

A Visionary Review of the Land Treatment of Septage

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Presenter: Stephen Rohm, MS, CET

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OBJECTIVES

- Overview septage land application under 40 CFR Part 503
- Clean Water Act 319 and 303 implementations that impact septage land application
- Examine Federal and State nutrient management program's effects on septage land application management
- Examine the USDA, Natural Resources Conservation Service (NRCS) role in septage land treatment management

503s & SEPTAGE

- 1993 - 40 CFR part 503 became the rule governing land treatment of septage and sludge
- Septage land application was allowed to continue provided:
 - Application site was managed under 503.14
 - Vector Attraction Reduction could be demonstrated under 503.33
 - Septage applied at “Agronomic Rate” under 503.13(c)

United States
Environmental Protection
Agency

Office of Wastewater
Enforcement and
Compliance (904-447)

EP/600/3-93/006
September 1993



A Guide to the Federal EPA Rule For Land Application of Domestic Septage to Non-Public Contact Sites

**(Agricultural Land, Forests, and
Reclamation Sites)**

**Discussed in Relationship to Existing State
Rules and Other Federal Regulations of
Septage**

- Achieve pathogen and vector attraction reduction
 - 1. Either directly inject domestic septage into the soil or incorporate it into the soil surface by plowing or disking within six hours after application.
 - 2. Adjust the pH of the domestic septage so that it remains at pH 12 or greater for at least 30 minutes before land applying.
- Apply at agronomic rate for crop nitrogen needs
- Observe site management practices/restrictions
- The applicator must assure that the land owner follows crop harvesting, animal grazing, and site access restrictions





State Response to 503

- Some states or regions within states were lax in oversight of septage land treatment
- Change State regulations or create State regulations that were equal or more stringent than 503s
- Public perception and political climate continually require greater compliance with regulations and appeasement of public concern

503 Implications on Appliers

- Observe Federal 503 regulations
- Observe State and local regulations as well as 503 especially if State or local regulations were more stringent than 503

CLEAN WATER ACT (rev.1987)

- Clean Water Act revision gave broader oversight of regulatory agencies over non-point pollution, particularly agriculture
- Septage land application, at agronomic rates is an agricultural practice
- Septage land treatment is subject to scrutiny by not only EPA but USDA/NRCS as well



Clean Water Act Goals



Part 319 of the CWA

- Non-Point source Pollution
 - Pollution that, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and manmade pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. Loadings of pollutants from NPS enter water bodies via sheet flow, rather than through a pipe, ditch or other conveyance.



Section 319 NPS Controls

- Prevent loss of pollutants (heavy metal compounds, nutrients, bacteria) via runoff from agricultural lands into surface water
- Requires managers of agricultural sites to prevent loss of pollutants via conservation practices and employing best management practices in applying nutrient
- Fostered the creation of nutrient management programs

Clean Water Act Section 303

- USEPA after a series of lawsuits in the late 90's implemented criteria to reduce the total nutrient loading upon surface waters by both point and non-point source runoff
- Creation of Total Maximum Daily Load (TMDL) limitations from all pollution sources to restrict pollution discharge into surface and ground water

What is a TMDL?



A TMDL is the State's formal process to clean up polluted waters

Total
Maximum
Daily
Load

Implementation Plan



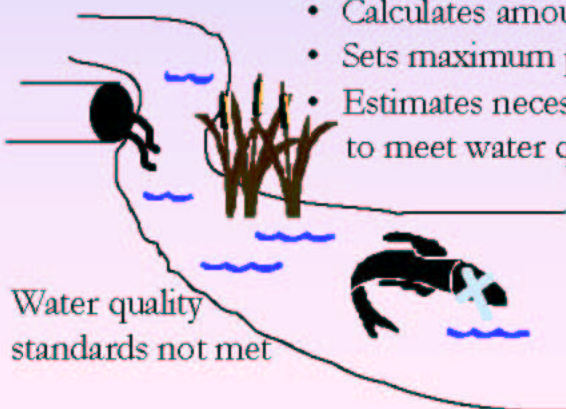
- Identifies permit controls or best management practices needed to make necessary pollutant reductions



Study

Polluted

- Identifies sources of pollution
- Calculates amounts from each source
- Sets maximum pollutant load
- Estimates necessary pollutant reductions to meet water quality standards



Water quality standards not met

Implementation



Monitoring



Clean

Water quality standards met



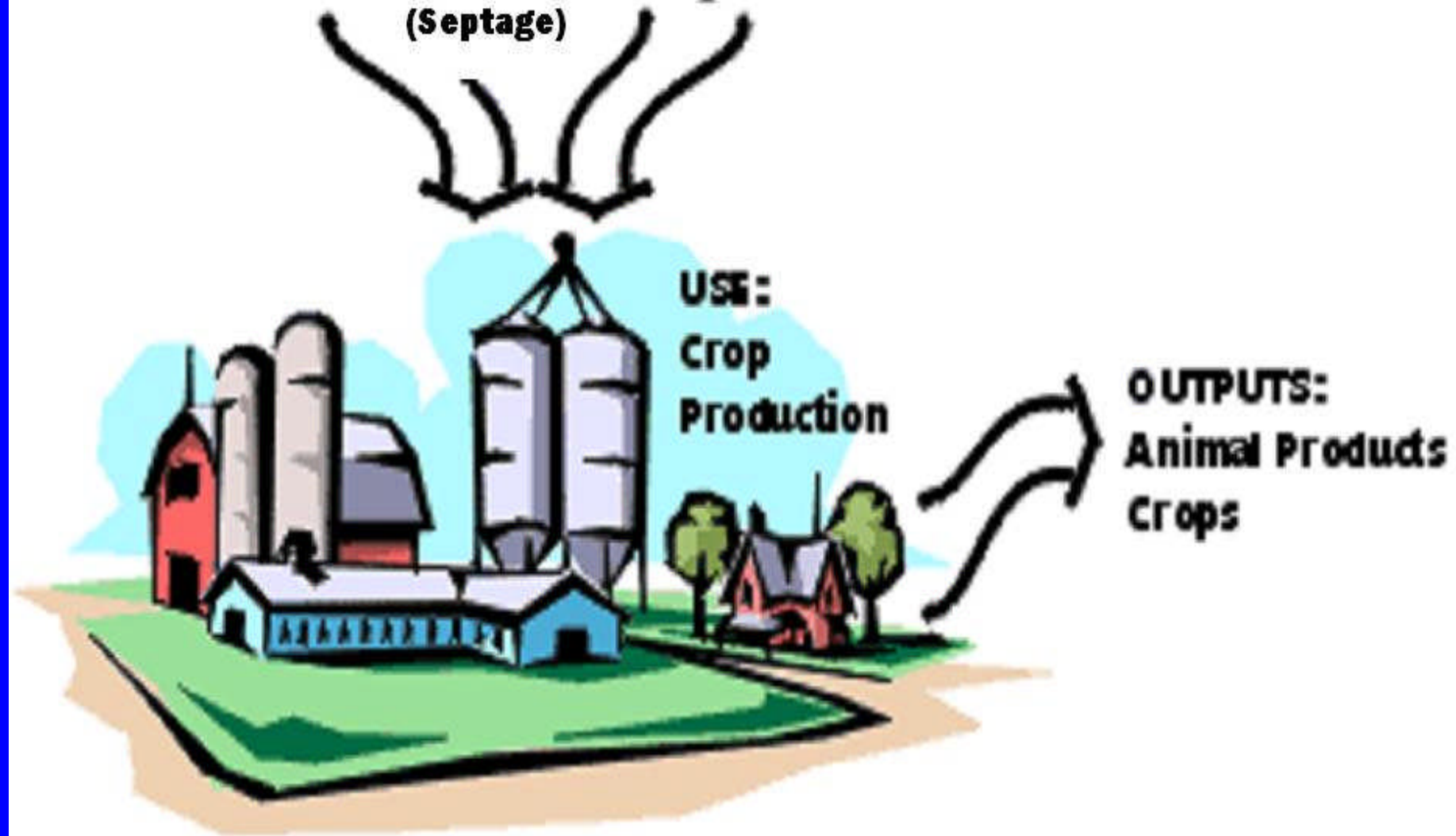
The Process

Nutrient Management Plan

- NRCS developed a handbook for guidance in establishing State Nutrient Management Plans
- Focus of Comprehensive Nutrient Management Plans (CNMP) is animal manures but includes all organic nutrient sources, biosolids and septage included
- States have the authority to regulate nutrient loading to agricultural land and conservation plans to prevent runoff

INPUTS: Feed Fertilizer Legume N Rainfall

(Septage)



**OUTPUTS:
Animal Products
Crops**

**LOSSES: Ammonia volatilization, leaching,
denitrification, runoff and erosion**

CWA Implications on Septage Land Application

- Land applicers may need to implement a CNMP for the use of septage in agriculture
- Application of septage may be limited by nitrogen or phosphorus content in some regions
- Record keeping for application rates, crop planted, crop yield, application adjustments and future crop planned may be required

NRCS and Septage Land Application

- NRCS is the USDA agency that oversees soil and water conservation practices in the USA through State conservation offices/districts
- NRCS oversight has expanded since the EPA required Combined Animal Feeding Operation (CAFO) permits
- NRCS has regulatory authority in cases involving soil and soil nutrient mismanagement

CONSERVATION

**Our Purpose.
Our Passion.**

NRCS

NRCS/COMMUNITY TECHNICAL COMMITTEES

- The USDA/NRCS has taken an active role in ensuring that non-point source, nutrient pollution is controlled from agricultural sites
- Community Technical Committees, composed of professional and non-professional members are consulted by NRCS in examining practices that may impact the environment in a watershed and NRCS responds to the Committee's requests

NRCS Implications on Septage Land Application

- Reflective 503 or CWA State or local regulatory requirements:
 - Septage land application permits
 - Possession of a Nutrient Management Plan
- NRCS may require any number of soil and water conservation plans to be filed as part of the agricultural aspect of septage land application

NRCS Areas of Concern

- Conservation Plan
 - Plan for land use that addresses erosion and soil loss
 - May require injection or no application on highly erodible land
 - May require cover crop during winter
- Storage
 - May expect agricultural type storage



NRCS Concerns (cont.)

- Wetland Determination
 - Federal and State Law prohibits discharge of a pollutant to a wetland, considered surface water
 - A wetland determination may be required when a new application site is considered

NRCS Concerns (cont.)

- Important Farmland
 - Certain farmland entered into FRPP may not be permitted for septage application due to historical, special soil or other restrictive reason
- Frozen Ground Application
 - Application of liquid or solid organic waste (incl. Septage) to frozen ground may be prohibited, despite 503 allowances

DEED OF AGRICULTURAL CONSERVATION EASEMENT

Indiana NRCS

13. *Application of Waste Materials*

The land application and placement on the Property of domestic septic effluent and municipal, commercial or industrial sewage sludge, waste or liquid for agricultural production purposes may be undertaken only if in accordance with applicable law and consistent with a Conservation Plan, a Nutrient Management Plan, or a Comprehensive Nutrient Management Plan.

Summary

- 503 regulations allow for the use of septage in agricultural as a fertilizer provided certain regulations are observed
- Septage land application can be a source of surface and ground water pollution and subject to any restrictions under the Clean Water Act
- Due its agricultural use, septage application must also comply with applicable agriculture regulations and BMPs required by NRCS

Informative Web Sites

- Overview of CWA:
<http://www.epa.gov/r5water/cwa.htm>
- Section 319, Clean Water Act:
<http://www.epa.gov/owow/nps/sec319cwa.html>
- Coastal zone agricultural non- point source management guidelines:
<http://www.epa.gov/owow/nps/MMGI/agricult.html>
- NRCS Nutrient Management Guidelines: <ftp://ftp-fc.sc.egov.usda.gov/NHQ/practice-standards/standards/590.pdf>