NH3 Emissions in the EPA’s Emission Inventory

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EPA’s National Emission Inventory

- A Little History
- National Emission Trends since 1999
- How EPA Intends to Populate 2008 NEI for Animal Husbandry & Fertilizer Application
- Closer Look at Trends since 2002
  - By State, By Region
  - Animal Population & Emissions
  - Emissions from Fertilizer Application
NH3 Emissions ~ All Area Sources

Source: USEPA 1999 NEI v3
Area Sources  4,857,366 tons/yr
Point Sources  87,587 tons/yr
Onroad Sources  266,821 tons/yr
Nonroad Sources  3,130 tons/yr
Estimated ammonium ion deposition, 1998

Sites not pictured:
- AK01 0.2 kg/ha
- AK03 0.1 kg/ha
- PR20 0.8 kg/ha
- VI01 0.2 kg/ha

National Atmospheric Deposition Program/National Trends Network
http://nadp.sws.uiuc.edu
2002 NEI NH3 Emissions

- Animal Husbandry: 51%
- Fertilizer Application: 28%
- Highway Vehicles: 7%
- Fuel Combustion: 2%
- Industrial Processes: 5%
- Other: 8%

Percent of total
Trends of NH3 Emissions (tpy) in NEI

![Graph showing trends of NH3 emissions from livestock and fertilizer. Methodology change is indicated with an arrow.]
Animal Husbandry Estimates in 2008 NEI

- Used CMU Model v3.6 with updated (2007) animal population data
  - County-level animal numbers for 2007 were obtained from the U.S. Department of Agriculture’s 2007 Census of Agriculture report

Fertilizer Application Estimates in 2008 NEI

- Used CMU model v3.6
- Calculated the percent change in county-level fertilizer quantities applied between 2002 and 2007
- Used the percent change in applied fertilizer quantity to grow the fertilizer activity files provided with the CMU Ammonia Model v3.6
- Ran the CMU Ammonia Model to calculate ammonia emissions based on the updated county-level fertilizer quantities.
  - CMU Model has 13 fertilizer types, 1 misc category
  - Semi annual application rates distributed monthly
  - CMU model has a temperature correction
2008 EI Data Available

- EI Data loaded onto Pechan website
  - Result of Work with ERTAC
- Will Load in EIS After Review Period Over
  - Aug 31 2009
Animal Population - 2007

The chart shows the animal population in 2002 and 2007 for various categories, including Beef, Dairy, Ducks, Geese, Goats, Horses, Poultry, Turkeys, Sheep, and Swine. The population in 2007 is notably higher than in 2002 for Poultry, with a significant increase from approximately 500,000,000 in 2002 to over 2,000,000,000 in 2007. Other categories such as Beef, Dairy, Ducks, Geese, Goats, Horses, Turkeys, Sheep, and Swine show much smaller population differences between 2002 and 2007.
Animal Population Minus Poultry
2007 NH3 Emissions by Animal Type
Change in Poultry Population Between 2002 and 2007 Ag Census
Change in Beef Population Between 2002 and 2007 Ag Census
Change in Dairy Cattle Population Between 2002 and 2007 Ag Census

[Bar chart showing changes in dairy cattle population across different states and regions.]
Change in Swine Population Between 2002 and 2007 Ag Census
NH3 Emissions Differences Between 2002 and 2007
Animal Husbandry

Animal Husbandry NH3 Emission Difference:
-5,732 - 500
-500 - 0
0
1 - 5,000
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