Is your hospital a health hazard?



**I**t is ironic that hospitals, which restore health of the community, are unwittingly also threatening their well-being. The villain of the piece is mercury. Mercury or mercury compounds are found in many instruments regularly used in medical institutions such as blood pressure monitors, dental amalgam, thermometers and thermostats. Mercury and mercury-containing products are used in patient areas and pathology labs, in clinical procedures (such as x-rays), and in medicines and vaccines.

A number of these mercury-containing products become part of the solid waste stream, including certain thermometers, fluorescent lamps, button batteries, thermostats, manometers, switches, relays, and dental supplies. If these wastes are disposed of with our regular trash then the mercury can contaminate our environment and endanger our health. The two properties that make mercury extremely unmanageable are bioaccumulation and bio-magnification. Bioaccumulation is the retention of the toxic substance in the tissues, especially muscles. The bioaccumulation factor

**Mercury, which is used widely in healthcare sector in thermometers, sphygmomanometers, dental amalgams, laboratory reagents, etc. is a very potent neuro and nephro toxic substance. The health impacts of this heavy metal have been widely documented**

## Indian laws and guidelines on mercury

The two rules that deal with hazardous substances are: **The Hazardous Waste Management and Handling Rules (1989)**, which list mercury and mercury containing waste as hazardous waste. The other rule is the **Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989**, which covers a few mercury compounds.

By the definition and categories mentioned in the Hazardous Waste Rules, mercury release from products or instruments of mercury (used in healthcare) would be covered under this rule. However, the authorities admit that mercury used in healthcare was not considered significant enough to draft any individual policy for this sector or take it into account within the existing framework.



from water to edible fish tissue exceeds 10 million for certain species of fresh and ocean water fish, thus increasing the potential for mercury poisoning. Nursing infants are highest in the food chain and can be exposed to dangerous levels of mercury.

Breakage, waste disposal, and spills from products in the hospital release mercury to the atmosphere or into drains, where it can persist for many years. Waste water streams from hospitals often show a higher than expected level of mercury.

Incinerators too are a significant source of mercury emissions to the atmosphere. This mercury can travel anywhere from a few hundred feet to thousands of miles away from its original source.

Fortunately, majority of products that use mercury now have alternatives that are being adopted by enlightened hospitals. The use of mercury-free products is a cost-effective choice when the direct and indirect costs of the products are considered. On the basis of purchase price alone, the cost of mercury-free equipment is gener-

**The healthcare sector needs to move towards non-mercury instruments. Meanwhile, staff training is a key element in the proper prevention and management of mercury spills**

### How to take care of mercury spills

- ▲ Keep all people and pets away from the spill area. To minimize the mercury that vaporizes, turn off any heaters and turn up any air conditioners. Ventilate the area by opening windows.
- ▲ Never use a vacuum cleaner to clean up a mercury spill. Not only will the mercury contaminate your vacuum cleaner, the heat from the cleaner will evaporate the mercury, further distributing it.
- ▲ Assemble the necessary supplies before attempting a clean up. Remember that any tools used for clean up should be considered contaminated and disposed off with the mercury.
- ▲ Always wear rubber gloves while handling mercury. Remove all jewellery and watches from your hands, as mercury will bond with the metal.



ally higher than mercury based products. However, when other direct and indirect costs are considered, mercury-free equipment was found to be cost effective for hospitals. Direct costs to hospitals include not only purchase price but also costs associated with clean-up of spills, training, storage, disposal and potential health risks to staff, patients, and visitors. Indirect environmental and health costs to the general public and wildlife may also be significant.

Consider this: A typical thermometer contains ½ to 3 grams of mercury. A typical household mercury fever thermometer contains approximately 1 gram and a typical barometer contains 454 grams of mercury. The cost of cleaning up a spill will vary by the size of the spill and the degree of exposure of property and people. Small spill clean-ups usually cost around \$1000 and large spills can go into the tens of thousand of dollars.

While using non-mercury alternatives is the way ahead, what is of concern is that hospitals that use mercury products are not equipped to deal with breakages and spills. The study done by Toxics Link presents a very grim picture of the way mercury is handled and disposed off by the hospital staff. Mercury is handled without any protective gear and is disposed off either with incinerable waste, general waste or in the drains, all of which would lead to mercury's entry into the food chain.

Data shows that an average sized hospital can release conservatively around 3 kgs of elemental mercury in the environment in a year. Conservative estimates suggest that a city like Delhi would be releasing around 51 kgs of mercury through dental practices alone

## Seven steps to managing mercury in hospitals

- ▲ Phase-out mercury containing instruments or chemicals and replace them with safer alternatives.
- ▲ Adopt mercury inventorization in the hospital to assess the mercury usage and plan a phase out strategy
- ▲ Announce a clear policy on mercury usage-handling procedures, safeguards, spill clean up, etc.
- ▲ Introduce reporting formats to report and register any mercury spills/ leaks
- ▲ Post hazard and warning information in the work area.
- ▲ Train employees to dispose off mercury when spilled.
- ▲ Establish mercury waste management in hospitals to ensure that no mercury enters the sewage system/ incinerator/ municipal bins. All the waste should be contained and dealt with as hazardous waste.



**An average-sized hospital can release around 3 kg of elemental mercury in the environment in a year. Instead of taking care of health, hospitals could be seriously undermining the community's well-being**

each year. This would come from hospitals, dental clinics, crematoriums and laboratories. The problem is compounded as all the generation sources are scattered and non-regulated. As there are no laws and guidelines governing the releases of mercury no one seems accountable.

## Policy initiatives to combat the hazard of mercury

The European Commission is currently investigating further potential regulatory actions on products containing mercury, in preparation of potential amendments to the marketing and use directive. In India the regulations and safeguards for handling mercury are virtually non-existent. The need of the hour is that:

- ▲ The government should ban or restrict, through disincentives like high taxes and import duties, the usage of elemental mercury and mercury compounds and provide incentives (lower or zero taxes or import duties) for mercury alternatives.
- ▲ Emission standards and suitable cost-effective environmental monitoring should be in place.
- ▲ Strong measures should be taken to reduce and/or eliminate mercury in wastes through sound mercury waste management.
- ▲ Curricula should have special emphasis on hazardous substance and pollution prevention. The curricula of medical, nursing, dental, para medical, schools etc should be considered for adding this information on.
- ▲ Establishing a clearing-house for information relevant to mercury.
- ▲ Awareness programmes should be launched to educate the population about the risk and impact of mercury exposure.



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