DNR Nutrient Management Regulations

Spring Biosolids Symposium
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Wisconsin Nutrient Management Performance Standards

**NR 151 (no permit farms) - >11,000 farms**
- NRCS 590 focus
- Mechanical manure applications
- Pasture requirements

**NR 243 (permit farms) - 250 farms**
- NRCS 590 + 243 requirements
- Mechanical manure applications
NR 151 – Performance Standards

- Applies to Crop producers & livestock operations with <1000 AU’s
- County ordinances, FPP require NR 151 compliance – **not uniform across state**

NR151 works in tandem with ATCP 50

- ATCP 50 defines practices to meet NR 151 standards
- Requires Nutrient Management Plan – NRCS 590
- NRCS 590 requires P management **when manure or organic by-products are applied to field**
NR 151 – Performance Standards

- **Nutrient Management Plans – ATCP 50**
  - account for all nutrient sources
  - right source, time, rate, place – avoid loss
  - P and N management

- **Reduce cropland soil erosion to T**

- **Clean water diversions**

- **Prohibitions**
  - No winter application of nutrients in SWQMA and on steep slopes
  - No stacking manure in SWQMA
  - No unlimited animal access to streams
  - No direct runoff from feedlots to streams
NR 151 – P Management

- **Soil Testing**
  - how much P is in the soil? > 35 ppm P – UW recs

- **Nutrient testing and budgeting**
  - how much P in manure, biosolids, fertilizers?
  - how much P applied?
  - how much P removed by crop?

- **Follow P Index OR Soil Test P strategy**
  - Rotation PI = 6 or less
  - P applications limited on fields > 50 ppm P to crop removal or 25% less crop removal
NR 151 – P Management

P management is similar to weight loss:

- Burn more calories than you eat, lose weight
- Eat more than you burn, gain weight

**Over a crop rotation (up to 8 years):**

- Apply more P than crops need, gain P
- Apply less P than crops need, lose P

**What is optimum P level for fields?**

- 18-26 ppm P

**What is too much P for field?**

- above 35 ppm P
NR 243
CAFO farms
NR 243 – Performance Standards

Applies to:

Livestock operations with 1,000 Animal Units (AUs) or more = Concentrated Animal Feeding Operation (CAFO)

- DNR water quality protection permit (NR 243/WPDES)
- ~250 permitted operations with ≥ 1000 AU’s
  - Dairy, beef, poultry, swine
- Focus on CAFO manure + process wastewater storage and land application
NR 243 – Performance Standards

CAFO NM requirements are like two cake layers:

- NRCS 590 criteria (one layer)
- NR 243 criteria (second layer)
- NR 243 is more restrictive than 590 for:
  - P management
  - Nutrient credits
  - Setbacks from surface waters, wetlands, and wells
  - Shallow groundwater and bedrock soils
  - Winter spreading
  - 180 days liquid manure storage and manure stacking
  - Record Keeping and accepting Industrial Waste – NR 214
NR 243 - P Management

Account for all P sources applied, include manure credits

CAFO’s must select one of following methods on a field-by-field basis:

- Soil test phosphorus method
- Wisconsin Phosphorus Index (P-Index)

Additional restrictions for fields at 100 ppm P or more
NR 243 - Phosphorus Management

**Fields > 100 ppm P:**

- Must use Wisconsin Phosphorus Index over 4 year time period
- PI must be 6 or less. If > 6, no manure allowed.
- P manure applications cannot be > 50% crop P removal over 4 year time period

**Example:** Crop P removal calculated @ 120lbs over 4 yrs. Manure P applied must be 60lbs or less for same 4 year period.

More aggressive P management than NR 151
CAFO Manure Spreading Methods

- **Injection or Incorporation** - tractors
- **Surface apply** – tankers/trucks
- **Irrigation** – center pivot or hose reel ‘gun’

Each method has different setback requirements

- **Road Weight Limits**
- **Custom Haulers** apply nearly 70% of liquid manure in state, includes CAFOs
CAFO NMP Challenges

Applying large volumes of manure in short time periods/windows

- Proximity to manure pit(s)
- Weather/Timing restrictions (fields too wet, frozen, custom hauler availability)
- Cropping limitations (grower wants corn vs. other crop)
- Setbacks and other field restrictions
  - P management, shallow groundwater or bedrock
- Road weight limits
- Increasing scrutiny from public who does not like CAFO size farms
- Recordkeeping and tracking nutrient sources applied
CAFO NMP Solutions

- Maintain large land base = flexibility for field selection
- Alter crop rotations for more double crops, forage crops – less spring (preplant) and fall (post harvest) applications
- Digesters and Separators
  - Separate P to solids, apply to fields with low P
  - Apply same or greater liquid manure volumes due to less P on high P fields
- Irrigation
- Increase storage capacity
P Management for Biosolids

Maintain large land base; limit biosolid application frequency

Soil Testing
- how much P is in the soil?
- Prioritize low P fields for application

Nutrient testing and budgeting – SNAP+
- how much P in biosolids, fertilizers or manure?
- how much total P applied?
- how much P removed by crop?

Track applications and crop rotation – SNAP+
- Apply more P than crops need, gain P
- Apply less P than crops need, lose P
Contact Information

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SNAP+ software:
http://snapplus.wisc.edu/