

Strategies for Handling Mixed Biological Waste Streams

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What is Mixed Waste

- Waste that includes a combination of Radioactive, Hazardous and/or Biological components.
 - Nuclear Regulatory Commission
 - Environmental Protection Agency
 - State Regulatory Agencies

Challenges

- Managing multiple hazards
- Regulated by multiple agencies
- Expensive disposal cost
- Finding adequate storage space



Radioactive Biological Waste



Rad/Bio

- Examples
 - Radioactive carcasses
 - Radioactive animal bedding
 - Contaminated blood

Rad/Bio con't

- Allow isotope to decay to background
 - Pros
 - Cost effective
 - Reduces regulatory burden
 - Cons
 - Difficult to find storage space

Rad/Bio con't

- Check to see if carcasses are exempt ($\leq 0.05\text{mCi}$ per gram of animal tissue)
 - Pros
 - Can be handled as biological only
 - Cons
 - Only applies to H-3 and C-14
 - Still need to check A1 and A2 values to determine if it is exempt per DOT

Rad/Bio con't

- Ship the waste out while it's still radioactive
 - Pros
 - Alleviates storage space concerns
 - Cons
 - Very Costly



Biological Hazardous Waste



Bio/Chem

- Examples

- Tissue samples in a chemical preservative
- Chemically contaminated blood

Bio/Chem con't

- Check with a Hazardous waste vendor
 - Pros
 - Usually able to handle the disposal
 - Additional cost is minimal
 - Cons
 - Occasionally, additional certification is required
 - Non-infectious certification
 - Extra handling may be required
 - Deactivation



Radioactive Hazardous Waste



Rad/Chem

- Examples
 - Toluene standards
 - Older scintillation fluids
 - Byproducts from experiments

Rad/Chem con't

- Allow to decay to background
 - Pros
 - Allows for the elimination of the radioactive portion of the waste
 - Reduce regulatory burden
 - Cons
 - Only effective for short lived isotopes
 - Lab or facility storage may be an issue

Rad/Chem con't

- Eliminate hazardous characteristics
 - Pros
 - Allow for the waste to be treated as strictly radioactive
 - Cons
 - Cannot “treat” waste once it’s generated
 - Can be incorporated into the experiment

Rad/Chem con't

- Ship the waste out while it's still radioactive
 - Pros
 - Alleviates storage space concerns
 - Cons
 - Very Costly

Questions?

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