

Topic: Conceptually, does having a zero discharge standard and an NPDES permit make sense?

Our Concern:

As defined by the US EPA, “...*the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.*”

Recommendation:

By definition, a “zero discharge” system is not designed to discharge pollutants into waters of the United States and, therefore, should not fall under the guidance of an NPDES permit. Therefore, it seems unreasonable to request new swine, poultry and veal operations to certify that their open manure storage can achieve a zero discharge standard, but then to require an NPDES permit to provide protection in the event of a precipitation-related discharge.

Topic: Is the Design Process Feasible?

Specific EPA Questions:

- EPA solicits comments on this approach to demonstrating that an open storage system meets the no discharge requirements and providing an alternate approach for facilities that comply with the enforceable design, construction, operation and maintenance measure developed under the approach (*Federal Register*, p. 37762).
- EPA solicits comments on this approach to streamlining the evaluation process for those CAFOs submitting “pre-approved” designs and operational procedures (*Federal Register*, p. 37762).

Our Concern:

The Waterkeeper decision remanded the NSPS for swine, poultry and veal, stating that “...*substantially preventing discharges is not the same as prohibiting them outright. With respect to the alternative performance standards, the court held that EPA had not justified its decision to allow compliance with the no discharge standard through an alternative standard permitting production area discharges so long as the aggregate pollution to all media is equivalent to or lower than that resulting from the baseline standards.*” As a result of the remand, EPA proposed in 40 CFR 412.46(a)(1) that open manure storage structures undergo design evaluation using the NRCS’s AWM software and rainfall modeling using SPAW. However, the proposed new source subpart D design standard is essentially a precipitation-based design standard in disguise.

The Clean Water Act requires that EPA promulgate NSPS standards that “reflect the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable a standard permitting no discharge of pollutants.” We believe that the NSPS promulgated

misses this requirement in two aspects. First we dispute that any CAFOs utilize the AWM software and SPAW modeling as a “technology standards” at all. Second, we believe that EPA did not properly consider all aspects of developing the technology standards.

AWM Software and SPAW modeling

The “design” step (*Federal Register*, p. 37761) describes using the Animal Waste Management (AWM) software from NRCS. The “evaluation” step describes modeling using the Soil Plant Air Water (SPAW) Hydrology Tool to incorporate weather events and data to determine if/when a discharge might occur.

In developing the NSPS for a category, the EPA is required to determine the best available demonstrated control technology. We believe that the proposed requirements fail the test of a demonstrated technology. In Missouri, NO operation actually utilizes the SPAW modeling to our knowledge. In fact, we are not even aware that the NRCS’s AWM software is being used for design of animal waste systems in Missouri. Given that knowledge, it is doubtful that the proposed technology standard is being utilized by any facilities in the United States.

We understand that the EPA is attempting to find a way to evaluate open containment structures to determine that they are zero discharge structures, but the proposed NSPS falls well short of that standard. The very fact that the standard utilizes a model demonstrates that the standard is not zero discharge. Modeling is simply an attempt to predict the system’s function. It is impossible to state that a system designed using a model will never discharge under any precipitation event. This will set up a conflict where the design engineer will be required to certify that a system is zero discharge when the model only shows that it is zero discharge under the data that was inputted, which will not be zero discharge.

This leads to the next point regarding the use of a model. This design process, though not described as a design based on a design storm per se, does in fact utilize a given precipitation database. The use of the state models requires the use of data, or rather a design storm. The data files for the AWM software available for Missouri utilizes the 1 in 25-year 24-hour storm event. The standard proposed does not establish a design standard for the AWM software. The SPAW model likewise is inadequate for determining a worse case scenario. It is entirely possible that the 30-year historical data for an area may not even contain a storm event of 1 in 25-year 24-hour proportion. In fact we again question whether operations are even using 30-year historical data as a demonstrated technology. Therefore, EPA is proposing that manure storage structures be designed based on historic precipitation data, though the success of the structures can not be guaranteed and no provision exists for describing an allowable discharge. Essentially, EPA is prescribing a design standard, but not allowing consideration for precipitation events that fall outside the design parameters.

Precipitation data utilized in the AWM program spans a period of 30 years (1974-2004). For Missouri, the precipitation record with which the zero-discharge analysis will be conducted includes data from significant precipitation events that occurred in 1993 and 1995. These events, which may be classified as chronic rather than catastrophic events, may skew the model used to verify a storage structure's "zero discharge" status leading to a structure sized larger than needed.

The proposed regulation's new source performance standards for swine, poultry and veal are fundamentally equivalent to the existing standards, but require significantly more effort to achieve the design volume for a storage facility. The proposed regulation states that a producer can not use a design storm event to determine a zero discharge standard, but a producer can derive a zero discharge standard from a model that uses the same or similar precipitation data as its critical input.

The very fact that the model is derived from precipitation records makes it the equivalent in everything but name to a design storm requirement. The end result will still produce a

design storm event, but now EPA has removed any certainty from the standard. The main difference of this proposal is that producers will have to invest time and money in searching for the data to derive the standard that should apply at their particular site and get greater uncertainty in return and they will use a prescribed computer program and hydrology model to achieve this design standard.

AWM serves very well as a design aid for sizing manure storage structures on the basis of animal and environmental inputs all of which can be done “by hand.” However, it was not intended to be utilized as a regulatory tool. Additionally, the database from which AWM draws to determine manure storage size is able to be edited by the user, thereby making it possible to adjust manure and nutrient excretion data as desired to fit a specific situation. Given that this capability exists, it will be necessary for a certified individual (likely a licensed engineer, or P.E.) to validate any storage system sized based on this model and affix their seal to the design.

Likewise, the SPAW model is designed to allow variability in database values through user input. Precipitation data may be edited by the user and runoff curve number (CN) is a user-defined value. By altering the CN and the precipitation database, a user could essentially alter the model’s output to meet individual objectives. In addition, a reliable quantity of 100 years of daily time step climate data does not exist for any place in the continental US, as required in such an evaluation. Such an evaluation should not exceed 20-30 years which is the intended life of such facilities.

Finally, listing specific models in statute is poor rulemaking. We liken this to requiring a regulatory authority to require all documents to be submitted in Word Perfect 5.1. Years later such software tools no doubt will become antiquated. The use of daily time step effluent models as regulatory tools are well established in other countries, such as Australia, where a model called the Model for Effluent Disposal and Land Irrigation (MEDLI) is widely accepted and used to estimate discharge frequencies from storage structures using land application systems. For example, pond and irrigation systems in Queensland are allowed to discharge once every 10 years, and the model is used in

this way to size the pond and irrigation system. The model and development is managed and distributed by the regulatory authority. We recommend that if EPA is going to require such an evaluation to show a “no discharge” status, that the language in the *Federal Register* be more vague to allow other models, or processes, to be allowed. The development of such evaluations is a dynamic process and must allow for improvement as better models and methods are developed.

In addition, the language of the NSPS reads, *412.46 (1) Any CAFO subject to this subpart may request that the Director establish NPDES permit best management practice effluent limitations designed to ensure no discharge of manure, litter or process wastewater based upon a site-specific evaluation of the CAFO’s open surface manure storage structure. In the case of any CAFO using an open surface manure storage structure for which the Director establishes such effluent limitations, “no discharge of manure, litter, or process wastewater pollutants,” as used in this section, means that the storage structure is designed, operated and maintained in accordance with best management practices established by the Director on a site-specific basis after a technical evaluation of the storage structure.*

The language in section 1 of 412.46 appears to suggest that the Director establishes best management practices and effluent limitations for said sites. For most situations, facilities are similar in that it is just a matter of how “big” the pond needs to be. Recommendations related to this issue may be found below.

Consideration of Technology

We are further questioning whether EPA has properly considered the technologies utilized in animal agriculture. It appears that the only technology that EPA has considered in its establishment of zero discharge is storage. Open containments are not singularly utilized for storage. Many lagoons are utilized as treatment units for nitrogen reduction. This treatment cannot be done in deep pit systems, which it appears that the EPA has used to establish the zero discharge standard.

To further support the fact that EPA has not appropriately considered utilization of lagoons for nitrogen reduction as a demonstrated technology standard is the Premium Standard Farms settlement. In the PSF settlement, the US EPA has required PSF to perform significant nitrogen reduction. This nitrogen reduction that EPA has mandated would likely be cost prohibitive if required to be covered or contained in a zero discharge manner. We also note that EPA is given “considerable discretion to weigh and balance the various factors required by statute to set [NSPS],” Riverkeeper, Inc v. EPA. It is our opinion that covered treatment operations, including digesters, will not be economically viable as a best demonstrated technology.

Recommendation:

Five options exist for meeting the zero-discharge requirement for new swine, poultry and veal operations with “open air” manure containment structures:

1. Increased volume of primary storage cell
2. Additional storage cell
3. Emergency storage basin
4. Exclusion of water from storage basin utilizing an impermeable cover
5. Total confinement of all production and manure storage areas

Any additional storage volume beyond that required to contain the process wastewater and precipitation during the design period (options 1, 2 & 3) will result in collection of excess storm water (larger surface area collecting storm water). Collection of this excess storm water will dictate that operations incur additional expense for land-applying the waste water. Although the volume of waste water handled from a storage designed in this manner will increase, no increase in value of the effluent will be realized.

Exclusion of water from the storage basin through the use of impermeable lagoon covers is infeasible due to management and safety concerns with these types of covers,

as indicated in University of Missouri comments to the EPA on the “Concentrated Animal Feeding Operation Proposed Rule” in 2001.

Any system where the animals and manure storage are completely contained under a roof will be capable of complying with the “zero discharge” standard. Therefore, it appears likely that “open air” manure storage structures will no longer be recommended for new swine, poultry and veal operations.

Missouri recommends that the US EPA reconsider the NSPS best demonstrated technology in two respects. First of all, the EPA must promulgate a technology standard that is actually being utilized in the industry. A pseudo model that might or might not represent current design practices is not appropriate as a regulatory standard. We recommend utilization of a standard engineering practice such as a design storm event. If this is not possible, due to the Second Circuit Court’s ruling, we suggest EPA conduct a study to prove that the proposed design process is sufficient to ensure a zero-discharge standard or that the 100-year, 24-hour design standard is adequate to meet this standard and fulfill the request of the court.

The AWM program and SPAW model are not intended to be regulatory tools and are not designed specifically for modeling the effects of precipitation on a manure storage structure. Likewise, both models allow for user input and manipulation of the database. This may result in mismanagement of the programs and will require the state regulatory agency to review the data used to generate a design, which is time- and labor-intensive. Therefore, we recommend that EPA abandon the prescribed computer program and model to avoid future regulatory changes when newer, more applicable programs become available. Furthermore, if the design standard described in this rule must remain, the language in the *Federal Register* should be more vague to allow other models, or processes, to be allowed. The development of such evaluations is a dynamic process and must allow for improvement as better models and methods are developed. Additionally, if this design standard described in this rule must remain, the analysis should be done by the EPA or the state regulatory authority for the most

common types of facilities in order to reduce repetitious and unnecessary work for CAFO owners.

The language in section 1 of 412.46 appears to suggest that the Director establishes best management practices and effluent limitations for said sites. For most situations, facilities are similar in that it is just a matter of how “big” the pond needs to be. We suggest that such evaluations should be done by the permitting authority or by EPA using the before mentioned tools to develop these effluent limitations and best management practices for most general types of facilities. For facilities that would deviate from the normal or established general types, then a site specific analysis would be warranted. For example, a storage basin and lagoon are the typical containment facilities for swine in EPA Region 7. The regulatory authority in each Region 7 state would establish effluent limitations and best management practices for facilities in different parts of their state. Design criteria would be the output of such an evaluation using daily time step models and software. The analysis would show the minimum volumes necessary to meet the “zero discharge standard” and if facilities met those volumes then they would essentially meet the zero discharge standard. Facilities that deviated, such as one that would use a two stage treatment lagoon for example, would be required to perform a site-specific evaluation. To require the proposed evaluation on every similar site we expect will place an unnecessary burden on the CAFO owners and the regulatory agency reviewing the design and does not necessarily provide the protection EPA is pursuing.

If section 412.12 (1) is not stricken entirely, the following language is suggested to remove reference to SPAW and AWM and allow for a more generalized approach:

“An evaluation of the adequacy of the designed manure storage structure using a model or procedure approved by the Director. The evaluation must include a daily time step process utilizing precipitation, temperature, and evaporation data for a period appropriate for the site, soil profiles representative of the CAFO’s land application areas, planned crop rotations consistent with the CAFO’s Nutrient Management Plan,

and the final modeled result of no overflows from the designed open manure storage structure.”

We recommend the burden of the effluent limitations for new sources and their best management practices (nutrient management plans) be established by the permitting authority for the most common facility types in each state as opposed to requiring every new source to complete a similar evaluation to meet the “zero discharge” standard. For facilities that deviate from the suite of “typical” operations, a site specific evaluation would be appropriate. The analysis being completed by the EPA or the Director allows for public scrutiny of such a complex evaluation and minimizes unnecessary cost to the CAFO owner.

Second, EPA must consider technology standards other than storage. The agricultural industry utilizes open containments for purposes other than storage. The NSPS established does not appear to have considered the economics behind technologies such as nitrogen reduction or pathogen treatment.