

# BIOMEDICAL

## WASTE

### Introduction

Biomedical waste represents a small proportion of the health care waste stream. Only 10 to 15% of all health care wastes are biomedical. Canada's various human and animal health care facilities generate over 40,000 tonnes of biomedical waste annually. While this is only a fraction of the six million tonnes of hazardous waste that are produced each year, concerns about the environment and the transmission of communicable diseases like AIDS have increased the need for proper handling and disposal of these wastes.

### What are biomedical wastes?

In response to the need for a consistent, national approach to the management of biomedical waste, the Canadian Council of Ministers of the Environment (CCME) has approved the following definition:

"Biomedical waste" means waste that is generated by

- human or animal health care facilities,
- medical or veterinary research and teaching establishments,
- health care teaching establishments,
- clinical testing or research laboratories,
- facilities involved in the production or testing of vaccines

The following are the types of biomedical waste:

#### (a) Human Anatomical Waste

Consisting of human tissues, organs and body parts, but excluding teeth, hair and nails.

#### (b) Animal Waste

Consisting of all animal tissues, organs, body parts, carcasses, bedding, fluid blood and blood products, items saturated or dripping with blood, body fluids contaminated with blood and body fluids removed for diagnosis or removed during surgery, treatment or autopsy unless certified by a trained person that the waste does not contain viruses and agents listed in Risk Group 4 of the Medical Research Council of Canada/Health and Welfare Canada publication "Laboratory Biosafety Guidelines," but excluding teeth, hair, nails, hooves and feathers.

#### (c) Microbiology Laboratory Waste

Consisting of laboratory cultures, stocks or specimens of microorganisms, live or attenuated vaccines, human or animal cell cultures used in research, and laboratory material that has come into contact with any of these.

#### (d) Human Blood and Body Fluid Waste

Consisting of human fluid blood and blood products, items saturated or dripping with blood, body fluids contaminated with blood, and body fluids removed for diagnosis

or removed during surgery, treatment or autopsy. This does not include urine or faeces.

#### (e) Waste Sharps

Clinical and laboratory materials consisting of needles, syringes, blades or laboratory glass capable of causing punctures or cuts.

Biomedical waste does not include waste that is

- from animal husbandry
- which is household in origin
- controlled in accordance with the *Health of Animals Act (Canada)*, or
- generated in the food production, general building maintenance, and office administration activities of those facilities to which this definition applies.

This definition does not apply to microbiology laboratory waste, human blood and body fluid waste, or waste sharps, provided that these wastes have been disinfected or decontaminated.

### Where do biomedical wastes come from?

Biomedical wastes come from hospitals, research labs, doctors, dentists, veterinarians, medical labs, nursing homes, old age homes and funeral homes. Hospitals are the largest generators, producing about half of the total amount for Canada, followed by nursing homes, old

age homes and veterinarians. Biomedical waste stream volumes vary from province to province, as do the proportions generated by each of the sources listed above. Ontario alone has an annual generation of 10,000 to 15,000 tonnes.

### What risks do biomedical wastes present?

The fraction of the biomedical waste stream that is likely to cause disease or injury is minimal, risks that *do* occur are those of exposure to infectious disease organisms and physical injury (such as punctures and cuts) caused by sharps. People working in the above professions may be affected, as well as those who regularly handle or transport biomedical wastes (maintenance staff, waste haulers and landfill workers). Few biomedical waste-associated injuries or diseases have been recorded to date.

### How can biomedical wastes be managed to minimize these risks?

The greatest risks are largely eliminated by proper packaging. This and other recommendations for proper management are summarized below:

#### 1 Segregation

Biomedical wastes should be separated from the general waste stream at the point of

generation to prevent costly treatment of the entire waste stream and permit the diversion of recyclable materials. Further segregation of biomedical waste into the five categories (defined above) should then occur to facilitate proper packaging, handling and disposal.

## 2 Packaging

- Should be appropriate for the waste being contained
- Should be leak resistant and tightly sealed
- Should be puncture resistant and marked with safe fill lines
- Should be able to withstand cleaning agents if reusable
- Should be classified as one of sharps container, waste holding plastic bag or cardboard container if designed for single use

## 3 Colour coding of packaging

CCME guidelines recommend the following colour coding

WASTE TYPE	COLOUR-CODING
HUMAN ANATOMICAL	RED
ANIMAL WASTE	ORANGE
MICROBIOLOGY AND LAB WASTE	YELLOW
HUMAN BLOOD AND BODY FLUID	YELLOW
WASTE SHARPS	YELLOW

## 4 In-house movement of wastes

In general, the handling of wastes should be minimized to prevent unnecessary exposure to staff and others within the facility. This includes

- Reducing the number of waste handling steps

care and other clean areas

## 5 Waste storage areas

- Should be enclosed, lockable and separate from food/supply areas
- Should be restricted to authorized personnel

- Using specially designed carts for transportation
- Prudent and regular cleaning and maintenance of those carts
- Size and weight criteria for waste loads
- Taking planned routes through the facility to avoid excessive passage of loaded carts through patient

- Should visibly display the bio-hazard symbol
- Should be kept below 4°C if anatomical wastes are stored
- Should not be used for the storage of non-biomedical waste
- Should not be used to store wastes beyond the maximum storage time determined by the health care facility

## 6 Waste treatment and disposal

The above table summarizes recommended biomedical waste treatment and disposal options

These practices ensure that the waste is disposed of in a safe and aesthetic manner

minimum national standards for biomedical waste management in Canada. These guidelines are entitled *Guidelines for the Management of Biomedical Waste in Canada* and are available to the public through their federal or provincial territorial Department of Environment

For further information about these guidelines, regulations or the various waste treatment/disposal techniques, contact your federal or provincial/territorial Department of Environment

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**What is being done to promote proper biomedical waste management ?**

CCME has recently published guidelines that promote uniform waste management practices and offer

**CCME**

Canadian Council of Ministers of the Environment / Le Conseil canadien des ministres de l'environnement

WASTE TYPE	TREATMENT		DISPOSAL		
	STEAM AUTOCLAVE	CHEMICAL DECONTAM.	LANDFILL	SEWER	INCINERATOR
HUMAN ANATOMICAL	●	●	●	●	▲
ANIMAL ANATOMICAL	●	●	●	●	▲
ANIMAL NON-ANATOMICAL	▲	▲	●	●	▲
MICROBIOLOGY	▲	■	■	■	▲
HUMAN BLOOD & BODY FLUID	▲	▲	●	■	▲
WASTE SHARPS	▲	▲	■	●	▲

▲ PREFERRED ■ REGULATORY APPROVED OR ADDITIONAL TREATMENT REQUIRED ● NOT ACCEPTABLE