40 CFR 503
DOMESTIC SEPTAGE & BIOSOLIDS

PATHOGEN CONTROL
VECTOR ATTRACTION REDUCTION
CERTIFICATION STATEMENT

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Wisconsin DNR
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TODAY’S OVERVIEW

• Domestic Septage → Biosolids
• Domestic Septage → Many Exemptions

TODAY’S FOCUS:

• PATHOGEN & VECTOR ATTRACTION REDUCTION for SEPTAGE
  – Includes: Certification Statement
DEPT. OF JUSTICE (DOJ) MEETING

• Meeting Goals
  – Align Staff/Team
  – Understand Cross-Dept. Issues
  – Evaluate Recent Referrals
    • What can we learn
    • What can we improve

• Process Changes
  – Consider Revocation earlier
  – Pre-referral Meetings
  – Strategic Enforcement Matrix
DEPT. OF JUSTICE (DOJ) MEETING

- **Messaging**
  - DOJ/DNR Joint messaging
  - Report Issuance in place of News Releases
  - Compliance Assistance
  - Outreach
  - Identifying KEY POINTS

- **Program “Take Homes”**
  - Pathogen Control
    - Cropping Restrictions
  - VAR
    - Injection/Incorporation
    - pH Treatment
  - Certification
REGULATORY PROGRAM

- Enforcement
- Education
- Compliance
REGULATORY PROGRAM

3 Legged Stool

– Education through continuing education
– Compliance through audits
– Enforcement through Stepped Enforcement…using as little enforcement as necessary to achieve compliance

GOAL:
Level Playing Field-No unfair advantage
40 CFR 503 Focuses on:
1. Domestic Septage Only
2. Non-Public Contact Sites
3. Manage for Pathogens
4. Manage for Vectors
5. Landowner: crop harvesting, grazing, site access restrictions
6. Certification required for pathogens/vectors
7. Nitrogen concerns
8. Follow State Rules

Wis. Septage program
- Not Delegated
  - ($$ Penalty issue)
- No state is delegated for septage

40 CFR 503
- State may impose more stringent requirements
- 1-7 included into NR 113
PATHOGEN/VECTOR RELATED STORY

- Vector Attraction Reduction
- Pathogen Control
- Certification
Vectors include:

- Flies, mosquitoes, rodents
VECTOR ATTRACTION REDUCTION

1. >38% Reduction in Volatile Solids
2. Demonstrate VAR w/bench scale Anaerobic Digestion
3. Demonstrate VAR w/bench scale Aerobic Digestion
4. Specific Oxygen Uptake Rate (SOUR) for aerobically digested solids
5. Aerobic Process – Composted Sludge
6. Alkali Addition: >12 SU - 2 hrs → 11.5 SU - 22 hrs
7. Drying w/out primary solids >75% TS
8. Drying w/primary solids >90%
9. Injection*
10. Incorporation* — 6 hrs
11. Surface Disposal Site
12. Alkaline Trmt** of domestic septage pH >12 – 30 min

*Acceptable for Septage
**Only for Domestic Septage
VECTOR ATTRACTION REDUCTION

3 METHODS FOR SEPTAGE

- **Injection**: Subsurface placement to 4-12 inches deep. No ponding after 1 hr.

- **Incorporation**: Surface Spread then incorporate w/topsoil to min. depth of 4” w/disc or plow within 6 hrs.

- **pH Treatment**: Add lime to septage, raise septage to pH of 12 or higher for 30 minutes with no additional lime.
INJECTION

4 inches deep. No ponding after 1 hr.
INCORPORATION

• Surface spread then incorporate w/topsoil to min. depth of 4” w/disc or plow within 6 hrs.
ALKALI ADDITION

- Alkali Addition: Raise pH of septage to 12 by alkali addition & w/out more alkali remain at pH of 12 or higher for 30 minutes.

- Typical Alkali:
  - Quick lime
  - Hydrated lime
PATHOGEN CONTROL

- Example Pathogens
  - Bacteria
  - Viruses
  - Ova
BIOSOLIDS PATHOGEN REQ

- TREATMENT PROCESS
- ORGANISM DENSITY

- **CLASS A** Requires BOTH
- **CLASS B** Requires only one
  - Additional CLASS B RESTRICTIONS
    - Crops
    - Grazing
    - Access
CLASS A TREATMENT PROCESSES

ALT 1: THERMAL TREATMENT: TEMP/TIME based on % Solids

ALT 2: HIGH pH-HIGH TEMP

ALT 3: OTHER PROCESS
Prior test for enteric virus/ova

ALT 4: UNKNOWN PROCESS-Post test for enteric virus/ova

ALT 5: USE PFRP (Processes to Further Reduce Pathogens--See Next Slide)

ALT 6: PROCESS EQUIV TO PFRP
CLASS A: ALT 5 - PFRPs

- Composting
- Heat Drying
  - 80°C
  - ≤10% moisture
- Heat Treatment
  - Liquid Sludge to 180°C for 30 Min
- Thermophilic Aerobic Digestion
  - Aerobic Cond: 10 days 55°C to 60°C
- Irradiate w/ beta rays
- Irradiate w/ gamma rays
- Pasteurization
  - >70°C for 30+ min
CLASS B TREATMENT PROCESSES

• **ALT 1:** Monitor Indicator Organisms

• **ALT 2:** Process to Significantly Reduce Pathogens (PSRP)

• **ALT 3:** Process Equivalent to PSRP

CLASS B: ALT 2 Options

• Aerobic Digestion

• Air Drying

• Anaerobic Digestion

• Composting

• Lime Stabilization

CLASS B SITE RESTRICTIONS ARE REQUIRED
CLASS B: SEPTAGE

DOMESTIC SEPTAGE

• EXEMPTIONS
  – NO Pathogen Treatment Process Required
  – No Pathogen Organism Testing Required

• NO EXEMPTION — CLASS B: Site Restrictions
CLASS B PATHOGEN SITE RESTRICTIONS

Two Alternatives for Pathogen Control

- **Alternative 1**: Biosolids/Domestic Septage **WITHOUT** Additional Treatment (i.e., pH adjustment) Applied to Non-Public Contact Sites
- **Alternative 2**: Biosolids/Domestic Septage **WITH** Additional Treatment (i.e, pH adjustment) Applied to Non-Public Contact Sites

- **Criteria** include:
  - Crop Restrictions
  - Grazing Restrictions
  - Site Restrictions
PATHOGEN CONTROL

14 Month Crop Restrictions

Alt 1 (no lime):

i) Food crops with harvested parts that touch the septage/soil mixture and are totally above ground shall not be harvested for 14 months after application of septage

Alt 2 (lime):

i) SAME
PATHOGEN CONTROL
38/20 Month Crop Restrictions

Alternative 1:
ii) Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of domestic septage.

Alternative 2:
ii) a. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of domestic septage when the domestic septage remains on the land for four months or longer prior to incorporation.
Alternative 1:

Alternative 2:

ii) b) Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of domestic septage when the domestic septage remains on the land for less than four months prior to incorporation.
PATHOGEN CONTROL
Crop Restrictions

Alternative 1:
c) Animal feed, fiber, and those food crops that do not touch the soil surface shall not be harvested for 30 days after application of the domestic septage.

Alternative 2: (same)
c) Animal feed, fiber, and those food crops that do not touch the soil surface shall not be harvested for 30 days after application of the domestic septage.
CROPS IMPACTED BY SITE RESTRICTIONS

Harvested Parts That:

Usually** DO NOT TOUCH the Soil/Biosolids Mixture:

- Apples
- Corn
- Wheat
- Oats
- Soybeans
CROPS IMPACTED BY SITE RESTRICTIONS

Harvested Parts That:

Usually** TOUCH the Soil/Biosolids Mixture:

- Melons
- Strawberries
- Tomatoes
- Cucumbers
- Cabbage
- Squash
CROPS IMPACTED BY SITE RESTRICTIONS

Harvested Parts That:

Are **Below** the Soil/Biosolids Mixture:

- Potatoes
- Onions
- Radishes
- Beets
- Carrots
PATHOGEN CONTROL
Crop Restrictions

Alternative 1:

d) Turf grown on land where domestic septage is applied shall not be harvested for one year after application of the domestic septage when the harvested turf is placed on either a lawn or land with a high potential for public exposure, unless otherwise specified by the permitting authority.

Alternative 2: (same)
PATHOGEN CONTROL
Grazing Restrictions

Alternative 1:
• Animals shall not be allowed to graze on the land for 30 days after application of domestic septage

Alternative 2:
• Same-40 CFR 503
• None-NR 113
PATHOGEN CONTROL

Site Restrictions

PUBLIC SITES
Restricted for 1 year.
- Golf Courses
- Ball Fields
- Playgrounds
- Parks
- Residential/Commercial Yards
PATHOGEN CONTROL
Site Restrictions

Alternative 1:
• Public access to land with a low potential for public exposure shall be restricted for 30 days after application of domestic septage.
  (Examples of restricted access include:
  – remoteness of site,
  – posting with no trespassing signs, and/or
  – simple fencing.)

Alternative 2:
• 40 CFR 503—30 Days
• NR 113: None
RECORDS

Tell the story....
Summarize activities...
Details...
Describe the goings on...
Communicates...
EPA-RECORDKEEPING SUMMARY*

- Location of Disposal
- Acres applied to
- Date/Time
- Nitrogen Requirement
  - Crop needed
  - Expected crop yield
- Gallons/Volume applied-annual

- Certification
- Pathogen Control Description (each batch land applied)
- Vector Attraction Reduction (each batch land applied)

*Additional items required for Biosolids...those listed show Septage

Source: EPA Doc #832-B-92-005
LOGS

- Logs ≠ Records
- Records include Logs
- Example Log
- Rest of the story?

Records for Vector Attraction Reduction

<table>
<thead>
<tr>
<th>Initial pH</th>
<th>≥ 30 Min. pH</th>
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<tr>
<td>Time</td>
<td>pH</td>
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<tr>
<td>Temp</td>
<td>Adj. pH</td>
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VAR**

- INJ
- INC
- pH

INJ/INC Time

Service Location

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Owner name Description</th>
<th>Physical Address City/Town/State</th>
<th>Gallons Waste</th>
<th>Service Location</th>
<th>Records for Vector Attraction Reduction</th>
<th>Disposal Location</th>
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DNR RECORD KEEPING (excerpt)

• NR 113.11 (3)(c)
  – 3. Daily books/invoice records shall at a minimum
    • a.-b. Service: Name/Location & Date/Time
    • c.-d. System: Waste type/description & Gallons
    • e. Disposal: location
    • f. Disposal: date & time
    • g. Written Certification Statement
    • h. Description: Pathogen Reduction
    • i. Description: Vector Attraction Reduction
Convey to Farmer

- Nitrogen conveyed to Farmer?
- Crop Restrictions conveyed to Farmer?
- Access Restrictions?
- ???

Gather from Farmer

- Planned Crop?
- Harvest Related
  - Actual Crop
  - Yield
  - Dates (for crop year)
- Other Nutrients Applied?
- ???

MISSING INFORMATION
RECORD KEEPING

Standard Operating Procedures (SOPs)

• How do you do it?
• How do you expect it to be done?
• How often do you discuss it?
“I certify, under penalty of law, that the [insert each of the following requirements are met: Class A or Class B pathogen requirements, vector attraction reduction requirements, management practices, site restrictions, requirements to obtain information] in [insert appropriate section number/s in Part 503 for each requirement] have/have not been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information used to determine that the requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.”

Signed: __________________________ Dated: ________
“I certify, under penalty of law, that the information verifying compliance with [insert either Class A pathogen requirements in s. NR 204.07(6)(a) or Class B pathogen requirements in s. NR 204.07(6)(b)] and the vector attraction reduction requirement in [insert one of the vector attraction reduction requirements in s. NR 204.07(a) to (k)], has been prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.”

Signed: __________________________ Dated: __________
CERT. STATEMENT -- NR 113

“I certify, under penalty of law, that the information that will be used to determine compliance with the pathogen requirements [insert either NR 113.07 (3) (d) 1. a. or NR 113.07 (3) (d) 1. b.] and the vector attraction reduction requirement in [insert NR. 113.07 (3) (e) 1., NR 113.07 (3) (e) 2., or NR 113.07 (3) (e) 3.] has been prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate this information. I am aware that there are significant penalties for false certification.”

Signed: __________________________ Dated: __________
ANNUAL REPORTS

• Only show part of the story...

• Recordkeeping
  – 5 years
  – Available to:
    • DNR
    • EPA
RECORDS

Tell the story....
Summarize activities...
Details...
Describe the goings on...
Communicates...
REDUCE THE SPOTLIGHT

• Neighbors
  – Sensitive to Neighbors Concerns

• Community Perception
  – Odors
  – Litter
TELLING THE STORY (& Recording it)

• Standard Operating Procedures (SOPs)
• Daily Activities & Entries
• Annual/Seasonal Activities & Communication
• Other?

• Collecting Farmer Info.
  – Crop Harvesting
    • Actual Crop
    • Yield
• Septage Info to Farmer
  – Harvesting Restrictions
    • Food Crop
    • Feed Crop
    • Grazing/Turf
  – Access
  – Nutrient Additions
YOUR RESPONSIBILITIES

• Ethics
• Public Health & Safety
• Farmer
• Consumer

• License/Certification
• Laws/Rules
• Liability
• Family
• Employees
• Neighbors
• Community
• Others
Thank you!