

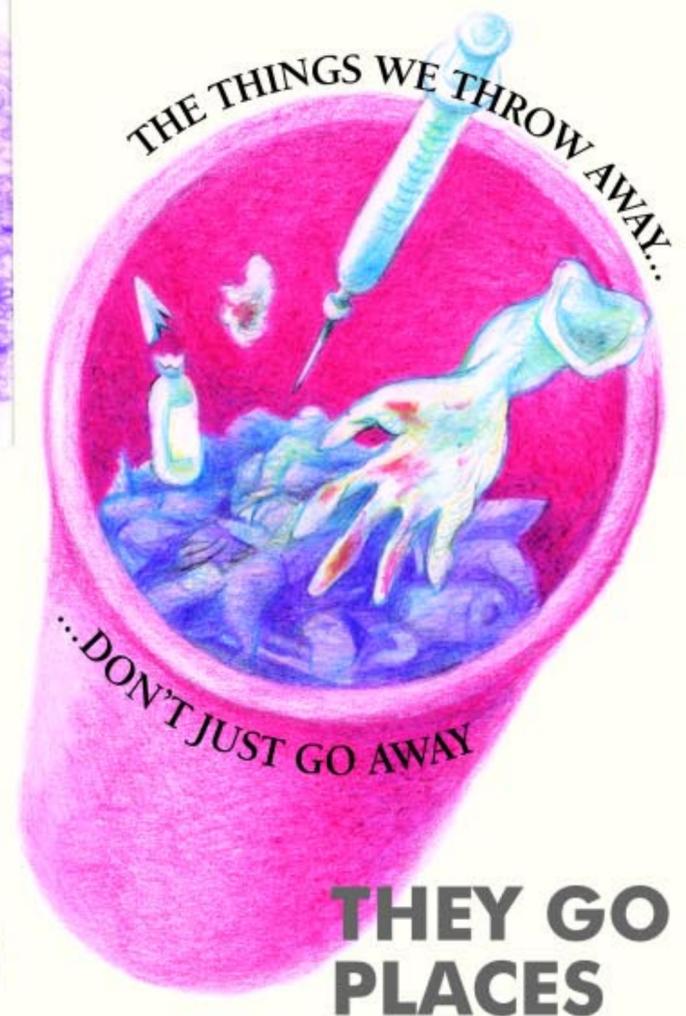


dioxins The most toxic substances known to man, dioxins and furans are released into the air when chlorinated plastics such as PVC are burnt in the open or in incinerators

infections Injury from discarded needles or cuts from other sharps and the illegal re-use of hospital waste can spread diseases such as AIDS and Hepatitis B and C

radiation Radioactive medical waste – by-products of radiotherapy or high-tech medical equipment – contains doses lethal enough to kill

mercury Poisonous metals such as mercury are released into water and soil from carelessly-disposed medical waste, or the effluents from incinerators



THEY GO PLACES



Medical Waste
THINK
before you
THROW!

- ▶ Segregate waste
- ▶ Manage sharps
- ▶ Don't burn chlorinated plastics
- ▶ Prevent re-use of disposables
- ▶ Adopt non-burn technologies
- ▶ Practise universal precautions

Medical Waste **THINK** before you **THROW!**

How do you get rid of the rubbish that you generate? Simple – you just throw it away. It's the easiest thing to do. Except that, with medical waste, it's also the most negligent thing to do. For medical waste doesn't just go away. It goes places, it finds ways of getting back into the system – into the ecosystem, into people's systems.

Medical waste, if not properly handled, is an epidemic waiting to happen. Material that started off as part of the cure to an ailment could well turn into the cause of another. The cures that help save a life could, if disposed of carelessly as untreated waste, infect a hapless new victim who comes in contact with it.

Sharps, for example – especially needles – can carry infection and disease on their dangerous tips. A survey in a Delhi hospital revealed **an annual needlestick injury rate of 40 per nurse**, underlining the magnitude of this problem. Syringes, ampoules, swabs – every type of disposable medical equipment can make its presence felt most unexpectedly.

Then there's the burning concern of incineration – a method of treatment that poisons the air, water and earth.

Life on the cutting edge

Sharp facts

Accidental needlestick injuries account for 86% of all cases of occupationally related infectious disease transmission. A single needlestick exposure to the Hepatitis B virus (HBV) has an infection transmission rate as high as 30%; the risk rate for HIV is 0.36%.

Injecting death

The re-use of medical equipment, especially syringes, is a major cause of spread of infection. A study conducted by a Delhi based NGO, Vatavaran, reveals that of the 40,000 syringes used daily in Delhi, only 40% are destroyed. The remaining 60% are washed, packed and resold.

Consider this fact in the light of another one – according to a WHO report, HBV can survive in a syringe in dry conditions for a week or more. Worldwide, more than 8 million Hepatitis B, more than 2.3 million Hepatitis C and more than 80,000 HIV infections are estimated to occur yearly from the re-use of syringe needles without sterilisation.

Hazardous waste

Carelessly disposed medical waste of any kind is dangerous. In Russia, six children were diagnosed with a mild form of smallpox (vaccinia virus) after having played with glass ampoules containing expired smallpox vaccine at a garbage dump.

There have been several cases of grievous injury and death from radioactive medical waste in places as diverse as Brazil, Algeria, Mexico and Morocco since the 1960s.

Incinerators: a burning issue

Incinerators, often used by hospitals to burn medical wastes, result in air, water and soil pollution through toxic emissions and hazardous residues, such as

- Dioxins and furans;
- Metals (lead, cadmium, mercury);
- Particulate matter;
- Acid gases (hydrogen chloride and sulphur dioxide);
- Carbon monoxide;
- Nitrogen oxides; and
- Bottom and fly ash

Dioxins and furans, specifically, are killer gases which wreak havoc on human systems, with such disastrous effects at very low levels of exposure as:

- Increased cancer mortality;
- Neonatal abnormalities;
- Reproductive and skin disorders;
- Endocrine disruption; and
- Changes in or even suppression of the immune system.

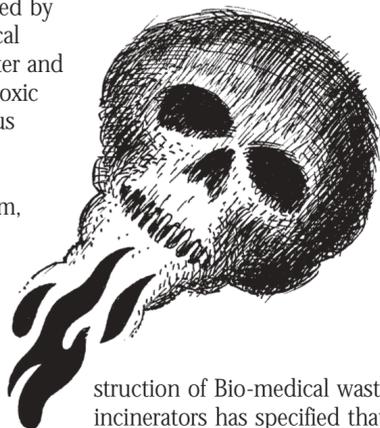
In hundreds of cases, the public has succeeded in shutting down operating plants or preventing the construction of new ones. The widespread resistance to incineration is a testament to the popular rejection to this technology.

The growing consensus against incineration has also been reflected in the body of international environmental law, which has increasingly restricted its use and acceptability.

India is now a signatory to the Stockholm Convention; an international treaty that seeks to protect public health and environment. Annex C of Convention addresses dioxins (and other unintentional by-products POPs). Waste incinerators, including co-incinerators of municipal, hazardous or medical waste have been identified as having the potential for comparatively high formation and release of chemicals i.e. dioxins.

Thus India will take measures to reduce the releases of dioxins and other unintended by products, with the goal of their continuing minimization and where feasible ultimate elimination.

The new guidelines issued by Central Pollution Control Board on Design and Con-



struction of Bio-medical waste incinerators has specified that incinerators shall be allowed only at Common Bio-medical Waste Treatment Facility and installation of individual incineration facility by a healthcare unit shall be discouraged..

More environment-friendly technologies are available for treating medical waste such as autoclaving, hydroclaving, microwaving and chemical disinfection. These are non-burn technologies which are safer, easier-to-use and even more economical. They are well-recognised and widely used the world over.

Alliances to tackle the bio-medical waste problem

Health Care Without Harm is an international coalition of over 300 healthcare providers and non-governmental organisations dedicated to eliminating pollution from the healthcare sector. For more info visit www.no-harm.org

Global Alliance for Incinerator Alternatives (GAIA) is an expanding international alliance of individuals, non-government organisations, community-based organisations and others working to end incineration of all forms of waste and to promote sustainable waste prevention practices. More info at www.no-burn.org

Safe Injection Global Network (SIGN) is a voluntary coalition aiming to achieve safe and appropriate use of injections throughout the world. For more info visit www.who.int/injection-safety/sign/en

HuMAN-Health & Us Medwaste Action Network is working collaboratively to make management of healthcare waste in India environmentally safe.

Managing sharps...

- Always wear gloves while handling sharps
- Never leave a sharp unattended in open containers or slabs
- Never recap the syringe
- Always store used sharps in puncture-resistant containers
- After use, ensure the disinfection and mutilation of sharps
- Destroy the sharp immediately after use

...and mercury spills

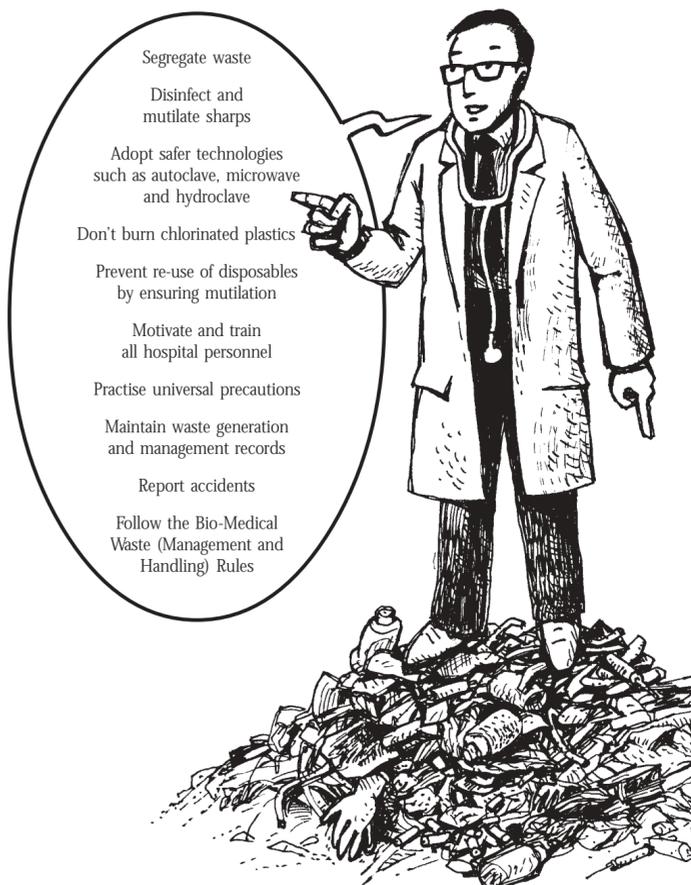
- Never touch mercury with bare hands. Remove all jewellery; mercury reacts with gold, silver and other metals
- Wear protective gear: Nitrile gloves or two pairs of latex gloves; face mask; protection for the eyes
- You will need: scotch tape, a 10cc syringe, a covered plastic or glass container with water
- Gather the mercury using stiff paper and suck the large droplet in a syringe without the needle
- Pour the contents of the syringe in a bottle containing water
- Put the scotch tape around the bottle
- Hand over the bottle to the stores

Encapsulation with immobilising materials: This involves placing waste in containers, sealing them with cement or other immobilising material and sending it to a local landfill.

Pit for disposing of sharps: Blades and needle waste, after disinfection, can be disposed off in a pit which is lined with brick, or concrete rings. The pit is covered with a concrete slab, penetrated by a galvanised steel pipe projecting about 1.5m above the slab. When the pit is full, it is sealed completely, and another prepared.

Smelting: The most promising option for sharps disposal as it does not require land and also encourages material recovery.

An illustrated guide to handling medical waste



WASTE SEGREGATION

A place for everything and everything in its place

Waste segregation is one of the most critical systemic components of a good medical waste management programme. Putting waste in an appropriate container, according to its nature, and treating it correctly, go a long way in controlling the spread of infection; decreasing occupational hazards; reducing the amount of waste that requires treatment; saving money; and ensuring compliance with the law.

	INFECTIOUS WASTE (20%)		NON-INFECTIOUS WASTE (80%)	
YELLOW BIN** Anatomical tissues and body parts Cytotoxic drugs	RED BIN Syringes Blood and urine bags I.V. sets and tubings Culture plates, plastic tips and other microbiological waste Gloves and catheters Soiled dressings, bandages and cotton swabs	PUNCTURE-PROOF CONTAINER Needles, blades, scalpels, lancets, broken glass and suture needles	GREEN BIN bio-degradable waste, such as kitchen waste and garden waste	WHITE BIN Paper and plastic waste, packaging and office waste
IMPORTANT No plastics in this bin ⇓⇓⇓	⇓⇓⇓		⇓⇓⇓	
Incineration/deep burial*	Autoclaving/microwaving/chemical disinfection and mutilation		Municipal corporation	
<small>* In a low-population area</small>				
<small>* No plastics in this bin</small>				

