Disease Control and Prevention Center (DCC) Program
"Technical Assistance for Nosocomial Infection Control and Travel Clinics for Sulianti Saroso Infectious Diseases Hospital in Indonesia"

Waste Management

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Center Hospital of the National Center for Global Health and Medicine

Quality Improvement Center (QIC)

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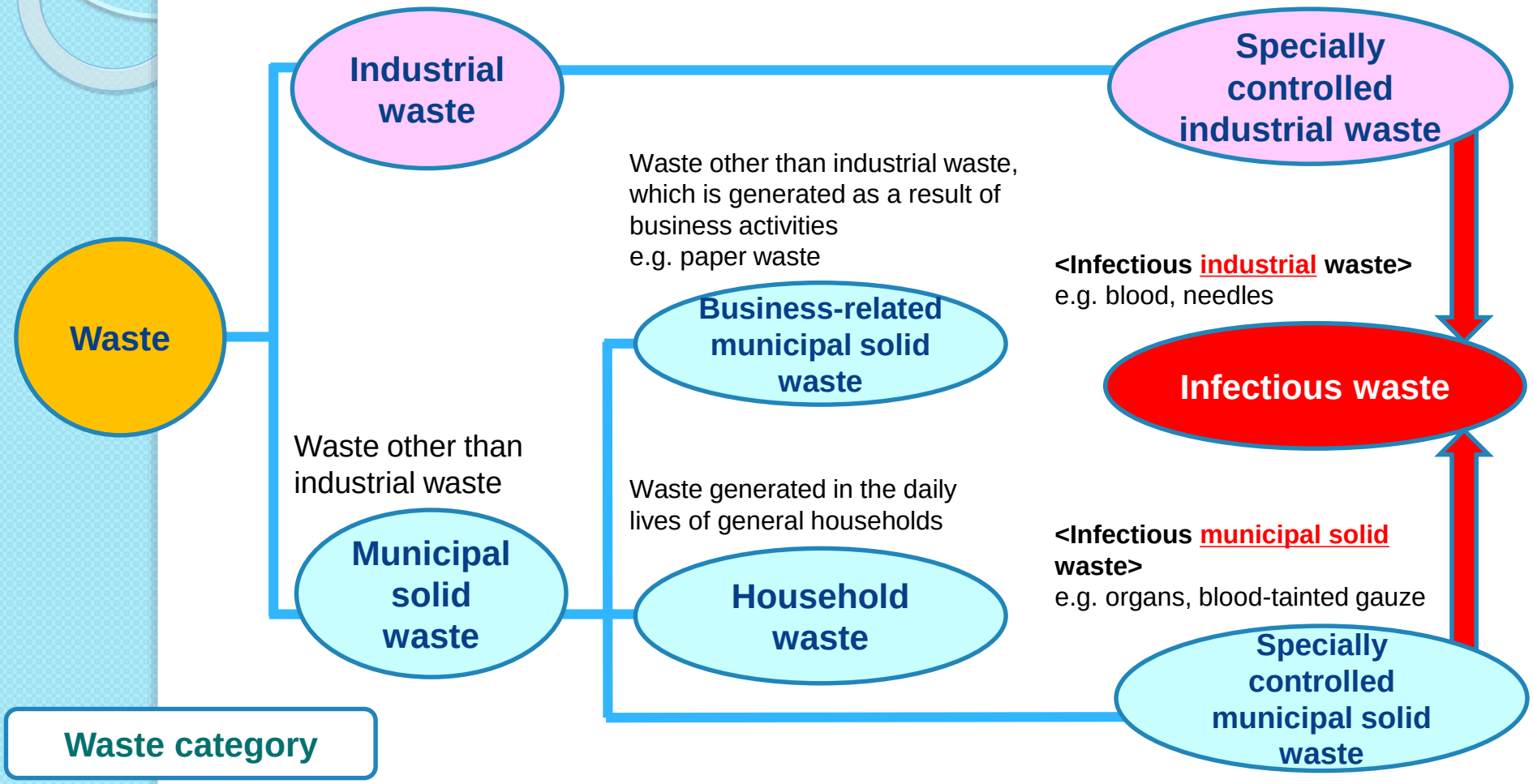
Introduction

- General Matters Concerning Waste
- Laws and Regulations Concerning Waste
- Management of Infectious Waste
- Management of Infectious Waste for Specific Infectious Diseases (New Infectious Diseases/Infectious Diseases Type I, etc.)
- Safety Control of Waste Management

General Matters Concerning Waste



"Manual for Infectious Waste Management", Ministry of the Environment, 2017
"For Proper Management of Infectious Waste" Bureau of Environment, Tokyo Metropolitan Government, 2009

Medical waste

Waste generated at healthcare facilities as a result of medical care (common term)
* Home medical waste: categorized as household waste

Waste generated in hospitals and clinics

1) Infectious waste
2) Non-infectious waste (i.e. medical waste, not infectious waste)
3) Other waste (mainly municipal solid waste including paper waste and food scraps)

* Radioactive waste
* Chemical waste

Infectious waste

Waste generated at healthcare facilities, which is capable of producing an infectious disease since it has been contaminated by an organism that is, or is likely to be pathogenic to healthy humans. Or, waste that is likely to cause these effects.

What is infectious waste?

- Waste containing blood
- Waste that is capable of producing an infectious disease
- Sharps used on patients

Disposable diapers (the following items are infectious waste)

1) Blood-tinged diapers
2) Diapers used by patients with specific infectious diseases
   - In categories specified under the Infectious Disease Law: Infectious diseases type I, type II, and type III (and part of infectious diseases type IV/V), designated infectious diseases, new infectious diseases, pandemic influenza

* Diapers other than the above ⇒ non-infectious waste (business-related municipal solid waste)

  Acceptance conditions for the disposal of used diapers vary between municipalities
  Coordination is required between healthcare facilities, waste disposal contractors, and municipalities

Flowchart to identify infectious waste

[STEP 1] (Shape) Waste corresponding to any of the following
1) Blood, blood serum, plasma and body fluids (including semen)
2) Pathological waste (organs, tissues, skin, etc.)
3) Items used for studies and tests involving pathogenic microorganisms
4) Sharps that have blood stains, etc. (including broken glass, etc.)

Yes

No

[STEP 2] (Place of generation) Waste generated and disposed from infectious disease beds, tuberculosis beds, operating rooms, ER, ICU and examination rooms after treatment and tests

Yes

No

[STEP 3] (Types of infectious diseases) Waste generated and disposed after the treatment or tests for infectious diseases type I, II, and III, designated infectious diseases, new infectious diseases, and tuberculosis, which are specified under the Infectious Disease Law. Medical devices used and disposed of after the treatment or tests for infectious diseases type IV and V that are specified under the Infectious Disease Law (however, limiting to disposable diapers of patients with specific infectious diseases)

Yes

No

Non-infectious waste

Infectious waste

Waste Disposal Flowchart

Infectious waste

* Note 1: Wastes that are blood-stained, infectious or possibly infectious, and those after RI tests

Bedside

- Injection needles
- Syringes with needles
- Blood collection needle holder
- SURFLO (outer and inner sheaths)
- Sharps

Portable sharps disposal container

Preparation room

Items that have not been used on patients

- Injection needles
- Syringes (including those with needles)
- Ampules/vials
- Liquid medicine bottles
- IV bags
- Gloves used for co-injections

Sealable plastic waste bin

Treatment room/soiled utility room

Items used on patients

- Injection needles
- Syringes with needles
- IV tubing
- IV bags with tubing
- Blood bags
- Puncture needles
- Scalpels
- Guide wires
- Ampules
- Vials
- Liquid medicine bottles
- Suction bags with solidifying agents
- Items used for administration of anti-cancer agents

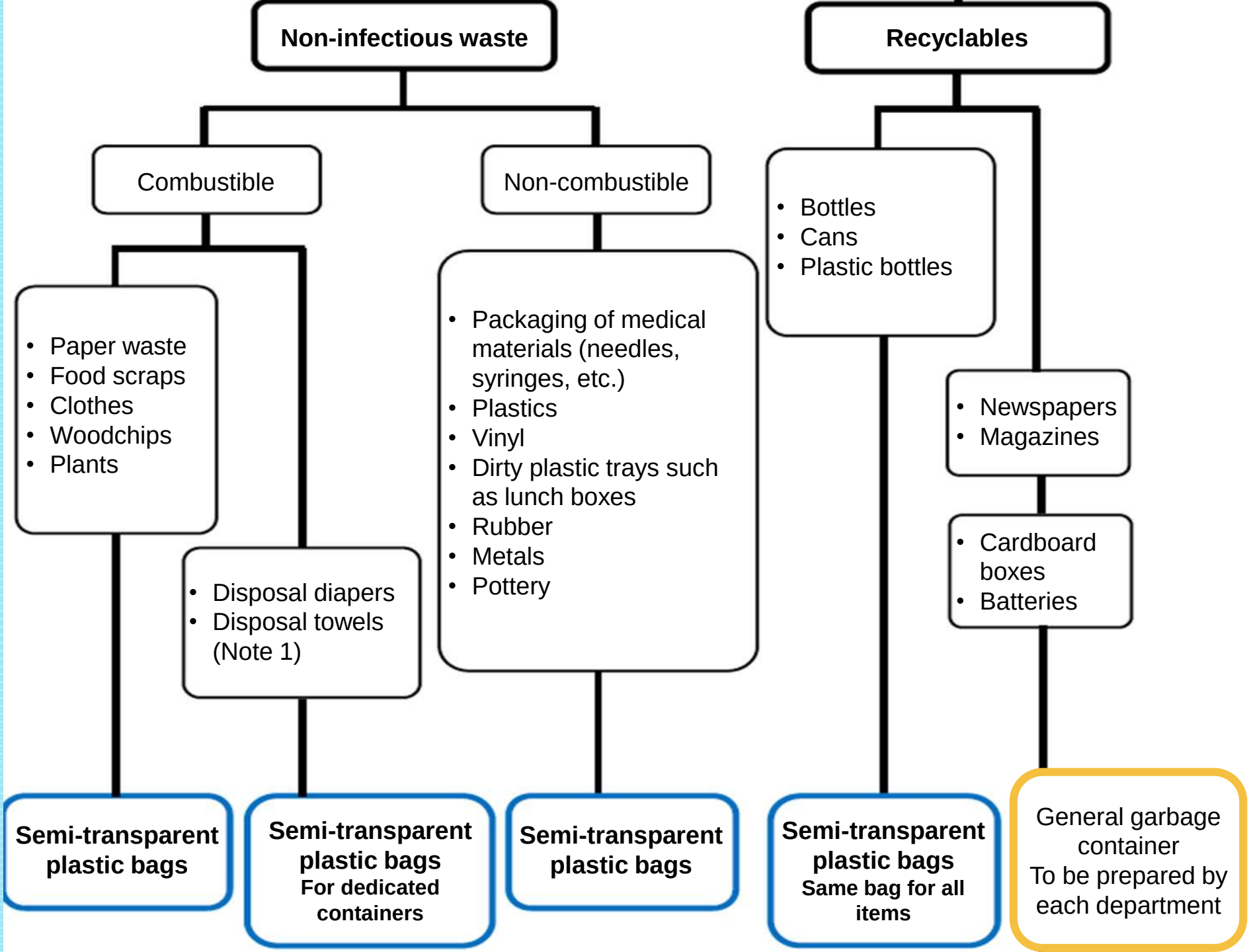
Sealable plastic waste bin

Treatment room/soiled utility room/infectious patient room

- Syringes without needles
- Catheter tips
- IV bags
- Liquid medicine plastic bottles (including disinfectant)
- Drainage supplies that are not sharp
- Empty drainage bags/bottles
- Oxygen mask/cannulas
- Gauze
- Alcohol swabs
- Personal protective equipment
- Part of disposal diapers (Note1)

Cardboard box for infectious waste

* Including private items


Non-infectious waste
Recyclables
Combustible
Non-combustible
• Paper waste
• Food scraps
• Clothes
• Woodchips
• Plants
• Disposal diapers
• Disposal towels (Note 1)
• Packaging of medical materials (needles, syringes, etc.)
• Plastics
• Vinyl
• Dirty plastic trays such as lunch boxes
• Rubber
• Metals
• Pottery
• Bottles
• Cans
• Plastic bottles
• Newspapers
• Magazines
• Cardboard boxes
• Batteries
Semi-transparent plastic bags
Semi-transparent plastic bags
For dedicated containers
Semi-transparent plastic bags
Semi-transparent plastic bags
Same bag for all items
General garbage container
To be prepared by each department

Laws and Regulations Concerning Waste

- **Waste Management and Public Cleansing Law**
- **Manual for Infectious Waste Management under the Waste Management Law**

  … were revised in March 2017, based on the "Basic Guidelines for Strengthening Measures on Emerging Infectious Diseases"

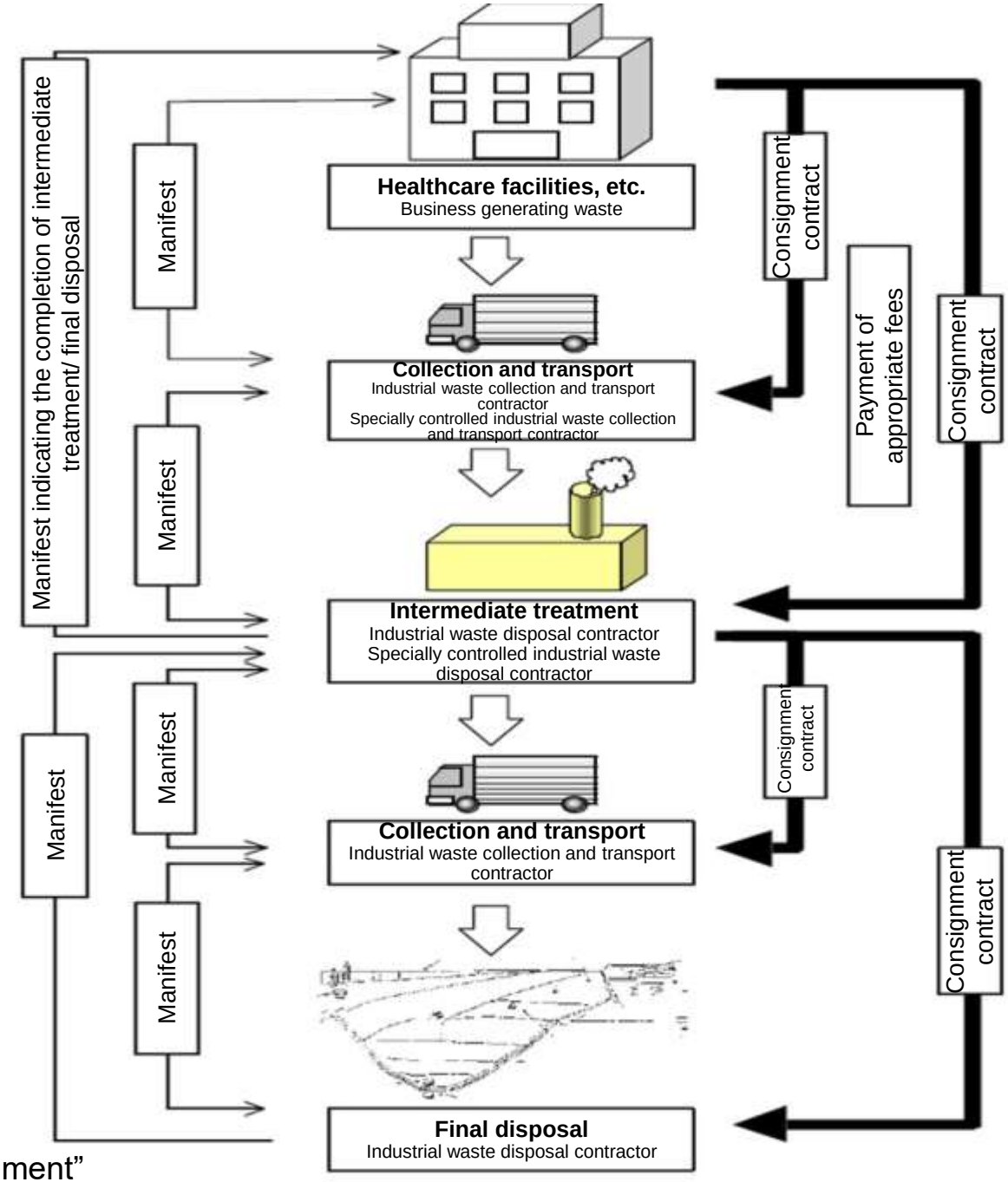
- **Guidelines for Infectious Waste Management**
- **Voluntary Standards for Incineration of Industrial Waste to Reduce the Formation of Dioxins**

<Other>

- Basic Environment Law
- Air Pollution Control Act
- Water Pollution Control Law
- Noise Regulation Law
- Vibration Regulation Law
- Offensive Odor Control Law
- Additional regulations of municipalities
- Agreement on environmental pollution control, etc.

Treatment Flow

- Entrustment of infectious waste management
- Control Manifest of Industrial Waste (Manifest)
- The specially controlled industrial waste manager checks for appropriate management



"Manual for Infectious Waste Management"
Ministry of the Environment, 2017

Matters concerning proper management of waste

(Revisions of the Manual for Infectious Waste Management under the Waste Management Law)

Revised in May 2012 and March 2017 by the Ministry of the Environment

- Strengthening measures to ensure proper management by businesses that are generating waste
  - Stricter manifest system

    Business that is generating waste: Copy of manifest ⇒ “Archive for 5 years”

    Electronic manifest: Notification of disposal completion ⇒ “Record deadline”
  - Creation of a system to notify the outsourcer of an industrial waste disposal contractor

    Disposal contractor: Difficulty in proper management of waste ⇒ “Notify the outsourcer”

- Promoting the creation of good industrial waste disposal contractors, etc.
  - Education to create good industrial waste disposal contractors

    Offer an exception for the valid period of permission: Normally 5 years ⇒ “7 years”

Matters concerning infectious waste management

(Revisions of the Manual for Infectious Waste Management under the Waste Management Law)

Revised in May 2012 and March 2017 by the Ministry of the Environment

- Drafting a disposal plan (reduction of waste, etc.)
  - Drafting/disclosure of a disposal plan by managers of healthcare facilities with industrial waste of 1,000 tons or more or specially controlled industrial waste of 50 tons or more in the previous year
- Specifying the deadline/archiving period for the disposal ledger
- Specifying the document content regarding collection, transport and storage of infectious waste

- "Basic Guidelines for Strengthening Measures on Emerging Infectious Diseases"
  - Strengthening of measures in case of infectious diseases with pandemic potential (Ebola hemorrhagic fever/Zika virus infection/MERS, etc.) in Japan

    * Provide details of the virus and precautions to contractors

Management of Infectious Waste

Packaging/labeling

- Label “infectious waste” on the container
- Sealable, easy-to-store, damage-resistant

Biohazard mark

Red: Liquid
Orange: Solid
Yellow: Sharp

Portable sharps disposal container

Sealable plastic waste bin

Cardboard box for infectious waste

Storage

- Store short period of time before transport
- Store separately from other wastes
- Display a sign indicating infectious waste at the storage site
- Restrict access to the storage site
- Lock the storage chamber

Transport

- Use carts that are impervious/clean/easy to transport

Precautions for handling infectious waste

- Wear personal protective equipment when handling infectious waste
  * Gloves, masks (gowns, aprons, goggles, if necessary)
- Change the container when it's 70% full (Do not overfill it)
- Do not squeeze or compress the container
- Avoid contact with your body during collection/transport
- Do not shift infectious waste into another container
  * Risk of scattering/leakage or injuries from sharps
- Segregate and store from other wastes
- Restrict access to the storage site
  * Lock the storage chamber

Disposal methods of infectious waste

Methods adopted for intermediate treatment/facility or specified by law

- Incineration (temperature of 800°C or more)
- Melting (temperature of 1,200°C or more)
- Sterilization (high-pressure steam sterilization, microwave sterilization)
- Irradiation (gamma ray/electron ray)

Final disposal

- Land disposal

* Incinerator
Waste is incinerated at 900°C for 3 to 4 hours.
Incinerated ash is then converted into slag for recycling

Photo: Tokyo Waterfront Recycle Power

Management of Infectious Waste Generated When Treating Specific Infectious Diseases (New Infectious Diseases/Infectious Diseases Type I, etc.)

To be sealed in a dedicated infectious waste container (sealable, easy-to-store, damage-resistant)
Or, to be sealed in double plastic bags

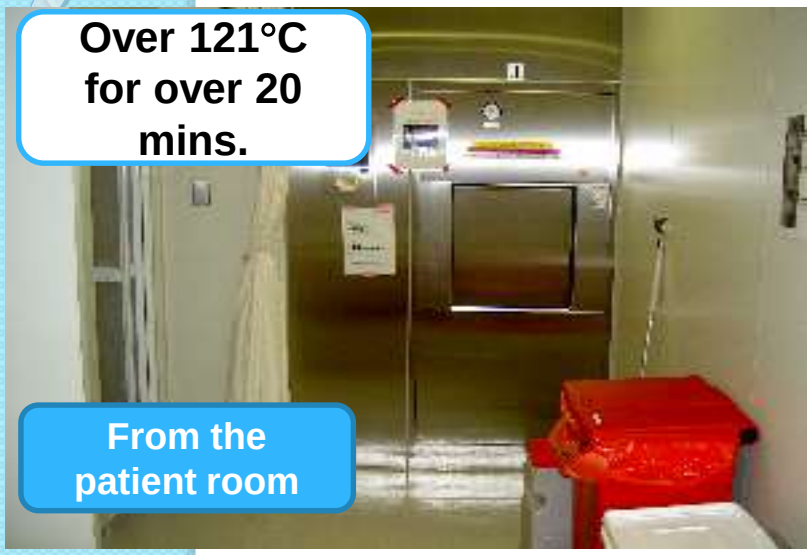
Disinfect the surface of the bag with 0.05 % (500ppm) sodium hypochlorite

Remove from the patient environment (patient room, etc.) and store in the medical waste storage room
⇒ Incineration

Biohazard mark

Red: Liquid
Orange: Solid
Yellow: Sharp

Management of Infectious Waste Generated When Treating Specific Infectious Diseases (New Infectious Diseases/Infectious Diseases Type I, etc.)



Infectious disease ward (for patient rooms)
High-pressure steam sterilization Autoclave

- Be sure to check the temperature of the chamber
- Do not overfill the chamber since the waste needs to be fully steamed
- When containers or bags are sealed, leave a small space to allow for steam between them

Safety Control of Waste Management

- Notification of the Waste Disposal Flowchart
- Periodic check during ward rounds, etc.
- Orientation, education and training

- Measures to be taken in an emergency/ accident
  - In case of sharps injuries, exposure to eyes or membranes
  - In case of waste leakage/spills (disinfection/cleaning of the contaminated area)
  - In case of fire/smoke of waste (initial extinguishment, etc.)
  - Establishment of an emergency communication system

Waste Disposal Flowchart

Safety measures for waste storage sites