

DNR

Nutrient Management Regulations

Spring Biosolids Symposium

March 2014

Andrew Craig

DNR Nutrient Management Specialist

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

Andrew Craig, DNR (608) 267-7695

andrew.craig@wisconsin.gov

SNAP+ software:

<http://snapplus.wisc.edu/>