UNIT – V

HAZARDOUS WASTE MANAGEMENT

1. Hazardous Waste

Waste having dangerous properties such as toxicity, flammability, corrosiveness, or reactivity.

2. Sources of Hazardous Waste

Source	Waste
Chemical industries	Toxic sludge
Hospitals	Infectious waste
Electronics	Heavy metals
Nuclear plants	Radioactive waste

3. Characteristics of Hazardous Waste

- Toxicity
- Ignitability
- Corrosiveness
- Reactivity

4. Effects on Environment

Air Pollution

Release of toxic gases.

Water Pollution

Groundwater contamination.

Soil Pollution

Loss of soil fertility.

Health Effects

- Cancer
- Respiratory diseases
- Skin irritation

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5. Risk Assessment

Evaluation of hazards posed by waste.

Steps

1. Hazard identification
2. Exposure assessment
3. Toxicity assessment
4. Risk characterization

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6. Disposal of Hazardous Waste

(a) Secured Landfills

Specially designed landfills with leak protection.

(b) Incineration

High-temperature burning of hazardous waste.

Advantages

- Reduces volume
- Destroys pathogens

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7. Biomedical Waste Disposal

Categories

- Infectious waste
- Sharps
- Pharmaceutical waste

Disposal Methods

- Incineration
- Autoclaving
- Chemical treatment

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8. E-Waste Management

Components of E-Waste

- Lead
- Mercury
- Cadmium

Management Methods

- Recycling
- Material recovery
- Safe disposal

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9. Nuclear Waste Management

Radioactive waste generated from nuclear reactors.

Disposal Methods

- Deep geological disposal
- Shielded storage

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10. Industrial Waste Management

Methods

- Waste minimization

- Recycling
- Treatment
- Safe disposal

Important Short Notes

1. 3R Principle

Reduce

Decrease waste generation.

Reuse

Use materials again.

Recycle

Convert waste into useful products.

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2. Advantages of Proper Solid Waste Management

- Protects environment
- Reduces pollution
- Conserves resources
- Improves public health
- Generates employment

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3. Disadvantages of Improper Waste Management

- Air pollution
- Water contamination
- Disease spread
- Bad odor
- Global warming

Conclusion

Solid Waste Management is essential for maintaining environmental sustainability and public health. Scientific handling, recycling, composting, energy recovery, and proper disposal methods help in minimizing environmental pollution and conserving natural resources. Effective implementation of waste management practices ensures cleaner cities and sustainable development.