

# Ammonia Mitigation Practices from Animal Feeding Operations

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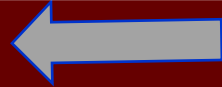
Chesapeake Goal Line 2025: Opportunities for Enhancing  
Agricultural Conservation

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Hunt Valley MD

# Mitigation methods can be classified into two categories.

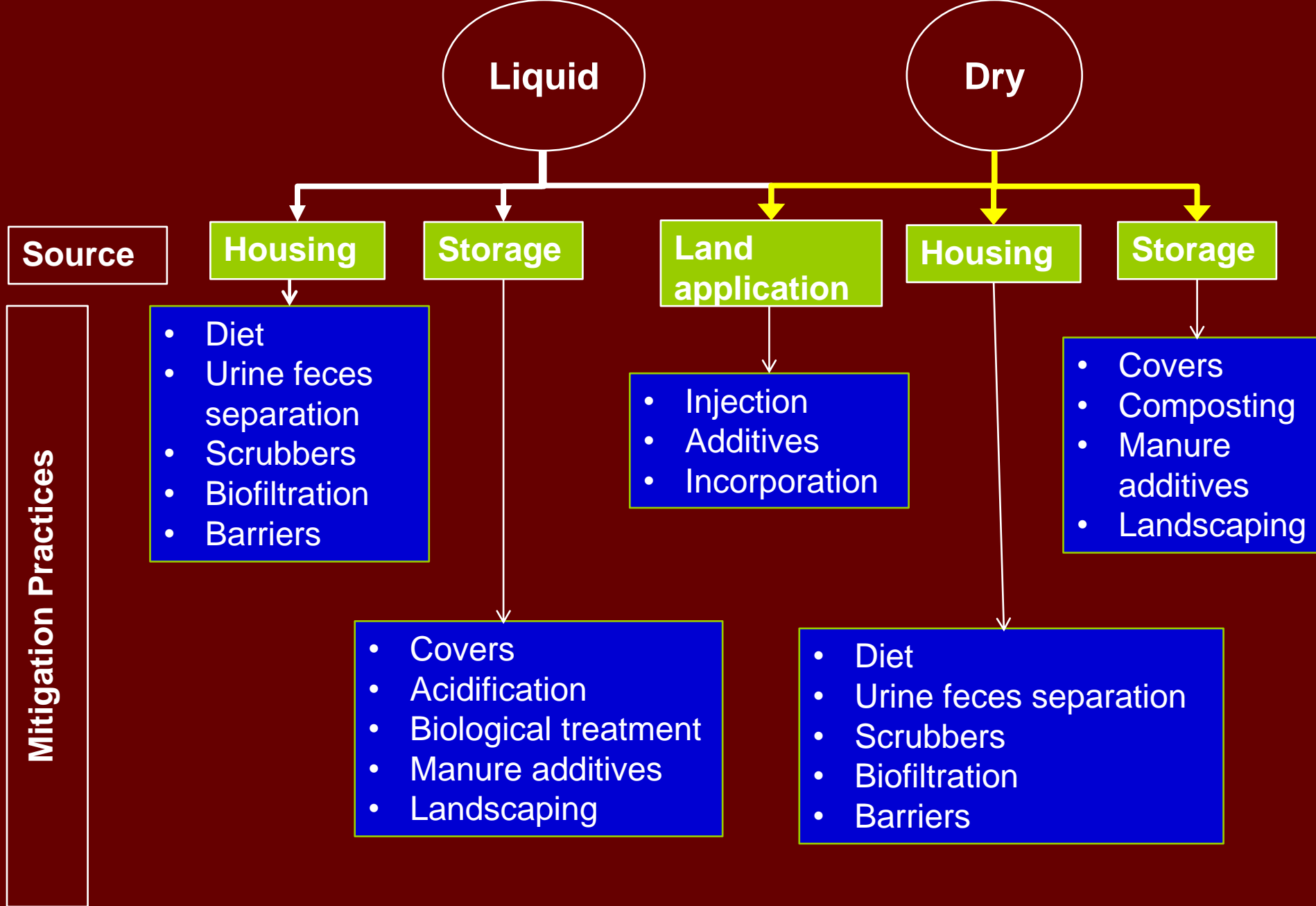
Pre-excretion:  
Diets; feed or  
water additives;  
genetics



Focuses on  
reducing potential  
for emission



Post-excretion:  
Housing,  
manure storage;  
land application



# Housing: Building design and manure management

- Reducing surface area of floors
- Frequent manure removal from building
- Ventilation techniques to create low air velocities above manure surfaces
- Separate urine and feces
- Porous floors to encourage manure drying





# Cleaning building exhaust

- Feasible for mechanically ventilated buildings only



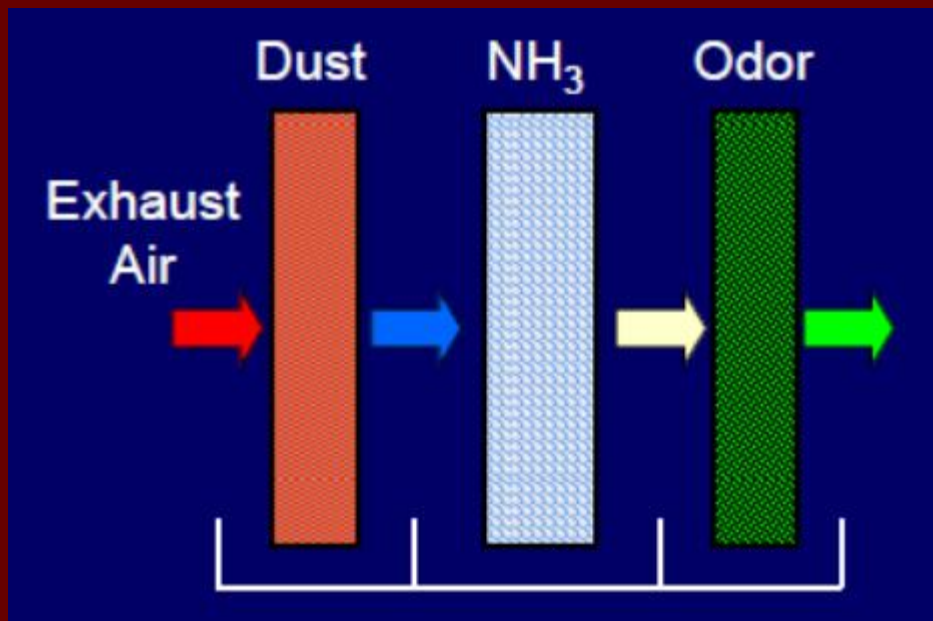
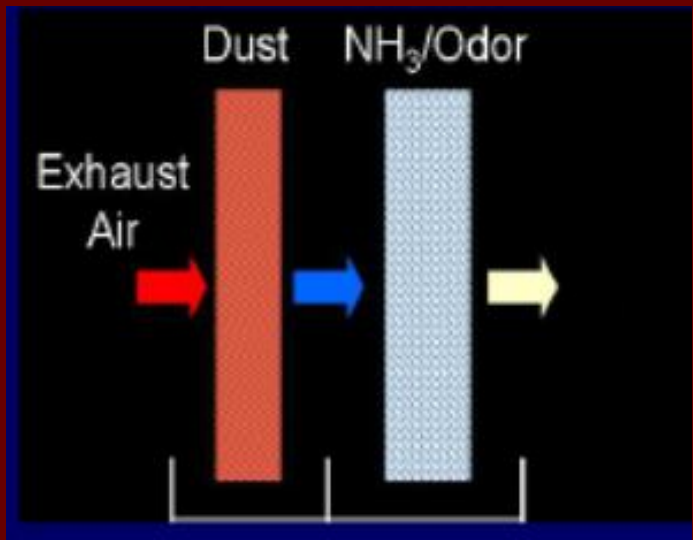
# Cleaning building exhaust

- Biofilter attached to exhaust fans



Source: Gates.

# Cleaning Building Exhaust Air





# Cleaning building exhaust

- Wet Scrubber Moore, USDA, ARS



*Source: Moore 2009*



# Cleaning building exhaust

- Structural and Vegetative barriers planted around the building



*Source: Gates; Burns; Attia.*

# Litter Amendments

## Acid Based

- Alum (Liquid or Dry)
- Poultry Litter Treatment (PLT)
- Poultry Guard
- Klasp

## Adsorption Based

- Zeolite

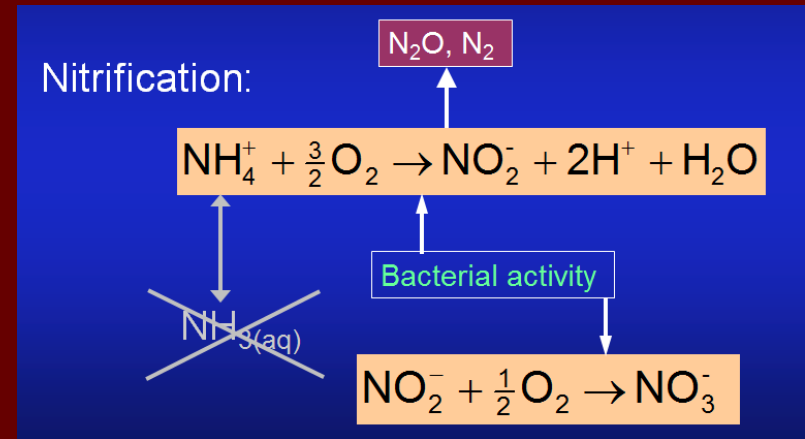
Could these be re-applied during growing cycle to be effective?



*Source: Moore 2009.*

# Nitrification for Liquid manure

- Convert ammonia to non volatile form but still be available in manure for use as a N-source
- Can we borrow from the swine industry?





# Nitrification example for controlling ammonia and odor emissions from swine wastewater



*Source: Vanotti, USDA-ARS , SC.*



# Nitrification – on dairy farms

Bioprocess  
Technologies

Agrimond  
Technology



*Source: FPPC website.*

**Thank You**