

**AN ORIENTATION  
EDUCATIONAL PROGRAMME  
ON  
BIO-MEDICAL  
WASTE  
&  
WASTE  
MANAGEMENT**

**Panchavati Rural Development Society (PRDS)**

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## **AN INITIATION FOR IMPLEMENTATION**

The **Dharani Green Kids League Club (DGKLC)** a unit of Panchavati Rural Development Society (PRDS) has taken up an initiative to work at grossroot strategies for **SAFE management of Bio-Medical Waste**.

An Integrated Bio-medical Waste Management Education Project (BMWMEP) involves a co-ordinated committed working of several departments within the Health establishment. As an initial step of the programme envisaged that, **to IMPART and EDUCATE on Bio-medical waste & Waste Management at their Door step of Hospitals** and involving medical and nursing staff a few administrators if at all, the hospital waste management committee would have to include personnel and representatives from all departments such as house-keeping, engineering, laundry, kitchen, security and several other who are **equally responsible for generating, handling, storing, transporting and disposal of Waste....**

As a thrust in this field, the PRDS has applied a small Awareness Project proposal to Ministry of Environment & Forests, New Delhi, through Deccan Development Society (RRA). A small grant of Rs.8,000/- was sanctioned under National Environment Awareness Campaign 2006-07. Under this project, a series of orinal Educational programmes are planned and the management is able to brought **a small book as a RESOURCE MATERIAL and it provide a basic knowledge on Bio-Medical & Waste Management**. We hope this will give you an insight and also seeking your valuable suggestions to upgrade the quality in the coming issues.

In your services  
Panchavati Rural Development Society



# Waste management

## What is the Waste segregation ?

Waste segregation is one of the most critical systematic 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.

## : USE COLOR CODING BINS FOR SAFE MANAGEMENT :

Yellow bin	Red bin	Puncture proof container	Black bin
Anatomical tissues And body parts  Cytotoxic drugs       (IMPORTANT) No Plastics in this bin	Syringes  Blood and Urine bags  I.V. sets and tubings  Culture plates, plastic tips and other micro-biological waste  Soiled dressings, bandages and cotton swabs	Needles, blades, scalpels, lancets, broken glass and suture needles	Paper and plastic packaging  Kitchen Waste  Other waste
Incineration/deep burial*	Autoclaving/micro waving/chemical disinfection and mutilation	Autoclaving/micro waving/chemical disinfection and mutilation	Municipal corporation

## LIFE ON THE CUTTING EDGE.....



***Do you know ?***

### ***Injecting death:***

The re-use of medical equipment, especially syringes, is another major cause of spread of infection. In India, for every 2.5 million syringes manufactured, 4.5 million injections are given. In other words, each and every syringe gets used 1.8 times. Consider this fact in the light of another one- according to a WHO report : Hepatitis B Virus (HBV) can survive in a syringe in dry conditions for a week or more.

Accidental needle stick injuries account for 86% of all cases of occupationally related infectious disease transmission.

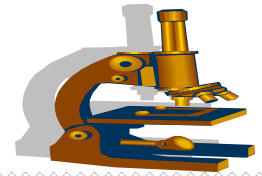
A Single needle stick exposure to the Hepatitis B Virus (HBV)\_ has an infection transmission rate as high as 30%; the risk rate for HIV is 0.36%.

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 sterilization.

### ***Hazardous waste:***

Careless disposal medical waste of any kind is dangerous. In Russia , six children were diagnosed with a mild form of smallpox(vaccine 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.



## ***FACTS on Needle stick Injury:***

- Health care workers suffer between 600,000 and one million injuries from conventional needles and sharps annually. These exposures can lead to Hepatitis B, Hepatitis C and Human Immunodeficiency Virus(HIV), the virus that causes AIDS .
- At least 1,000 Health Care workers are estimated to contract serious infections annually from needle stick and sharps injuries.
- Needle stick injuries are preventable. Over 80% of needle stick injuries could be prevented with the use of safer needle devices.
- Less than 15% of U.S hospitals use safer needle devices and systems.
- In 1992, the food and drug administration issued an alert to all health care facilities to utilize needle less IV systems where ever possible. This alert is merely a recommendation, not a mandate. Therefore, health care facilities are under no legal obligation to comply.
- More than 20 other infections can be transmitted through needle sticks, including: tuberculosis, syphilis, malaria and herpes.



***It can happen to you:***

Younger or old , new or experienced , working in a rural or urban setting, e are all at risk. Together we must work to protect all nurses and other health care workers from the preventable risk of needle sticks and potentially life –threatening infections they may bring.

## Do you Know?



Re-use of Syringes and needles without sterilization causes more than a crore of infections even estimated 13 lakh early deaths happen every year due to unsafe injections.

**Indian Medical Association organizes a series of regional workshops on**

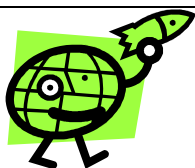


**Injection Safety across India.**

The Indian Medical Association in collaboration with PATH organizing a series of regional workshops on safe injection practices in Mehsana (Gujarat). The objective of the workshops is to Educate and Train the Medical professionals in Injection and Waste Disposal practices.

**: LATEST INFORMATION ON Waste Generation - profile:**

CITIES	Waste Quantity Tonnes per day (tpd)	Types	Waste composition
Delhi	5922		Percentage
Greater Mumbai	5320	Compostible fraction/Biodegradable	40.62
Chennai	3036	Recyclables	11.22
Kolkatta	2653	Moisture content	21.62
Hyderabad	2187		
Bangalore	1669	Higher calorific value	800 – 2,632
Ahmedabad	1302	(on dry weight basis)	Kilo calories/kg



# 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);
- ❖ Nitrogen oxides; and
- ❖ Bottom and fly ash Dioxins and furans, specially 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 various nations, steps are being taken against this menace. Public campaigns have led to closure of several incinerators around the world.

India too has put in place a complete ban on incineration of chlorinated plastics such as PVC. In many cities, there is a ban on site incineration of medical waste.

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 recognized and widely used world over.

**120,000 TONNES EVERYDAY**  
That's how much garbage urban India Produces. The Easy way out is to burn it and make electricity. This is dangerous -and a waste of a resources... Read more in Down To Earth . March15,2007.

Environmental damages cost IN India Rs 24,500 crore a year.....And mass illness....  
Source: Down To Earth October15,1995

# The devil in dioxin:



***Incinerators emissions contain dioxins, the most toxic of all human made substance. These are carcinogenic, cause neurological damage, and disrupt the reproductive , Thyroid and respiratory system, among other things .They are produced when chlorinated plastics (like PVC) are burnt.***

**In February 2006, the European Commission adopted a new law setting emission levels of some dioxins and dioxin like polychlorinated bi-phenyls food and feed.**

**According to Paul Connett, chemistry professor at St. Lawrence University in Canton, New York, three French solid waste incinerators were closed in January 1998 because milk from cows on nearby dairy farms was *found contaminated with excessive levels of dioxins.***

**A study in the British Journal of Cancer says people living with in a 7.5 km radius of a municipal solid waste incinerator *have an increased likelihood of getting several cancers.***

**The 1996 Research studied 14 million people living near 72 incinerators in the UK.**

***Incinerators release carcinogenic chemicals from their smoke stacks, including heavy metals (such as arsenic, lead, cadmium, mercury, chromium and beryllium); acid gases , including hydrogen fluoride; partially-burned organic material such as PVC; herbicide residues and wood preservatives; Other organic chemicals including polycyclic aromatic hydrocarbons; and dioxins and furans.***

**One recent analysis identified 192 volatile organic compounds being emitted by a solid waste incinerator.**



# **Basic Principles to handling Medical Waste:**



- 1) Segregate waste.
- 2) Disinfect and mutilate sharps.
- 3) Adopt safer technologies such as Autoclave and Microwave
- 4) Don't burn chlorinated plastics.
- 5) Prevent re-use of disposables.
- 6) Motivate and train all hospital personnel.
- 7) Practice universal precautions.
- 8) Follow the Bio-Medical waste rules.

## **References:**

- 1) A.P. Pollution Control Board, Hyderabad.
- 2) The American Nurses Association.
- 3) Articles in Andhra Jyothi – A Telugu daily news paper.



## **Websites:**

- 1) [www.injectionsafety-india.org](http://www.injectionsafety-india.org)
- 2) [www.nursingworld.org](http://www.nursingworld.org).
- 3) [www.needlestick.org](http://www.needlestick.org)
- 4) [www.cdc.gov](http://www.cdc.gov)

## YOU CAN JOIN IN ..... India Injection safety Coalition: Resources

The India injection safety coalition modeled on the lines of the global SIGN-Safe Injection Global Network was formed in March 2002 to bring injection safety issues on the national agenda, work with safe injection policies, assist implementation of safe injection and waste disposal.

### India Injection Safety Coalition: Members

- ✓ **PATH:** It is an international Non profit organization .
- ✓ **Becton Dickinson India Limited:** It is a medical Technology Company.



- ✓ **Department for International Development(DFID)**
- ✓ **Hindustan Syringes And Medical Devices Ltd.**
- ✓ **India CLEN program Evaluation Network (IPEN)**
- ✓ **Indian Academy Of pediatrics (IAP)**
- ✓ **Indian Medical Association (IMA)**
- ✓ **Indian Nursing Council (INC)**
- ✓ **Srishti – It is an Environmental Non-profit organization.**
- ✓ **Trained Nurses Association of India (TNAI)**
- ✓ **United Nations Children’s Fund (UNICEF)**
- ✓ **World Health Organization (WHO)**
- ✓ **World Bank.**

**THINK GLOBALLY... ACT LOCALLY..... CAN YOU DO ?**

