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PGY - sem - II

paper CC - IV

unit - V

NAME - Dr. Vandana Kumari

Asst. Professor

Dept. of Chemistry

Nuclear waste Management continued...

[6] Waste Processing 'Pre-treatment'!

- collection
- segregation
- Decontamination
- chemical adjustment

→ Treatment (objectives)

- Volume reduction
- Removal of radionuclides
- change waste composition methods:
 - Compaction
 - Incineration
 - Chemical precipitation
 - Ion exchange
 - Evaporation
 - Membrane separation

→ Conditioning!

Make waste for handling and disposal.

Examples:

- cementation
- Bituminization
- Polymerization
- Immobilization.

[7] Ion Exchange in waste treatment :

- Removes Radioactive Ions from Liquids.
 - Media may be natural (clay, zeolite) or Synthetic.
 - often used as a final polishing step, after filtration.
- spent ion exchange materials become highly radioactive and require careful disposal.

[8] Waste storage :

Definition: safe containment of radioactive waste with the intention of retrieval.

Important points:

- storage is usually temporary.
- Helps reduce radioactivity before disposal.
- Increasing reliance due to delays in repository construction.

Examples of storage facilities:

- Bulgaria
- Finland
- Norway

[9] Importance of Records in Waste Management

Missing facility records can cause:

- safety risks
- Higher costs
- Delays in decommissioning
- Regulatory problems

- Environmental concerns proper documentation is essential.

[10] Optimization of Waste Management:

A good system considers:

- cost
- safety
- Regulations
- Available technology
- Disposal options

What is the Goal?

→ Minimize waste and maximize resource use.

"The generation of radioactive waste should be kept to the minimum practicable in terms of both activity and volume!"

IAEA Principle.