Simple chemical disinfection

Treatment by contact to commonly used products for surface disinfection

- Requires shredding of waste
- May introduce strong chemicals into the environment
- Efficiency depends on operational conditions
- Only the surface is disinfected
- Human tissue should usually not be disinfected
- Special disposal required to avoid pollution of the environment
Commercial chemical disinfection systems

Several self-contained, fully automatic systems are available on the market, containing several operations, such as:

- shredding of the waste
- chemical treatment
- encapsulation

Possible advantages:
- Landfilling of residues
- Environmentally friendly
- Easy to operate

Possible disadvantages:
- Requires specialized operators for maintenance
- May be expensive
Wet thermal treatment systems

Method that exposes waste to steam under pressure

*Examples:*
autoclaving, larger off-site treatment facilities

*Characteristics:*
- Low investment and operating costs for simple apparatus
- Environmentally friendly
- Not appropriate for tissue or carcasses
- Trained operatives required
Screw feed technology

Continuous dry thermal process

• Waste is shredded to particle size of 25mm first
• Waste rotates through hot auger:
  ‣ Oil circulates in central shaft at 110-140°
  ‣ 20 minutes retention in system
• Waste Reduction
  ‣ 80% Volume
  ‣ 30% Weight
• Air & water emissions must be treated
Microwave irradiation

- Waste is shredded
- Waste is humidified for homogeneous heating
- Microwaves rapidly heat the waste
- Microbiological inactivation by heat conduction and radiation
- Routine microbiological testing required
- Waste is compacted for landfill
Disposal to land

Not recommended for untreated hazardous waste

Minimum requirements for land disposal:
• No deposit on open dumps
• A degree of management control is exercised
• Engineered avoid leaching to water bodies and retain waste on site
• Rapid burial of HCW on site to isolate from animal or human contact
Landfilling in municipal landfills

In case hazardous health-care waste cannot be treated or disposed elsewhere:

- Within the site, establish a designated place for hazardous HCW
- Limit access to this place
- Bury the waste rapidly to avoid human or animal contact
- Investigate more suitable treatment methods
Burying inside hospital premises

For remote locations and temporary encampments

Apply the following rules:

• Access to the site restricted and controlled
• Site lined with low permeable material
• Only hazardous HCW to be buried
• Each deposit covered with soil
• Groundwater pollution must be avoided
Disposal to land by encapsulation

Fill metal or plastic containers to 3/4 with waste and fill up with:

- plastic foam
- bituminous sand
- cement mortar
- clay material

When dry, seal containers and landfill to restrict access to and reduce mobilization of hazardous substances;

May be used for sharps, chemicals, drugs etc.
Inertization

Method:
• Remove Packaging
• Grind material (Road Roller)
• Add Water Lime and Cement
• Then, either
  • when dry, store or landfill, or
  • when wet, decant into municipal waste in landfill

For chemical and pharmaceutical waste and incinerator ashes