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**C O N C E N T R A T E D   A N I M A L   F E E D I N G  
O P E R A T I O N   P R O P O S E D   R U L E**

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## Executive Summary of the Report

The USEPA's review and update of the National Pollutant Discharge Elimination System Permit Regulation and the Effluent Limitation Guidelines and Standards for Concentrated Animal Feeding Operations seeks to protect water quality. Our objective in submitting these comments is to help ensure that the final rule is based on sound science and proven agricultural practices.

Within the proposed USEPA rules are a large number of options and proposals that will have implications on the costs and feasibility of phosphorus-based manure management. Will the USEPA insist on annual phosphorus limits or allow 5-year rotation limits? Will lagoon operations be required to agitate lagoons to ensure land application of all excreted phosphorus? The many potential outcomes of the phosphorus rule make a straightforward, concise analysis difficult.

The USEPA, in their analysis of the proposed rule, focused primarily on the costs associated with the proposed rule. In our analysis of the rule, we determine that feasibility issues, not costs, are the most obvious barriers to a farmer implementing its requirements.

The USEPA also addressed the impact of proposed rules on components of a concentrated animal feeding operation but frequently failed to address the effect of component changes throughout the whole swine production system.

Our analysis includes an extensive evaluation of the impacts of implementing phosphorus limits and "zero discharge" on swine operations within the midwestern, northeastern, southeastern, and western regions of the U.S., as defined by the USEPA. The three most important recommendations are:

### **Recommendation 1. The USEPA adopt 5-year rotation phosphorus limits on manure applications, not annual phosphorus limits.**

We propose replacing the existing wording in FR 3142, 412.37 (a)(2) *i* and *ii* with the following text:

"Multi-year phosphorus applications are permissible as long as they do not exceed the nitrogen limit for the current crop year. The phosphorus store should not exceed 5 years of crop need if there is a high or very high risk of phosphorus loss."

### **Recommendation 2. The USEPA must clearly define design criteria and provide upset and bypass provisions in permits for open manure storages.**

**Recommendation 3. The USEPA needs to reconsider its economic study of the proposed rule to include the following:**

- All costs associated with adopting the rule are considered costs to the CAFO – none are the responsibility of non-CAFO recipients of manure.
- Include an estimate of the impact of compliance on liquidity.
- Recognize the difference in gross revenue and ability to pay between contract producers and independent producers.

We also respectfully submit the following observations and recommendations:

**Annual phosphorus limits are infeasible for most swine slurry operations.**

- Annual phosphorus limits are below those feasible for currently available injection equipment.
- Annual limits were infeasible with any method of application on 30% of the operations.
- Most other operations would need to modify equipment to reduce discharge rate, maximize surface application swath width and maximize travel speed to attain the desired rate. (Chapter 3 and 4)

**Phosphorus limits increase land requirements for land application of manure.**

- Phosphorus limits increased land requirements per animal unit from 0.3 to 1.0 on slurry based operations in our study.
- Phosphorus limits increased land requirements per animal unit from 0.09 to 0.13 for unagitated lagoon effluent and to 1.3 for agitated lagoon effluent. (Chapter 4)

**Most unagitated lagoon operations moving to a phosphorus rule will experience minor impacts in the short term.**

- Unagitated lagoon effluent has a relatively high N:P<sub>2</sub>O<sub>5</sub> ratio because most of the phosphorus is retained in the sludge at the bottom of the lagoon (Chapter 2).
- Fourteen of 16 analyzed farms had ample controlled acres for the increased land requirements. The exceptions were both in North Carolina. (Chapter 4)

**Agitating lagoons makes phosphorus-based applications infeasible with irrigation technology.**

- These operations would need to adopt dragline injection or tanker technologies to spread manure. (Chapter 4)

**Most slurry operations and some lagoon operations would be unable to rely on a single season land application of manure.**

- Average storage capacity of the analyzed farms was 7 months for slurry systems and 9 months for lagoons.
- Average duration of land application time already exceeds 50% of the spring field work days for corn among slurry operations.
- Operations that inject lagoon effluent on row crop land face the same time issues as slurry operations. (Chapter 4)

**Zero-discharge creates a design dilemma for any existing or new open manure storage structure.**

- Without a design criteria (e.g. 24-hour, 25-day storm) it is impossible for an engineer to design or certify any structure that captures rainfall or runoff.
- Open structures require an upset and bypass provision in the permit.
- We encourage the USEPA to consider more stringent design storm criteria to address concerns with open storages. (Chapter 5).

**Technical challenges limiting the use of impermeable covers include;**

- Storm water collection and disposal
- Gas collection and utilization/disposal
- Maintaining structural integrity
- Impact of freezing conditions (Chapter 5)

**We predict that the EPA's economic assessment of farms in the moderate to stress categories is underestimated.**

- We estimate 20% of operations will be in the moderate or stress category, as defined by the USEPA, from implementing only a rotational phosphorus limit.
- We estimate 100% of operations implementing both a zero discharge requirement and a rotational phosphorus rule will be in the moderate or stress categories.
- Table 10-6 of the Preamble (Federal Register, p 3090) reports that the EPA estimates that 20% of the hog producers will be in the moderate to stress categories. Their estimate includes those who will be financially stressed by implementing an annual phosphorus rule and by attaining zero discharge.

**As an alternative to an absolute zero discharge we evaluated the economic impact of additional storage options.**

- Additional storage options do not meet the zero discharge rule as proposed and will provide additional protection to the environment by reducing the likelihood of overflow.
- Increasing storage capacity to 18 months resulted in only 50% of modeled farms being in the EPA's Moderate to Financial Stress 3 categories.
- Adding an emergency storage cell designed to contain a 10-year, 10-day frequency storm plus 30 days of manure and facility wastewater production resulted in all modeled farms being in the EPA's Affordable 1 category.

**Improving water management by implementing water reduction methods will not appreciably reduce effluent volumes to open storages.**

- Compared to rainwater inputs, wash water is a small percentage of the total water volume of most operations.
- Reduced water increases nutrient concentration, which will affect the feasibility of phosphorus application rates. (Chapters 3, 4 and 5)

**The USEPA underestimated the costs to the CAFO of writing, implementing and maintaining a nutrient management plan.**

- The USEPA assumed nutrient management plan costs were \$5 per acre and record keeping costs were fixed at \$880, independent of operation size.
- We anticipate combined costs for nutrient management and record keeping will be close to \$10 per acre on all land receiving manure, and that record keeping costs will increase on larger operations.
- We recommend that the USEPA increase the estimated costs of developing, managing and updating a nutrient management plan and assume that the CAFO operator will incur those costs on all controlled and uncontrolled acres. (Chapter 4)

**Regional differences are much more significant than recognized in the USEPA economic analysis.**

- North Carolina and Pennsylvania manure storage, land application techniques and cropping systems have nothing in common, yet the USEPA considers them a single region (Chapter 4).
- Differences in land productivity, crop selection and manure characteristics can result in 0 to 10 times more land required for phosphorus-based applications.

**The USEPA failed to recognize the financial differences between contract producers and independent producers.**

- Gross revenue per animal unit for independent producers is significantly different than that for contract producers.
- The impact of environmental compliance is significantly more costly for contract producers than independent producers.

**The USEPA makes unjustifiable distinctions between controlled (owned and rented) land and uncontrolled land receiving manure.**

- The USEPA assumes nitrogen-based application rates will be sustainable on uncontrolled land although the receiving farmer has strong incentives to allow only phosphorus-based rates under the proposed rules.
- The USEPA assumes that farmers receiving CAFO manure will pay for nutrient management planning on their farm and for the manure transportation costs. There is no incentive for these farmers to absorb these costs.
- We recommend the USEPA assume the CAFO will manage and incur all the costs of the nutrient management plan on all acres receiving manure.
- We recommend that the USEPA assume that manure application on all land (including non-CAFO land) receiving manure will be limited by phosphorus crop removal in the long term, in accordance with the provisions of the proposed rule. (Chapter 1)

**The USEPA assumes the ratio of animals to land is higher on larger farms.**

- Our analysis of 31 swine farms in four USEPA regions indicated a weak, but positive effect of operation size on animal density (see 4.5.1.1).
- Regional differences were much more pronounced; North Carolina had significantly higher animal densities than four other analyzed states. Pennsylvania farms were the most dependent on land not owned or rented by the CAFO. (Chapter 4)

**We recommend the USEPA consider alternatives to animal number or animal units when defining operations that pose significant risk to water quality.**

- Within the swine sector, animal units was highly correlated with the quantity of nutrients (phosphorus and nitrogen) excreted by the animals.
- Nutrient management sustainability is better measured as the ratio of nutrients excreted, or nutrients land applied and the nutrient assimilation capacity of the land base. (Chapter 4)

**The environmental objectives of co-permitting may be obtained with market mechanisms or other regulatory rules.**

Co-permitting, as recommended by the EPA, may result in:

- a negative impact on market transactions for excess manure,
- Increased administrative and manure management costs,
- Increased regulatory monitoring and enforcement costs.

**Sludge accumulation in lagoons needs to be treated as a fertilizer rather than a manure.**

- Current data on nutrient concentration in sludge indicates it is too concentrated to be applied on a phosphorus basis.
- Technologies for processing the sludge into a concentrated fertilizer are being developed and should be fostered by allowing markets for manure nutrients.

**We recommend that the USEPA take care to promote appropriate application of manure nutrients by promoting markets for manure.**

- Adoption of a phosphorus rule will require that farmers gain spreading rights to more land.
- The current proposal that all land receiving manure have a nutrient management plan creates a barrier to non-CAFO acceptance of manure.