



CLEAN WATER IS OUR RIGHT!
2975 113TH ST. TOLEDO, OH 43611

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“STAGGERING” NEW LOOK AT ANIMAL FACTORY MANURE IMPACT ON LAKE ERIE

A Toledo environmental group today released a report showing that government failure to protect Lake Erie is causing much more harm than previously thought.

Advocates for a Clean Lake Erie (ACLE) revealed for the first time that measuring the impact of animal feeding factories on Lake Erie by the amount of Phosphorus animals produce, not the volume of manure as previously measured, makes a staggering difference. Phosphorus is the main driver of the harmful algal blooms that plague Lake Erie every summer and animal feeding factories are increasingly seen as [pandemic incubators](#).

ACLE researcher, Marj Mulcahy said, “Nearly 25 million animals in over 800 animal feeding factories generate more Phosphorus every year than the combined human [populations](#) of [Ohio, Indiana, Chicago and Atlanta](#), dumping it untreated, on fields that drain into Lake Erie. If that sounds shocking, it should. Hopefully, it will shock people into demanding it stop.”

“After filing open records requests with state governments, reviewing published reports, and analyzing the data through the lens of Phosphorus (P2O5) production, it is painfully clear that state and federal governments have failed massively in their responsibilities to Lake Erie and the people who rely on it,” she added.

“When the Farm Bureau controls the Ohio Legislature and Big Ag lobbyists do the same in Washington, laws not only allow but encourage these feeding factories to use our lake as a free toilet and turn it toxic every summer,” said the group’s coordinator, Mike Ferner.

The environmentalists also highlighted how industrial agriculture has eroded democracy, when information about animal feeding factory operations is hidden from the public.

ACLE Researcher, Vickie Askins, noted how the Ohio Department of Agriculture (ODA) has hidden reports that were once open to public review, contributing to the government’s “illusion of protection.”

“We researched over 80 ODA Fact Sheets for data about the number of Ohio-permitted facilities, animals, and amounts of manure in the WLEB. Previously these were posted on the ODA web site, but now we must file public records requests to get them. Even then, the data and formatting are inconsistent, making it harder to see what’s going on. The industry is further protected from public oversight by regulations that allow millions of gallons of manure to be sold to ‘brokers,’ relieving operators from any responsibility to report what’s in it, where it goes, how it’s applied.”

Beginning in 2016, ACLE relied on estimates that said waste from animal feeding factories in the Western Lake Erie watershed was equal to the combined sewage of Chicago and Los Angeles. A [study issued in April, 2019](#), showed the amount was roughly twice that. But those reports measured the waste by volume and weight, not by the amount of Phosphorus the animals produced.

The roughly 8,000 square mile watershed of Western Lake Erie consists of the Maumee River in Ohio, Indiana and Michigan, the Cedar-Portage and Sandusky Rivers in Ohio and the River Raisin in Michigan. The region was once known as the Great Black Swamp and today requires the most concentrated underground drainage system in the U.S. to be farmed.

ACLE endorses a moratorium on additional animal feeding factories and their eventual elimination, out of concern for the environment, rural communities and the suffering endured by the confined animals.

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Purpose, Methodology and Sources

“Staggering” New Look At Animal Factory Manure Impact On Lake Erie

Nearly 25 million animals in over 800 animal feeding factories generate more Phosphorus every year than the combined human populations of Ohio, Indiana, Delaware, Vermont, North and South Dakota, dumping it untreated, on fields that drain into Lake Erie.

Advocates for a Clean Lake Erie published this information for three reasons:

- 1) To illustrate the continual and growing environmental impact on Lake Erie when hundreds of animal feeding factories¹ dump millions of gallons of untreated waste onto fields draining into the lake's Western Basin. These facilities and their waste continue to proliferate, and Lake Erie gets more polluted every year. Any thinking citizen would ask, “Why does this continue?” We address this next.
- 2) To show that we are witnessing not only an environmental crisis in our lake, but a crisis in our democracy when state and federal governments protect the polluters, not the public.
 - We could begin by asking the simple question, “Who decided our milk, meat and eggs should be produced in factories?” If people knew all the costs involved to the environment, the producers, the processors and the animals, would we vote in favor of it, let alone pay to subsidize it?
 - Our government, corrupted by money and beholden to private interests, wastes our tax dollars when it refuses to protect the public interest. Worse yet, our own government is turned against citizens, blocking efforts to provide even minimal oversight. For example, the Ohio Department of Agriculture (ODA) permits and regulates animal feeding factories.

¹ In government parlance, “Confined Animal Feeding Operations (CAFOs)” or ODA’s term, “Confined Animal Feeding Facilities”

Operators of each proposed facility with more than a certain number of animals must apply for permits stating how many and what species of animals,² summarized in an ODA Fact Sheet. These Fact Sheets and other public records were inexplicably removed from the ODA's website several years ago, requiring citizens to submit official public records requests. The process of evaluating the data from over eighty Fact Sheets for this report was made even more difficult because the data and the formatting are inconsistent.

- Ohio has split permitting programs for animal feeding factories – Ohio EPA regulates federal water pollution permits and ODA regulates “state” operating permits – although ODA has been trying to get legal authority over all permitting and regulating for the past 20 years. The US EPA has not approved this scheme primarily because the ODA's program includes a huge loophole which allows owners to circumvent the rules by simply selling the manure to third-party brokers. These brokers keep all their records on-site, so the public has no access to what happens after the hand off. Most ODA permits include this loophole; thus the public has no access to assessments that might determine the amount of manure and pollutants contaminating surface waters – as the Clean Water Act clearly mandates.
- As the public who lives with the impacts of these laws, we have to understand that it is industry that determines what is in permit applications and actually writes the regulations that will be used to monitor themselves. We live under an “illusion of protection” that government agencies are “regulating” the harm. It is industry that is regulating us and that is why the people in the communities need to be part of the rule making process.
- The most profound example of how this industry and its agents in government thwart democracy was when the citizens of Toledo collected over 10,000 signatures on initiative petitions to pass the Lake Erie Bill of Rights (LEBOR). Ohio's Attorney General and the Lucas County Board of Elections fought unsuccessfully to keep it off the ballot. Citizens passed it February 26, 2019 by 60-40%. Within 24 hours of the polls closing, an agricultural corporation, represented by a [\\$500/hour](#) corporate law firm, filed a federal court lawsuit, claiming potential harms. The LEBOR organizers were not even allowed to be a party to the suit and a year later, the court declared it unconstitutional.

3) To acknowledge, if only briefly, the immeasurable suffering inflicted on the animals trapped in our industrialized system of food production, as well as the economic and psychological stress it places on the people who produce and process our food.

Methodology and Sources

It is important to note that we have conservatively estimated the impact on Lake Erie from animal feeding factories, as described below.

² Operators can avoid the permitting process altogether by keeping the number of animals “one under” regulatory thresholds.

- We began with the landmark report from the Environmental Working Group (EWG) and the Environmental Law and Policy Center, “[Explosion of Unregulated Factory Farms in Maumee Watershed Fuels Lake Erie’s Toxic Blooms.](#)” This report examined only the Maumee River watershed portion of the Western Lake Erie Basin (WLEB). By using permit data from Ohio, Indiana & Michigan then correlating this data with satellite images, they were able to geolocate the permitted animal facilities. Other facilities were listed as unpermitted.
- To the Maumee River portion of the WLEB must be added the River Raisin watershed in Michigan and the Cedar-Portage and Sandusky River watersheds in Ohio. For those areas we included only the large facilities permitted by the ODA and Michigan’s Department of Environmental Quality (MDEQ)³, meaning they are above the threshold numbers in the law.
- Values in the “Daily manure production and characteristics, as excreted (per head per day)” cited in the Ohio Administrative Code, [Appendix](#) to rules [901:10-2-04 and 901:10-2-10](#) were used to determine Phosphate (P₂O₅)⁴ excreted by dairy cows, beef cattle, poultry, and swine according to each species and weight class.⁵
- The value in the USDA National Resources Conservation Service, “[Agricultural Waste Management Field Handbook](#),” Part 651, pg. 4-26, Table 4-17, was used to determine how much Phosphorus (P) an average human excretes daily⁶. This value was converted to P₂O₅ (P x 2.288 = P₂O₅) to determine how many humans it would take to equal the P₂O₅ excreted by the animals housed in animal feeding factories in the WLEB.

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³ As stated in ODA’s Concentrated Animal Feeding Facility Fact Sheets and MDEQ’s National Pollutant Discharge Elimination System (NPDES) permits, respectively.

⁴ Technically, P₂O₅ is “Phosphorus Pentoxide,” but is commonly referred to as “Phosphate.”

⁵ Comparable numbers in the EWG report are lower because we used current data from the OAC Appendix.

⁶ .02 lbs. P per 1,000 lbs. human waste as excreted - which equates to 2.50536 lbs. P₂O₅ per year for a 150 lb. human.

2019 Western Lake Erie Basin (WLEB) Manure and P2O5			
Maumee River Watershed (MRW) - INDIANA (1) (2)			
Dairy	Swine	Poultry	Cattle
Total: 12,949	Total: 239,595	Total: 4,610,857	Total: 21,527
85% Lactating, 15% Dry	Manure/year = 239,595 x 7.4 lbs. x 365 = 647,146,095 lbs. P2O5/year = 239,595 x .03 lb. x 365 = 2,623,565 lbs.	75% Layers, 14% Pullets, 10% turkeys	Manure/year 21,527 x 52 lb. x 365 = 408,582,460 lb./yr. P2O5/yr.
<i>Lactating Cows</i>		<i>Layers</i>	
12,949 x 0.85 = 11,007		4,610,857 x 0.75 = 3,458,143	21,527 x 0.105 x 365 = 852,022 lb./yr
Manure/year = 11,007 x 155 lbs. x 365 = 622,721,025 lbs.		Manure/year	
P2O5/year = 11,007 x 0.52 lb. x 365 = 2,089,129 lbs.		3,458,143 x 0.2275 lb. x 365 = 287,155,549 lbs.	
		P2O5/year	
<i>Dry Cows</i>		3,458,143 x .0023625 lb. x 365= 2,982,000 lbs.	
12,949 x 0.15 = 1,942			
Manure/year: 1,942 x 87 lbs. x 365 = 61,668,210 lbs.		<i>Pullets</i>	
P2O5/year: 1,942 x 0.18 lb. x 365 = 127,589 lb./year		4,610,857 x .14 = 645,520	
		Manure/year	
		645,520 x .11375 lb. x 365 = 26,801,184 lbs.	
		P2O5/yr.	
		645,520 x .00118 lb. x 365 = 278,025 lbs.	
		<i>Turkeys:</i>	
		4,610,857 x 0.10 = 461,086	
		Manure/year	
		461,086 x .47 lb. x 365 = 79,099,303 lbs.	
		P2O5/yr	
		461,086 x .0051 lb. x 365 = 858,312 lbs.	
Total Dairy Manure/year 684,389,235 lbs.	Total Swine Manure/year 647,146,095 lbs.	Total Poultry Manure/year 393,056,036 Total lbs./year	Total Cattle Manure/year 408,582,460 lbs.
Total Dairy P2O5/year 2,216,718 lbs.	Total Swine P2O5/year 2,623,565 lbs.	Total Poultry P2O5/year 4,118,337 lbs.	Total Cattle P2O5/year 825,022 lbs.
MRW Indiana Total Phosphate (P2O5) = 9,783,642 lbs./yr.			

Maumee River Watershed (MRW) - MICHIGAN (1) (2)			
Dairy	Swine	POULTRY	CATTLE
Total: 15,494	Total: 18,560	Total: 285,076	Total: 29,288
85% Lactating, 15% Dry	Manure/year	75% Layers, 14% Pullets, 10% Turkeys	
<i>Lactating Cows</i>	18,560 x 7.4 x 365 = 50,130,560 lbs.	<i>Layers:</i>	Manure/year
15,494 x .85 = 13,170 lactating cows	P2O5/year	285,076 x .75 = 213,807	29,288 x 52 lb. x 365 = 555,886,240 lbs.
Manure/year	18,560 x .03 lb. x 365 = 203,232 lbs.	Manure/year	P2O5/year
13,170 x 155 lbs. x 365 = 745,092,750 lbs.		213,807 x .2275 lb. x 365 = 17,753,999 lbs.	29,288 x .105 lb. x 365 = 1,122,463 lbs.
P2O5/year		P2O5/year	
13,170 x .52 lb. x 365 = 2,499,666 lbs.		213,807 x .0023625 lb. x 365 = 184,368 lbs.	
<i>Dry Cows:</i>		<i>Pullets:</i>	
15,494 x .15 = 2,324 dry cows		285,076 x .14 = 39,911	
Manure/year		Manure/year	
2,324x 87 lbs. x 365 = 73,798,620 lbs.		39,911 x .11375 lb. x 365 = 1,657,055 lbs.	
P2O5/year		P2O5/year	

2,324 x .18 lb. x 365 = 152,687 lbs.		39,911 x .00118 x 365 = 17,190 lbs.	
		<i>Turkeys:</i>	
		285,076 x .10 = 28,508	
		Manure/year	
		28,508 x .47 lb. x 365 = 4,890,547 lbs.	
		P2O5/year	
		28,508 x .0051 lb. x 365 = 53,068 lbs/year	
Total Dairy Manure/year	Total Swine Manure/year	Total Poultry Manure/year	Total Cattle Manure/year
818,891,370 lbs.	50,130,560 lbs.	24,301,601 lbs.	555,886,240 lbs.
Total Dairy P2O5/year	Total Swine P2O5/year	Total Poultry P2O5/year	Total Cattle P2O5/year
2,652,353 lbs.	203,232 lbs.	254,626 lbs.	1,122,463 lbs.
MRW Michigan Total Phosphate (P2O5) = 4,232,674 lbs./year			

Maumee River Watershed (MRW) - OHIO (1) (2)

Dairy	Swine	Poultry	Cattle
Total: 69,834	Total: 789,904	Total: 14,323,216	Total: 18,652
85% Lactating, 15% Dry		75% Layers, 14% Pullets, 10% Turkeys	
<i>Lactating Cows</i> 69,834 x .85 = 59,359	Manure/year	<i>Layers</i>	Manure/year
Manure/year	789,904 x 7.4 lbs. x 365 = 2,133,530,704	14,232,216 x .75 = 10,742,412	18,652 x 52 lb. x 365 = 354,014,960 lbs.
59,359 x 155 lb. x 365 = 3,358,235,425 lbs.	P2O5/year	Manure/year	P2O5/year
P2O5/year	789,904 x .03 lb. 365 = 8,649,449 lbs.	10,742,410 x .2275 lb. x 365 = 892,023,036 lbs.	18,652 x .105 lb. x 365 = 714,838 lbs
59,359 x .52 lb. x 365 = 11,266,338		P2O5/year	
		10,742,410 x .0023625 lb. x 365 = 9,263,316 lbs.	
<i>Dry Cows</i> 69,834 x .15 = 10,475			
Manure /year		<i>Pullets</i>	
10,475 x 87 lb. x 365 = 332,633,625 lbs.		14,323,216 x .14 = 2,005,250	
P2O5/year		Manure/year	
10,475 x .18 lb. x 365 = 688,208 lbs.		2,005,250 x .11375 x 365 = 83,255,473 lbs.	
		P2O5/year	
		2,005,250, x .00118 lb. x 365 = 863,661 lbs.	
		<i>Turkeys</i>	
		14,323,216 x .10 = 1,432,322	
		Manure/year	
		1,432,322 x .47 lb. x 365 = 245,714,839 lbs.	
		P2O5/year	
		1,432,322 x .0051 lb. x 365 = 2,666,267 lbs.	
Total Dairy Manure/year	Total Swine Manure/year	Total Poultry Manure/year	Total Cattle Manure/year
3,690,869,050 lbs.	2,133,530,704 lbs.	1,220,993,348 lbs.	354,014,960 lbs.
Total Dairy P2O5/year	Total Swine P2O5/year	Total Poultry P2O5	Total Cattle P2O5
11,954,546 lbs.	8,649,449 lbs.	12,793,244 lbs.	714,838 lbs.
MRW Ohio Total Phosphate (P2O5) = 34,112,077 lbs./year			

Cedar-Portage River & Sandusky River (Ohio) & River Raisin (Michigan) - State Permitted Facilities (3)

Dairy	Swine	Poultry	CATTLE
Total: 15,519	Total: 34,352	Total: 4,303,672	Total: 6800
<i>Lactating Cows:</i> 15,519 x .85 = 13,191	Manure/year	<i>Layers</i>	Manure/year
Manure/year	34,352 x 7.4 lbs. x 365 = 92,784,752 lbs.	Manure/year	6,800 x 52 x 365 = 129,064,000 lbs./year
13,191 x 155 lb. x 365 = 746,280,825 lbs.	P2O5/year	2,327,672 x .2275 lb. x 365 = 193,284,064 lbs.	P2O5/year
P2O5/year	34,352 x .03 lb. x 365 = 376,154 lbs.	P2O5/year	6,800 x 0.105 x 365 = 260,610 lbs./year
13,191 x .52 lb. x 365 = 2,503,652 lbs.		2,327,672 x .0023625 lb. x 365 = 2,007,181 lbs.	
<i>Dry Cows:</i> 15,519 x .15 = 2,328		<i>Pullets</i>	
Manure/year		Manure/year	
2,328 x 87 lbs. x 365 = 73,925,640 lbs.		1,976,000 x .11375 x 365 = 82,041,050 lbs.	
P2O5/year		P2O5/year	
2,328 x .18 lb. x 365 = 152,950 lbs.		1,976,000 x .00118 x 365 = 851,063 lbs./year	
C-P, Sandusky and Raisin Total State Permitted Dairy	C-P, Sandusky and Raisin Total State Permitted Swine	C-P, Sandusky and Raisin Total State Permitted Poultry	C-P, Sandusky and Raisin Total State Permitted Cattle
Manure/year: 820,206,465 lbs.	Manure/year: 92,784,752 lbs.	Manure/year: 275,325,114 lbs.	Manure/year: 129,064,000 lbs.
P2O5/year: 2,656,602 lbs.	P2O5/year: 376,154 lbs.	P2O5/year: 2,858,244 lbs.	P2O5/year: 260,610 lbs.
Cedar-Portage, Sandusky and Raisin Watersheds Total Phosphate (P2O5) = 6,151,610 lbs./year			
Western Lake Erie Basin Animals & P2O5 (Maumee, Cedar-Portage, Sandusky & Raisin)			
Watersheds	Animals	P2O5 Produced	
Maumee River Watershed	20,434,952	48,128,393 lbs./year	
Cedar-Portage, Sandusky, Raisin Watersheds	4,360,343	6,151,610 lbs./year	
WLEB Total	24,795,295	54,280,003 lbs./year	
	54,280,003 divided by 2.50536 lbs. (the amount of P2O5/year for a human) = 21,665,550 humans		
Number of humans to produce 54,280,003 lbs. of P2O5/year = 21,665,550			
(1) Environmental Working Group/Environmental Law and Policy Center report: "Explosion of Unregulated Factory Farms in Maumee Watershed Fuels Lake Erie's Toxic Blooms" https://www.ewg.org/release/investigation-manure-unregulated-factory-farms-fuels-lake-erie-s-toxic-algae-blooms			
(2) http://codes.ohio.gov/pdf/oh/admin/2020/90110-2-04_ph_ff_a_app1_20140529_1419.pdf			
(3) ODA Fact Sheets			
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Western Lake Erie Basin Estimated Animal Counts, Manure and P2O5

Estimated Animal Counts: Maumee River Watershed 2018 (1)				
Species	Indiana	Michigan	Ohio	Total
Dairy	12,949	15,494	69,834	98,277
Cattle	21,527	29,288	18,652	69,467
Swine	239,595	18,560	789,904	1,048,059
Poultry	4,610,857	285,076	14,323,216	19,219,149
Total	4,884,928	348,418	15,201,606	20,434,952

Animal Counts by State Permits: Cedar, Portage, Sandusky & River Raisin Watersheds 2019 (3)				
Species	Cedar Portage River	Sandusky River	River Raisin	Totals
Dairy	4,960	2,376	8,183	15,519
Swine	8,800	25,552		34,352
Poultry		4,303,672		4,303,672
Cattle		2,200	4,600	6,800
Total	13,760	4,333,800	12,783	4,360,343

Estimated Annual Manure and P2O5: Maumee River Watershed only (1) (2)				
	Indiana	Michigan	Ohio	Total
Manure in lbs/year	2,133,173,826	1,449,209,771	7,399,408,062	10,981,791,659
P2O5 in lbs/year	9,783,642	4,232,674	34,112,077	48,128,393

Manure and P2O5 by State Permit: Cedar, Portage, Sandusky & River Raisin Watersheds 2019 (2)				
	Cedar Portage River	Sandusky River	River Raisin	Totals
Manure in lbs/year	285,914,720	512,694,245	578,547,265	1,317,380,331
P2O5 in lbs/year	945,458	3,634,247	1,876,545	6,151,610

(1) Environmental Working Group/Environmental Law and Policy Center report:

"Explosion of Unregulated Factory Farms in Maumee Watershed Fuels Lake Erie's Toxic Blooms"

<https://www.ewg.org/release/investigation-manure-unregulated-factory-farms-fuels-lake-erie-s-toxic-algae-blooms>

(2) OAC Rules 901:10-2-04 & 901:10-2-10:				
http://codes.ohio.gov/pdf/oh/admin/2020/90110-2-04_ph_ff_a_app1_20140529_1419.pdf				
(3) ODA Fact Sheets				
<i>Rev. 11/19/20</i>				