

The Big Change that Brought the Algae back

CONFINED ANIMAL MANURE

IN THE 1990'S CONFINED ANIMAL OPERATIONS BEGAN & LAKES GOT GREEN

Cow, pigs, and poultry were put in confined spaces that produce massive amounts of manure, almost all of which is land applied within miles of the operation. And because cow and pig manure has too large of chunks, it is liquified to make it easier to apply to fields.

USEPA MANURE WATER REPORT 2013

Over the past 60 years in the United States (U.S.), farm operations have become fewer in number but larger in size. This has been particularly true in livestock and poultry production. Since the 1950s, the production of livestock and poultry in the U.S. has more than doubled; however, the number of operations has decreased by 80%. Food animal production has shifted to more concentrated facilities with animals often raised in confinement. Production has also become more regionally concentrated. “

Manure discharges to surface waters can be caused by rain events, spills, storage lagoon and equipment failures, or the improper application of manure, including application to frozen or saturated ground. In some cases, fish mortalities may be caused by oxygen depletion or ammonia toxicity from large loadings of manure. Harmful algae blooms produce cyanotoxins that may be harmful to animals and aquatic life, as well as to humans when exposed in recreational waters or from drinking water supplies.”



Decades ago, taking phosphorous out of laundry detergent reduced algae in Lake Erie and elsewhere - phosphorous source reductions first then BMP's.



REMOVING PHOSPHOROUS FROM LAUNDRY DETERGENT

A 1965 the National Academy of Scientist study showed that phosphates in laundry detergent were a big driver in greening waters. Then there was an environmental uprising that got local and state legislation to ban phosphates in laundry detergent. The pressure forced the giants like Proctor and Gamble to fight for its interests. Eventually in the 1980's there was an acceptable balance between protecting the aquatic environment (you can now swim in Lake Erie without slipping on mats of green slime), protecting the citizens' health and welfare, and not burdening the detergent manufacturers and phosphate producers unreasonably with blanket prohibitions.



GREAT LAKES ALGAE HOT SPOTS:

- Green Bay/Fox River/Lake Michigan
- Saginaw Bay & River/Lake Huron
- Maumee Bay & River/Lake Erie

GREAT LAKES BAYS CAFO RUNOFF: Green Bay, Saginaw Bay, Maumee Bay

Note: Increases in CAFO's continue



- **Green Bay/Lake Michigan:**

82 CAFO's in/near the Green Bay watershed producing over 2 billion gallons of manure/year. Wisconsin has the most dairy cows in the US.

- **Saginaw Bay/Lake Huron**

32 CAFO's in/near the Saginaw watershed that produce over 500 million gallons of manure per year. Saginaw is Michigan's highest concentration of CAFO's

- **Maumee Bay & River/Lake Erie**

Nearly 200 CAFO's in the Maumee watershed that apply over 600 million gallons and millions of tons of manure per year (liquid = cows and pigs, solid = poultry). The Maumee is Ohio's highest concentration of CAFO's with \$billions invested to reduce phosphorous runoff. These CAFO's have received an estimated \$16. Million in Federal subsidies between 2008 and 2015.



RECOMMENDATIONS TO REDUCE EXCESS PHOSPHOROUS MANURE LAND APPLICATIONS

- Adopt the International Joint Commission (IJC) recommendation to require a set amount of acreage per type of animal unit (which is the Ontario rule)
- Require manure phosphorous and pathogens reductions for land application
- Have special reduced phosphorus/manure applications for watersheds with excess phosphorous discharges.
- Require federal farm subsidies (that often favor CAFO's) have a requirement for manure applications that reduce the amount of phosphorous permitted to be applied
- Require soil phosphorous rules for manure (now about 150 ppm) to be the same as phosphorous for commercial fertilizer (usually less than 40 ppm)
- Establish numeric phosphorous standards and conduct TMDL's that provide accountability for nutrient reductions

Note: A 2001 report from the USDA's Economic Research Service found that 60%-70% of the manure nitrogen and phosphorus may not be able to be assimilated by the farmland on which it was generated. Technology to solve the manure land application problem is the responsibility of the CAFO industry, just as it was for the laundry detergent industry.

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