

Kuch 3/11/01

**Presentation at Berkeley on EPA Agro-Environmental Policies:
Concentrating on Water**

Narrow the field of EPA's concerns about agriculture as a source of environmental problems:

Pesticides are not viewed as a major health or environmental problem, but they absorb a lot of resources and attention. Really a perception problem.

Climate change – Even though agriculture is a major source of methane and NO₂ emissions, EPA is primarily concerned about CO₂ from utilities and internal combustion engines. (AgStar Program)

Air quality – OAR is primarily concerned about the particulate (PM₁₀) from the burning of agricultural residues.

OAR is starting to talk about ambient hydrogen sulfide levels (and H₂S in manure pit and barns). Some people in OAR think ammonia particulates are a problem (PM_{2.5}). There is a lot of uncertainty about these, these need a lot of research.

Water- OW is primarily concerned about the ecological problems stemming from agricultural sediments and nutrients. Secondly it is concerned organic matter in livestock-wastes depleting oxygen and pathogens associated with livestock wastes affecting health (drinking water costs, water contact recreation). These are the principle locus of the Agency's involvement with agriculture.

(EPA pays less attention to ag-sediments, because of USDA's focus on erosion control)

Looking at the 1998 Nation Water Quality Inventory:

Of the assessed Rivers and Streams not meeting WQ standards or uses-

Siltation was the cause of impairment of 40% of the river miles.

Pathogens were the cause of impairment of 38% of the river miles.

Nutrients were the cause of impairment of 29% of the river miles.

Oxygen depleting substances were the cause of impairment 23% of the river miles.

Agriculture was by far the leading reported source of impairment (60% of impaired river miles).

Of the assessed Lakes, Reservoir & Ponds not meeting WQ standards or uses –
Nutrients were the cause of impairment of 44% of lake acres.
Siltation was the cause of impairment of 15% of lake acres.
Oxygen depleting substances were the cause of impairment in 14% of lake acres.

Agriculture was the leading reported source of impairment (30% of lake acres).

Of the assessed Estuaries not meeting WQ standards or uses –
Pathogens were the cause of impairment of 47% of estuary sq. miles.
Oxygen depleting substances were the cause of impairment of 42% of estuary sq. miles.
Nutrients were the cause of impairment of 23% of estuary sq. miles.

Agriculture was the 4th largest reported sources of impairment (15% of estuary sq. miles).

The reference for impairment and the goal of remediation is the **Water Quality Standard**. WQ standards (e.g. nutrients) are established for each pollutant by states based on **Criteria Guidance Manual** for that pollutant issued by EPA. The guidance document provides ranges of values or narrative descriptions by beneficial use category, water-body type, and eco-region.

A Water Quality Standard pertaining to a water body consists of 3 elements:

- 1) A Designated Beneficial Use (e.g. aquatic life support, cold or warm water fishery, drinking water source, swimming, etc.)**
- 2) Water Quality Criteria (usually a range of values that would support the beneficial use, could be a narrative).**
- 3) A Non-degradation Clause (e.g. if it currently supports a cold water fishery, but is designated a warm water fishery that level of WQ must be maintained).**

Agriculture has been traditionally viewed as a NON-POINT-SOURCE. However, some agricultural sources are by their nature point sources (e.g. large animal confinement operations, irrigation return flows, storm-water flows from tile drainage systems)

The CWA (1972) gave EPA authority to regulate certain AFOs as point sources under NPDES, but precluded it from regulating irrigation return flows and agricultural storm-water flows as point sources.

POINT SOURCES IN GENERAL:

- *Point sources must have a permit (NPDES) to discharge into WUS and can only discharge in accordance with that permit.**
- *Such permits must include any nationally established technology-based effluent discharge limitations (Effluent Guidelines).**
- *Absent any National Effluent Guidelines, permit writers must establish technology based limits on a case-by-case basis using best professional judgment (BPJ).**
- *Water Quality based effluent limits can be used in a permit where technology based limits will not insure state WQ Stds. are met, or where required to meet a TMDL.**
- *Permits may include specific BMPs.**
- *Permits generally include monitoring and reporting requirements.**

NPDES permits may be issued by EPA or by authorized states, territories or tribes.

***43 states and V.I. are authorized to administer the base NPDES program (including the federal program relating to CAFOs). Oklahoma is not authorized to do CAFO permitting.**

***AL,AZ,D.C.,ID,MA,ME,NH,NM are not auth. to do NPDES (CAFO) permitting.**

There can either be INDIVIDUAL or GENERAL PERMITS (for similar facilities). EPA prefers General Permits wherever possible.

NATIONAL EFFLUENT GUIDELINES:

Are based on the degree of control that can be achieved using various levels of pollution control technology (may include non-numeric limits in the form of BMPs).

In ascending order of severity -

1) Best Practical Control Technology Currently Available (BPT)

***based on average of best performance achieved across facilities of different ages and sizes.**

***costs vrs. effluent reduction achieved.**

2) Best Conventional Pollutant Control Technology (BCT)

***relates only to designated conventional pollutants (e.g. biochemical oxygen demand, TSS, fecal coliform, ph, oil & grease) from existing plants.**

*** EPA uses a 2-part “cost-reasonableness test”.**

3) Best Available Technology Economically Achievable (BAT)

***based on the best performing technology observed in a discharging facility**

***costs vrs. Effluent reduction achieved.**

***“economic achievability” is determined on the basis of total cost to the industry sub-category and overall affect of costs on industry’s financial health.**

4) New Source Performance Standards (NSPS)

- *based on best available demonstrated control technology (not necessarily observed in operation) for all pollutants.**
- *assumes best & most efficient production technology being used.**
- *take account of cost of achieving reduction & any non-water environmental impacts & energy requirements.**

Current NPDES Permitting Program for CAFOs

Effluent Guidelines issued for CAFOs in 1974

NPDES Regs. Issued in 1976

A livestock operation must be defined as a AFO before it can be defined as a CAFO.

AFO – facility where livestock is confined and fed for 45 days out of 12 months, no crops or forage maintained.

CAFO- designation depends largely on the # of animal units, (EPA’s def. of AU differs from USDA’s and BLM’s).

An AFO is a CAFO if:

1000 AU or more,

More than 300 AU if there is direct connection to Navigable Waters via “man-made” conveyance or because a stream passes through the facility,

Any sized facility may be designated a CAFO by the permitting auth. if it is a significant contributor of pollution to WUS.

****Facilities only discharging during a 25 year, 24 hour storm event are exempt, not a CAFO.**

A CAFO must have a permit:

***For 1000 or more AU CAFO, the permit includes containment requirements for manure and process waters that will insure no discharge, except during 25yr. 24hr. storm as specified in the Effluent Guideline.**

***For CAFO of less than 1000 AU, the containment requirements based on the BPJ of the permit writer. (i.e. may allow some discharge).**

Problems with Current Permitting Program

***Existing program has been in effect for 20 years it has not been effective in controlling pollution from livestock operations.**

***Heretofore EPA didn’t give it a high priority, hence lack of enforcement by Regional Offices.**

***EPA estimates that 12,000 facilities should have NPDES permits, as of 1999 only 2530 have or have applied for permits.**

***17 NPDES authorized states have issued no permits.**

Why?

- *25yr, 24hr. storm exemption.
- *facilities with dry waste removal & watering systems are exempt (virtually all broiler operations, many layer and beef feedlots not permitted).
- *states have their own permitting programs many for construction and operation of lagoons.
- *confusion about need for NPDES permit.
- *lack of political will.

Other Problems with existing rules:

- *Does not address over-application of wastes to land.
- *Does not address leaching to GWs connected to WUS.
- *Has not kept pace with major changes in the organization of livestock production:
 - larger facilities with less available land.
 - changing geographic concentration of animals.
 - production contracting where integrator has substantial operational control of production process & makes locational decisions.
 - who can pay, who should bear the costs?

EPA is Proposing Revisions to CAFO NPDES Regs. & to Effluent Guidelines:

Proposing to require all CAFOs to apply for a NPDES permit.

Relating to the definition of a CAFO proposing:

- *Dropping the exemptions for facilities “not discharging except in a 25yr, 24hr storm, and for facilities with “dry” systems.
 - *2 alternative sets of thresholds for automatic designation as a CAFO:
 - 2-tiered system: 500 AU or above automatically a CAFO, below 500 requires special designation.
 - 3-tiered system: 1000AU or above automatically a CAFO; between 300 and 1000 AU automatically a CAFO if certain less ambiguous special conditions are met
 - direct contact of animals with WUS
 - insufficient storage
 - evidence of a past discharge
 - production area within 100ft of WUS
 - does not have an approved nutrient management plan
 - shipping more than 12 tons of manure off-site to a single recipient.
- (operator can certify he does not meet these special conditions and is therefore exempt); Burden on permitting authority.
Under either system any AFO can be designated a CAFO by the permitting authority.

(Other size cut-offs are being considered)

****Under either system for any size category if operator can demonstrate the facility has “no potential to discharge”, no permit application is required. Rebuttable presumption.**

***the CAFO is defined to include both the production areas and the land application areas owned by the operator of the CAFO.**

Also proposes to require:

***Co-permitting of entities that exert “operational control over CAFO.**

***Facilities to remain permitted until there is proper closure.**

***The permit would include requirements for a nutrient management plan (PNP) and record keeping for off-site transfer of waste, and possible certification by recipients of application according best agronomic practice (has a state approved nutrient management plan.**

Proposed changes to National Effluent Guidelines Include:

(Only relates to the largest size categories, rest BPJ)

***For beef and dairy, zero discharge from production and land application areas except for “catastrophic or chronic storms”, if containment designed for 25yr/24hr storm.**

***For poultry, swine and veal, zero discharge regardless. (They are kept indoors).**

***specific requirements for land application on land owned or under operational control of CAFO, based on N & P requirements of crop and the ability of soil to absorb excess P. Must maintain record of wastes shipped off-site.**

***For beef and dairy, zero discharge to groundwater beneath production areas. hydrologically connected to WUS.**

***This is also required for all New Sources, namely swine, poultry and veal.**

***Operator must develop Permit Nutrient Plan for production and land application areas. Establishes methods for calculation of manure application rates. Specifies land application timing requirements to assure use only for ag. purposes.**

***Requires off-site recipient that application to certify they are using a state approved NMP.**

Some Un-addressed Problems with CAFO Proposals:

***Doesn't deal with erosion to prevent water contamination by excess P.**

***Only requires 100ft setbacks for land application, not planted buffers, etc.**

***Rebuttable presumption of direct hydrological connection to GW, does not define what a direct hydro. connection is.**

***States are able to get out of the co-permitting requirement, if integrators have an undefined “environmental management system”, or if state has a program to deal with excess manure.**

BUT THERE WILL BE MORE PERMITTING, WHATEVER THE VARIANT ADOPTED.

HOW DOES EPA ADDRESS NON-POINT SOURCES?

CZARA: Coastal Zone Reauthorization Amendments of 1992

States having approved Coastal Zone Programs (there are 33) are required to have enforceable NPS programs that include “management measures” for the major NPS

***management measures consist of BMPs appropriate to the state.**

***management measures are prescribed for confined animal feeding operations (NPDES permitted facilities are exempt) and for grazing activities.**

***a nutrient management measure is required for all agricultural lands applying nutrients (including manure).**

TMDLs: Total maximum Daily Loads

Congress established TMDLS in the 1972 CWA as a mechanism for achieving water quality standards where point source effluent limits (NPDES) were inadequate.

Law suits in the 1980s and 1990s have compelled the development of TMDLs on specific schedules for all impaired waters, including waters impaired by agriculture and forestry.

In July 2000, issued a revised TMDL rule to facilitate the development of these required TMDLs.

States are required to list all impaired water-bodies every 4 years.

Where pollutants causing impairment can be identified and effluent guidelines in place (NPDES permits) will not achieve WQ standards within the next 4 yrs, TMDLS must be prepared and implemented for the impaired WBs.

LISTING: every 4 yrs.

Part 1- Waters not meeting WQstds. in spite of required effluent limits due to pollutants. (TMDL needed)

Part 2 -Waters not meeting WQstds. in spite of required effluent limits where no pollutants can be identified as causing the impairment. Low flow not a pollutant per se, heat is a pollutant. (TMDL not needed).

Part 3 – Waters not meeting WQstds. in spite of required effluent limits and a completed TMDL. (Needs new TMDL).

Part 4 – Waters not meeting WQ stds., but required controls on point and NP sources can be expected to achieve WQ stds. By the next 4-year reporting cycle. (TMDL not needed).

(States no longer need to identify “threatened water”).

***Listing must include a prioritized schedule for the development of TMDLS needed. This is a new requirement!**

-Highest priority to be given to drinking water and endangered species impairments.

-States have up to 15 years to establish TMDL after new listing.

Public review and comment required.

THE TMDL:

Consists of 9 elements

- 1. WB name and location (hydro. unit designation)**
- 2. Identification of the pollutant and quantification of the allowable pollutant load.**
 - quantify the total load (by day, month, season) which may be present to support WQ std.**
 - identify the difference between that amount and total current loading from all sources including background.**
- 3. Identify source categories with as much precision as possible.**
- 4. Wasteload Allocation – an individual allocation to each point source, may not require change in effluent limits, but could.**
- 5. Load Allocation – and allocation of pollutant load to NP sources, including air deposition, background, and categories of NPS. Must include a technical analysis to show how load allocation would achieve WQ stds., once implemented.**
- 6. Margin of Safety – a loading taken off the top to deal with uncertainties in the calculation of loads, WQ modeling, monitoring.**
- 7. Consideration of Seasonal Variation – takes account of how seasonal variation in flow and temperature would affect the impact of the pollutant. May necessitate different allowable loads for different seasons.**
- 8. Allowance for Increased Loads – expected consequences of increased growth, based on available data.**
- 9. Implementation Plan (The Most Important Revision to the TMDL Rule).**
 - a) Listing of intended control actions.**
 - b) Demonstration of reasonable assurance that wasteload and load allocations will be achieved.**
 - c) Legal authorities to be used.**
 - d) Time required to achieve WQ stds.**
 - e) Monitoring Plan.**
 - f) Milestones for achieving WQ stds.**
 - g) TMDL revision procedure.**

Implementation plans should vary by type of WB.

***Where only point sources are present, should rely on reissuing and revising NPDES permits so effluent limits will be consistent with the wasteload alloc. in the TMDL.**

***Where they are impaired by NPSs, rely on regulatory and voluntary action with heavy reliance on: CWA 319 block grants, CZARA, USDA programs (e.g. EQIP, CRP).**

State has to allow at least 30 days for public comment on TMDL.

The Rule expressly does not require States to enact regulatory programs for NPSs, of course they must permit point sources.

EPA has 30 days to approve TMDL.

EPA has 30 days to provide replacement TMDL, where disapproved.

EPA has promised to support the development of TMDLs with manpower and money.

Rider on FY 2001 appropriation prevents EPA from spending any money on TMDL development until 10/01.

Requested increased funding for complementary USDA programs was not appropriated in FY2001.

Problems with the TMDL Rule:

***How do you evaluate the Implementation Plans relative to their likelihood of achieving WQ STDs.?**

***No assurance that states will fully exploit NPDES permitting before they turn to voluntary NPS programs?**

***Estimates only made of increased administrative cost.**

***Is USDA willing to target its conservation resources on TMDL watersheds?**

The TMDL Rule best represents EPA's approach to NPS pollution:

Delegate to the states,

Tell them what they should do in vague terms,

Then let them do whatever they want

ACTION PLAN FOR REDUCING, MITIGATING & CONTROLLING HYPOXIA IN THE NORTHERN GULF OF MEXICO (Announced 1/01)

All 9 states along the Miss. R. and Federal Agencies (EPA, USDA, NOAA, COE) have agreed to work together to cut the dead zone in half over the next 15 years.

Participants agree to develop strategies for reducing nutrients (mostly N) by 30%.

The Farm Bill Conservation Programs will be the major tools for the Strategy.

Programs that pay farmers to:

- restore wetlands**
- retire sensitive lands**
- install vegetative buffers along streams**
- reduce fertilizer use.**

“What happens depends on how these programs are funded now and in the 2002 Farm Bill”. (Lots of luck!)

States and tribes in the basin are to establish sub-basin commissions to coordinate implementation of the Action Plan by major sub-basin, including coordination among the smaller watersheds. (Seems to be modeled on the Chesapeake Bay sub-watershed approach.)

In addition to more research, monitoring and coordination, the Action Plan emphasizes:

- *encouraging NPS reduction under CWA, Farm Bill, CZARA, and state cost-share programs.**
- *focusing EQIP to assist grain and livestock producers to reduce excessive nutrient movement.**
- *Focusing CRP, WRP, Corps Environmental Restoration Programs, and Ag Extension to promote restoration and enhancement of natural systems for N retention and denitrofication.**
- *developing TMDLs and implementing NPDES controls for nutrients.**
- *promoting public-private partnerships to restore stream buffers.**
- *promoting cost-effective (soft) flood control alternatives.**
- *providing voluntary incentives for N reduction from point and NPSs.**

Problems with Hypoxia Strategy:

- *Relies on large increases in the funding of programs, which are not likely to occur.**
- *Focuses almost exclusively on reducing nutrients entering the system, but ignores changing the hydrology of the systems, i.e. tile-drainage systems, hard flood control systems.**

It seem there will be much coordination, but not much substance.

CWA Section 319 Program

- A small grants program to help states implement their NPS plans.**
- *about \$300 million**
- *mostly block grants**
- *for education & demonstration projects, no cost-sharing.**