

# Alkaline Hydrolysis as an Effective Method for Carcass Disposal

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## Key Points:

- applicability and operational standards of process
- safety concerns
- sodium vs. potassium hydroxide
- effluent disposal
- non-aqueous solutions
- plastics
- animal bedding decontamination
- cost value vs. incineration
- maintenance considerations

The USDA, APHIS, NVSL has used alkaline hydrolysis to decontaminate and dispose of infected animal carcasses, tissue samples, aqueous liquids, inert surfaces that are hydroxide compatible, and other materials. This process involves specific process parameters of temperature and retention times. For transmissible spongiform encephalopathies, the process is conducted at 150 C in a 1 normal potassium hydroxide (1N KOH) for greater than 6 hours. Carcasses contaminated with viral and bacterial agents have been treated at 121 C in a 1 N KOH for 1 hour or greater. Following the retention time, the resulting effluent is cooled and the pH is lowered to between 9-10 prior to disposal. The 1 N KOH is essential for alkaline hydrolysis to ensure the liquefaction of the organic material therefore ensuring a uniform heat application to all parts of the material being processed. The resulting effluent consists of a nutrient rich liquid and bone residue. The authors will discuss disposal of the effluent by means of land application, dehydration, sanitary sewer, and/or incineration; issues surrounding sodium versus potassium hydroxide; and some unique decontamination methods for nonaqueous solutions, plastics, animal bedding, and other noncarcass materials.