

# EPA Guidance on Phosphorus Management & CAFO Technical Standards

Chesapeake Goal Line 2025  
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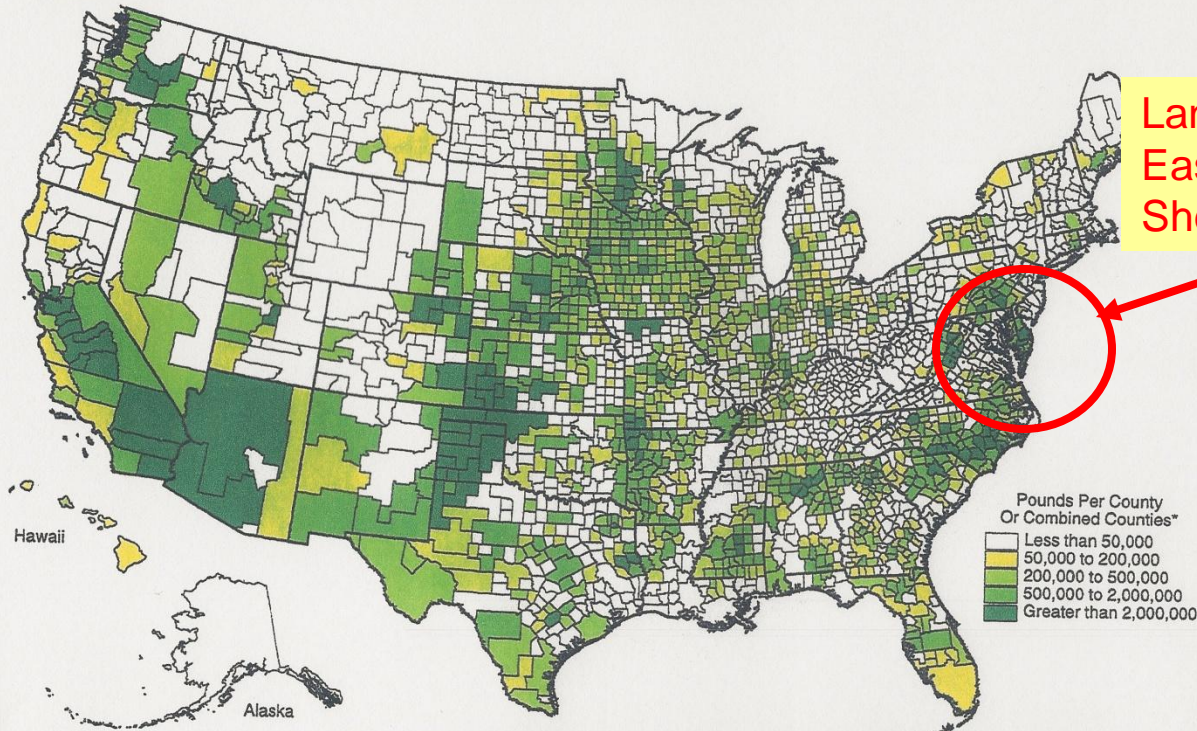
# Outline

- Houston...We have a problem
- P Imbalances and Saturation Levels
- E. O. 502 Implementation Measures
- CAFO Technical Standards
- EPA Future Actions

# Significant Manure P Imbalances in Chesapeake Bay Watershed - USDA Study

USDA 2002 Report

Map 30 Excess manure phosphorus assuming no export of manure from farm, 1997

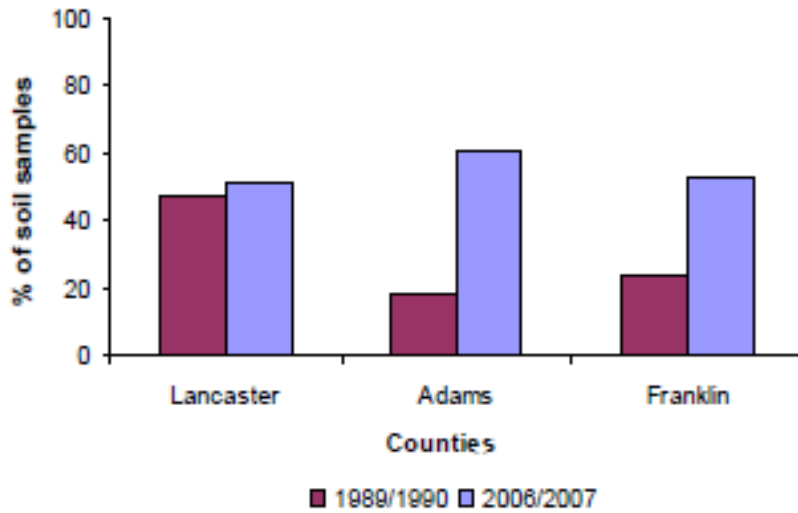


Lancaster region, PA  
Eastern shore, MD/VA/DE  
Shenandoah Valley, VA

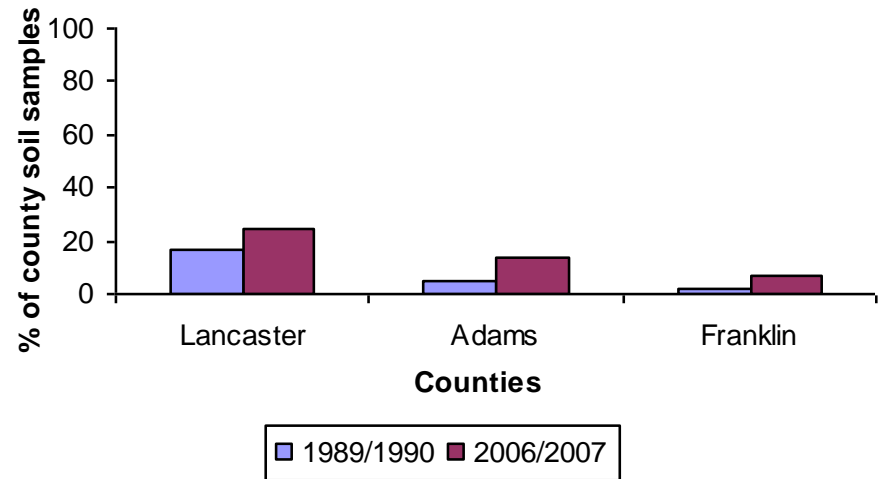
Excess Manure P assuming no export of manure from county, 1997  
Chesapeake Bay Watershed is one of the regions nationwide with the highest excess manure P (greater than 2 million lbs/county).

# P Saturation Levels in Select PA, MD, and VA Counties - Water Stewardship, Inc.

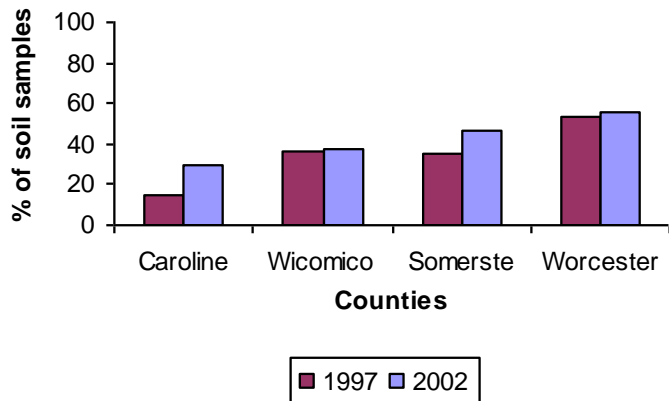
Pennsylvania's Soils that are 15 to 31% P Saturated



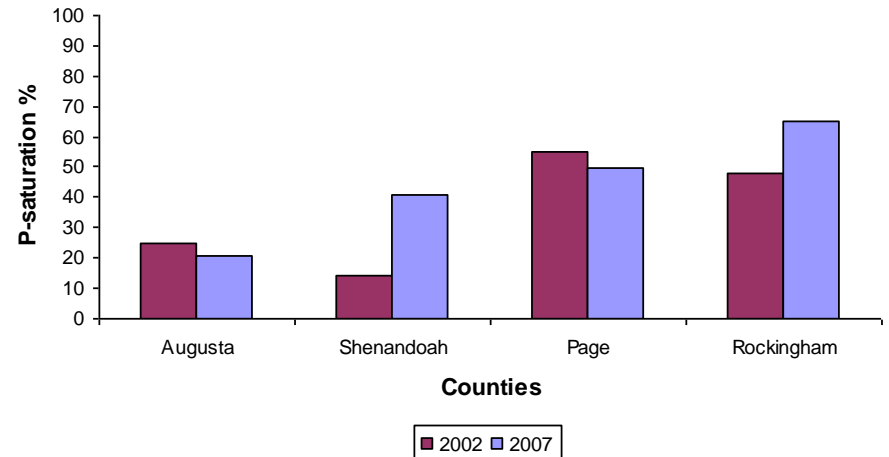
Pennsylvania's Soils that are > 31% P Saturated



Maryland's Soils that are > 31% P-Saturated



The Percent of Virginia's Soils that are > 18% P-saturated



P Imbalance Studies  
P Build Up in Soils  
P Increasing in Runoff

***Federal , State, and Private Studies  
document P Imbalances in the  
Chesapeake Bay Watershed***

***P is building up in Chesapeake Bay Soils  
and is increasing in runoff.***

# E.O. 502 Implementation Measures

## Source Control and Avoidance

- Base P application on P saturation in soils as follows:
  - Don't apply fertilizer that contains P to cropland, grazing or pasture land where soil P saturation percentage is above 20 %.
  - Where application is allowed, apply up to an N-based rate.
  - Implement a soil P monitoring plan to ensure that soil-P levels are staying steady over time.
  - If soil P saturation percentage is increasing, adjust manure applications to P-based rate and use commercial N fertilizer to make up the difference; if levels exceed 20 percent P saturation, no longer apply P.

# E.O. 502 Implementation Measures

- Source Control/Avoidance
  - P saturation approach for P application
  - Feed management
  - Manure storage and transport
  - Livestock exclusion
- In-field Controls
  - Prohibition on manure application to saturated, snow-covered, or frozen ground
  - Manure injection/incorporation
  - Cover crops
  - Soil amendments
- Edge-of-field Trapping and Treatment
  - Buffers

# CAFO Technical Standards

- CWA requires state directors to establish standards for NMPs- technical underpinning for CAFO permit
- Standards must address as nutrients are applied: Amount, Form, Source, Timing, Method – all related to transport of nutrients
- P Site Index plays a critical part
- FIV/PI values are too high – PI doesn't kick in until P levels are very high
- Agriculture community has been lax to make changes in PI resulting in soil P buildup/runoff into waters
- Houston, do we have a “Sleeping P Giant”?

# CAFO Technical Standards

- EPA has notified States of technical standards review
- Evaluating the effectiveness of minimizing N&P transport
- Detailed review of the standard - elements of 412.4 ( c ) (2) and 122.42 (e) (5) included
- Review completion : December 2010

# Future Actions to Address P Imbalance

- More stringent NMP requirements in the new Chesapeake Bay CAFO Rule : Draft-2012
- Updated USDA-NRCS 590 technical standard
- EPA finalizes review on States' CAFO Technical Standards- State/EPA meetings- early 2011