

18 December 2015

RE: findings of the CFO/CAFO Study Committee.

Dear County Plan Commission Colleague:

This letter accompanies the transmittal of materials and documents for your reference on the matter of findings of the CFO/CAFO Study Committee.

The Final Process Agenda lists meetings, trips and topics. You will see that the Committee – counting the 8 December 2015 meeting not shown – held twenty-one meetings and four site visits over the course of sixteen months. The work of the Committee took place in meeting rooms, hog and dairy barns, online surveys, and before a public audience.

We certainly owe a debt of gratitude to the members who stayed with the process and represented their interests responsibly. The presenters and agricultural hosts who helped us out are also to be thanked, along with Ashley Klingler and Jeff Bergman of the Columbus/Bartholomew Planning Department.

The Committee members were selected by the County Commissioners over the summer of 2014 to represent a variety of agricultural, community, and governmental interests that apply to the subject of CAFO/CFO regulation. A listing of those individuals, and their affiliations, is attached.

You might wish to know how the topics shown in the Final Process Agenda were chosen. I began in the summer of 2014 with a list of topics that seemed to emerge from the BZA hearings that were taking place at that time, limiting scope to only that which zoning regulates. Additionally, I consulted with Extension colleagues in other counties – who were also facilitating study committees on CAFO/CFO zoning – and with specialists on the Purdue campus. The Committee reviewed and approved the overall Process Agenda, and individual Agendas as each meeting came around. Topics suggested along the way required Committee approval to be added.

Even though the Process Agenda seems comprehensive, there was concern expressed by Committee members – and public commenters – that the matters of public health and property values were not adequately addressed. While a presenter was engaged to address pathogens (3/30/14), some Committee members expressed an interest in more on public health. Weighing Committee interest in moving forward with interest in more information, I asked the Committee for their wishes on 13 August and again on 10 September; the Committee consensus was to move forward.

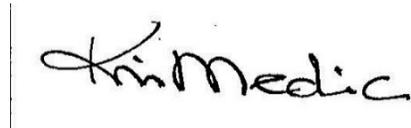
Many of the meetings were recorded, but not all (due to technical issues), and all meetings were documented with a set of notes. You can find those recordings and documents on the Purdue Extension Bartholomew County website, <https://extension.purdue.edu/bartholomew/Pages/article.aspx?intItemID=6684>.

As I understand it, Jeff Bergman will forward to you the proposed ordinance revisions and other essential documents. As you will see, recommendations from the Committee were split into minority and majority positions, of which the majority recommendation was used for the purposes of drafting proposed ordinance language. Jeff will be able to explain this further.

I regret that the Committee was unable to reach a consensus on the specifics of this important matter. It did become clear, however, that most members of the Committee wanted to see additional regulation; the question then became "how much?" As you read through the materials, you will see that Committee members had a range of answers to this question based on their understanding of what was studied. I am hopeful that the Plan Commission will be able to take this to the next level in the best possible way.

I'll be happy to answer your questions as we proceed.

Sincerely,



Kris Medic, Extension Educator  
Agriculture/Natural Resources/ Community Development

C: CAFO Regulation Study Committee Members

Attachments:

Definitions document  
Final Process Agenda Revised  
Recommendations Summary (as provided by Planning Staff)  
Public Input received in writing or by voice mail  
Items suggested for future study  
CAFO/CFO Regulation Study Committee Majority Report  
CAFO/CFO Regulation Study Committee Minority Report  
CAFO/CFO Regulation Study Committee Members

# DEFINITIONS DOCUMENT



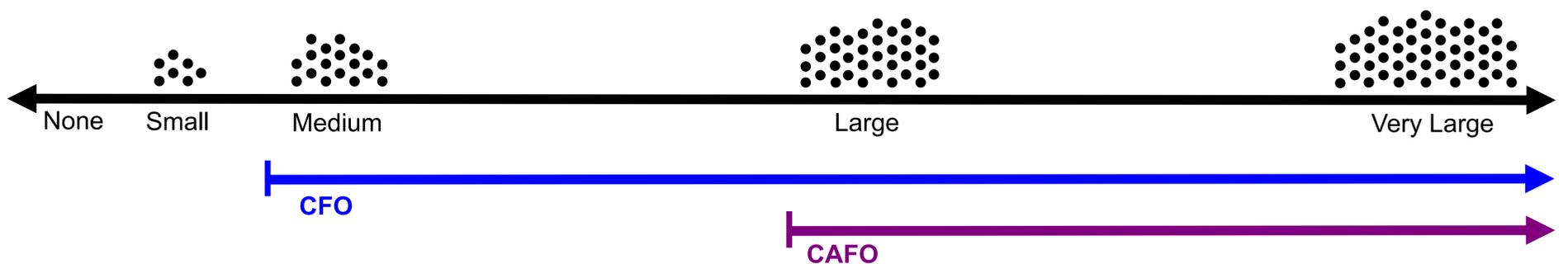
# CONFINED FEEDING OPERATIONS: WHAT ARE THEY?

## Definition:

Confined feeding is the raising of animals for food, fur or recreation in lots, pens, ponds, sheds or buildings, where they are confined, fed and maintained for at least 45 days during any year, and where there is no ground cover or vegetation present over at least half of the animals' confinement area. Livestock markets and sale barns are generally excluded.

A Confined Feeding Operation (CFO) meets all of the criteria above. A Confined Animal Feeding Operation (CAFO) is a term for a large CFO. All CAFOs are CFOs. A CAFO requires a larger threshold number of animals.

## Threshold Number of Animals to be a CFO or CAFO:



	<b>CFO:</b> <b>Confined Feeding Operations</b>	<b>CAFO:</b> <b>Concentrated Animal Feeding Operation</b>
 <b>cattle</b>	300 or more	700 mature dairy cows 1,000 veal calves 1,000 cattle other than mature dairy cows
 <b>swine</b>	600 or more	2,500 swine above 55 pounds 10,000 swine less than 55 pounds
 <b>sheep</b>	600 or more	10,000 sheep or lambs
 <b>poultry</b>	30,000 or more	55,000 turkeys 30,000 laying hens with a liquid manure handling system 125,000 broilers with a solid manure handling system 82,000 laying hens with a solid manure handling system 30,000 ducks with a solid manure handling system 5,000 ducks with a liquid manure handling system
 <b>horses</b>	500	500 horses



# FINAL PROCESS AGENDA REVISED



# BARTHOLOMEW COUNTY CAFO REGULATION STUDY COMMITTEE

<b>Date:</b>	<b>Activity:</b>	<b>Topic:</b>	<b>Guest Presenter:</b>
September 17, 2014	Presentation/Discussion	Overview of <b>Existing County Regulations</b>	Jeff Bergman (Columbus/Bartholomew Planning Department)
September 29, 2014	Presentation/Discussion	Historical and Current <b>Livestock Methods</b>	Matt John (IVY Tech Agriculture Program)
October 29, 2014	Presentation/Discussion	The <b>State of CAFO Regulation</b>	Steve Howell & Joe Williams (Indiana Department of Environmental Management)
November 19, 2014	Site Visit	Ag Production Enterprises in Decatur County ( <b>Swine CAFO</b> )	Robert Pumphrey (Ag Production Enterprises)
December 17, 2014	Presentation/Discussion	CAFOs and <b>Groundwater</b>	Mark Basch (Indiana Department of Natural Resources/Division of Water)
January 15, 2015	Presentation/Discussion	CAFOs and <b>Local Water Utilities</b>	Keith Reeves (Columbus Utilities), <i>Jane Frankenburger (Purdue Agricultural and Biological Engineering) was unable to attend on the topic of surface water.</i>
January 29, 2015	Presentation/Discussion	CAFOs and <b>Air Quality</b>	Al Heber (Purdue University Agricultural and Biological Engineering)
February 18, 2015	Presentation/Discussion	CAFOs and <b>Infrastructure</b> , Evaluate Process Mid-Term	Danny Hollander (Bartholomew County Engineer)
February 24, 2015	Site Visit	Wagler Dairy in Brown County ( <b>Dairy CAFO</b> )	Sarah Pence Wagler (Wagler Dairy)
March 25, 2015	Site Visit	Columbus Fire Station 5 for <b>HAZMAT Considerations</b>	Scott Maley (Columbus Fire Department)
March 30, 2015	Presentation/Discussion	<b>Pathogens, Noise, Visual</b>	Paul Ebner (Purdue University Animal Science)
April 15, 2015	Presentation/Discussion	<b>Regulatory Options and Zoning Practices</b>	Jeff Bergman (Columbus/Bartholomew Planning Department)
April 29, 2015	Discussion	<b>Stakeholders, Dairy Visit</b> (Dan Fleming), <b>Odor Modeling</b> (Mike Percy), <b>Zoning Models</b> (Annalee Huey)	
May 6, 2015	Discussion	Rank <b>Regulatory Direction</b> —Less, Same, or More?	
May 20, 2015	Discussion	<b>Setback Values, SMART Goals</b> (Zach Matthews), How to Wrap Up	
June 3, 2015	Discussion	<b>Setback Values</b>	
June 6, 2015	Poll	Committee Polled on <b>Setback Values</b> and use of other <b>Zoning Tools</b>	
June 17, 2015	Discussion	Poll Results on <b>Setback Values</b>	
June 24, 2015	Discussion	<b>Setback Values</b>	
July 1, 2015	Site Visit	Four Committee Members visit Professor Al Heber (Purdue Agricultural and Biological Engineering) to learn more about the <b>Purdue Setback Model</b>	
July 20, 2015	Discussion	<b>Purdue Setback Model</b> (visit with Dr. Heber), <b>Setback Values</b>	
August 4, 2015	Discussion	Review <b>Committee Process</b> , Finish-Out Schedule	
August 13, 2015	Discussion	<b>Setback Values</b>	
September 10, 2015	Discussion	<b>Review maps generated by setback values</b> , and poll results on <b>Permitted vs. Conditional Use</b> , Open House	
October 21, 2015	Future Discussion	Committee to consider final draft of recommendations in light of <b>public input</b> from Open House	
September 2016	Future Discussion	Committee to review <b>how recommendations have been used</b> , and to learn from Planning Staff about their implementation	



**PUBLIC INPUT  
RECEIVED IN WRITING  
OR BY VOICE MAIL**



To the County Commissioners,  
I would like CAFO setbacks  
to be stronger than the Minority  
Report. One mile setback between CAFO  
structure + property line would be best for  
the majority residents in Bartholomew County.

I have talked to 5 small farmers and they  
do not want CAFO anywhere near where  
they farm. The small farmers are afraid  
to come out against CAFO's because they  
are renting land from Big Business Farmers  
(who want CAFO).  
Sincerely  
Mbecca Jones

DEAR COMMISSIONER KLEINHEART,

JUST LOOKING AT POPULATION DATA  
BY COUNTY, I'M CONVINCED THAT BARTH  
COUNTY IS TOO POPULATED/SQ MILE TO  
SUPPORT MORE FEED OPERATIONS WITHOUT  
RUINING THE LIVES OF YOUR CONSTITUENTS.  
PLEASE SUPPORT A LARGE SETBACK  
1/2 MILE - BLDG TO RESIDENTIAL PROPERTY  
LINE.

DENNIS THIBETTS

# Pig Power Pays Off

Scaling up waste-to-energy technology could transform the hog farming industry.

BY WENDEE NICOLE



→ In the heart of North Carolina's bucolic wine country, east of the Great Smoky Mountains, lies Loyd Ray Farms — a factory farm that turns pig poop into energy.

From the road, the sprawling site looks like a typical concentrated animal feeding operation, or CAFO, with nine elongated metal barns housing nearly 9,000 hogs and an open lagoon that stores liquefied manure. But next to the lagoon is a bizarre basin covered by an inflated tarp: the biodigester. Every week, this swollen structure turns 400,000 gallons of liquid hog waste into biogas that fuels the farm.

Loyd Ray Farms is the first to tap a new energy market created under North Carolina's unique renewable energy law, which took effect in 2012. Whereas many states have renewable energy laws requiring utility companies to harvest a percentage of their energy from solar or wind power, North Carolina is the only one requiring power derived from hog or chicken manure. Loyd Ray Farms has been turning its animal waste into

suit and expand the market for waste-to-energy systems on a national scale.

## CLEANING UP SLOP

Before its upgrade, Loyd Ray Farms was a classic "feeder-to-finish" operation, bulking up thousands of swine for slaughter every year. These large, confined hog facilities spread rapidly through North Carolina in the 1980s and 1990s. But during this heyday, heavy rains caused several manure lagoons in the state to rupture; public outrage swept the country as pathogen-laden sludge leached into waterways.

Meanwhile, researchers were showing that besides soil and water contamination, hog CAFOs emit high volumes of the potent greenhouse gas methane (pound for pound, hog manure produces twice the methane of cattle manure) and ammonia, which has been linked to respiratory ailments. Farmers exacerbate these health hazards when they spray the liquid manure onto their fields as fertilizer, volatilizing more chemicals and producing an unpleasant stench



A biodigester (top, foreground) generates power for Loyd Bryant's farm. A flare (inset) burns leftover biogas to minimize methane.

waste to groundwater and preventing the release of pathogens to the environment.

In 2007, with this new environmental law in place and the renewable energy law under consideration in the state Legislature, environmental scientists at Duke University seized the opportunity to reimagine swine farms. They teamed up with Duke Energy, North Carolina's largest utility, to convert a standard hog CAFO into a sustainable farm. Engineers from Cavanaugh Solutions designed a system that would turn the animal waste into energy. Soon, Google got wind of the project. With its well-known corporate commitment to reduce the carbon footprint of its operations to zero, Google's top brass saw investment in the project near its Lenoir, N.C., data

reducing odors on the farm, which I knew my neighbors would appreciate. I liked the idea of having healthier pigs from the ammonia control, which helps them grow better and reduces mortality. And I liked the idea that I might be able to expand my farm someday because of this innovative system,” Bryant explains.

### A DAY ON THE FARM

Now Bryant’s daily chores include flushing 80,000 gallons of manure from two barns into the farm’s biodigester, a 174-by-218-foot plastic-covered pit. Inside, anaerobic bacteria — which do not require oxygen — silently convert the organic matter into methane, carbon dioxide and other chemical byproducts. Bryant’s biodigester mixes the liquid inside to keep digesting bacteria in constant contact with the waste material. This maximizes digesting efficiency and helps the bacteria outcompete pathogenic strains, reducing pathogen loads without the use of synthetic chemicals.

At the other end of the digester, Bryant captures biogas composed of about 60 percent methane and 40 percent

carbon dioxide. A machine called a gas skid brings this mixture to the right temperature and pressure for turning a 65-kilowatt microturbine. The electricity it generates is enough to run the waste treatment system plus the lights and machinery in five of Bryant’s nine hog barns. Any excess biogas is burned in a flare that converts methane into less-polluting carbon dioxide.

The leftover liquid waste is routed to an aeration basin where nitrogen-fixing bacteria convert ammonia to nitrate. Some of this “manure tea” is used to flush out the barns. Bryant sprays the rest on his fields in place of the less-treated manure he used to use. Since the treated effluent tea has far less ammonia, it produces less fumes and odors, which Bryant’s neighbors have been quick (and happy) to note. Also, plants take up the tea faster than manure because their roots can absorb nitrates directly and more easily than ammonia.

Preliminary estimates indicate the converted farm prevents the production of greenhouse gases equivalent to 5,000 metric tons of carbon dioxide a year —

like taking some 1,000 cars off the road.

This allows Bryant to provide renewable energy credits to Duke Energy and carbon offset credits to both Google and Duke University, in exchange for their initial investment in upgrading his farm. When the existing contract expires in 2020, Bryant can sell those credits on the open market, as

payoff. “Less than 1 percent of our carbon emissions are offset by this,” says Jolanka Nickerman, manager of Google’s Carbon Offsets Team. Buying into the waste-to-energy project was an opportunity to help transform an industry to benefit the environment, business and local communities. “It was win-win-win,” says Nickerman. Now the challenge is spreading and scaling that technology to make it a viable means of offsetting more carbon.

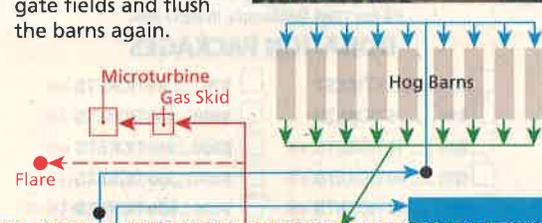
### HARNESSING POOP POWER

The Loyd Ray Farms project was a learning process. In the summer heat, for example, the system didn’t produce enough energy to power the biodigester’s electrical system while also cooling the hog houses, so managers had to shift the operational schedule to balance the electrical load. When a plastic basin liner was installed wrong, managers had to put in a new one. Plus, the original gas skid needed to be replaced because it could not handle the sulfur dioxide contained in the biogas.

Despite these setbacks, analyses of the Loyd Ray experiment show that electricity generated from swine waste is competitive in the renewable energy marketplace. Getting new projects off the ground will likely hinge on the cost to farmers, says Tanja Vujic, who directs the project at Duke University. Environmental safeguards, like Bryant’s aeration basin and plastic basin liners, are necessary but expensive because they lack financial incentives. Vujic expects prices to come down as more waste-to-energy systems are studied, tested and implemented. With Bryant’s farm as an example of success, Vujic hopes other farmers will see payments for energy and carbon offsets as a way to finance

### Loyd Ray Farms

Manure in the barns is flushed into the biodigester. Here it produces biogas to fuel a microturbine. The remaining effluent is aerated so it can be used to irrigate fields and flush the barns again.



Voice Recording

Received by County Commissioners

24 August 2014

Hi, my name is Elizabeth Larson. I live in Bartholomew County, and I would like to go on record as opposing any CAFO expansion, and that I am opposed to them even considering adding or putting them close to homes, schools, churches, businesses, or any building. It's detrimental to the environment and it's cruel to the animals. Thank you.

## Indiana gives initial OK to off-site manure ponds

INDIANAPOLIS — A state rule-making panel has given its preliminary approval to Indiana's first regulations governing big stand-alone ponds and lagoons built to hold manure trucked in from livestock farms.

The Environmental Rules Board gave initial approval Wednesday to the rules for so-called "satellite" manure lagoons after environmentalists told the panel the regulations aren't tough enough.

Dave Menzer of the Citizens Action Coalition called them "grossly inadequate" compared with what's needed to protect Indiana's water supplies.

Some environmentalists fear the rules will turn Indiana into a dumping ground for out-of-state manure. The rules largely mirror Indiana's existing regulations for manure lagoons on large livestock farms.

Board chairwoman Beverly Gard said the panel is expected to tweak the

9704 West Raintree Dr.  
Columbus  
IN 47201

February 21, 2015

Kris Medic  
Director, Bartholomew County Extension Service  
1971 State Street  
Columbus, IN 47201

Dear Kris,

This is written to you in your role as the head of the Committee studying CAFO's in Bartholomew County. Please share as you see fit with other Committee members.

I was raised on a farm in northeastern Indiana. My father raised 50-100 hogs for the period of my first memory until I was in high school. I know what pig poop smells like. And I've shoveled lots of it.

It was a different time. All of our neighbors were also farmers and they also raised livestock so everyone had "odor" in their everyday life. And the size of each family's herd was such that the manure could be spread on their acreage and be "plowed in" without significant damage to the water supply.

Today is different. Most farmers have neighbors that do not raise livestock. They live in rural areas for a lifestyle they have chosen.

CAFO's with hundreds or thousands of hogs or cattle cannot eliminate the smell, no matter what they argue. And the amount of "poop" generated cannot be disposed of on their acreage without resultant water pollution. (Unless they happen to have thousands of acres on which to spread the waste and that just is not true, nor will it be, in our county.)

I hear the arguments of CAFO proponents that it is their land and they should be able to do as they wish. What I don't hear is anything about the rights of their neighbors. Do they not have the right to clean air and water? What makes the "right to build a CAFO" more important or better than their rights?

Let's continue to make Bartholomew County "different by design" by not allowing CAFO's.

Thank you for your time.

Sincerely,

  
Terry Marbach

Gentlemen:

The model below is taken from an Alaskan high school student study (1) done in **2004**. It's said that a picture is worth a thousand words, so I hope you appreciate my attempt at brevity. The quote below it comes from a Michigan State University study (2) appearing in *Proceedings of the National Academy of Sciences* in **2015**. Taken together, I'm trusting that you'll see their relevance to the current CAFO issues before you. They are just two of scores of such studies that reach the same conclusions.

My point is that due to the fact that a large portion of Bartholomew County sits on an 85-foot-deep underground lake which serves as the only water supply for many of its rural citizens, not to mention its city and towns, CAFOs by their very nature jeopardize our health, our safety and productivity, and our property values. Perhaps you can use this document to convince yourselves and your fellow commissioners not to piss in our wells with their votes tomorrow night.

--Noel Taylor, 2529 Sandcrest Blvd Suite B, Columbus, IN 47203

*Water expert Joan Rose and her team of water detectives have discovered freshwater contamination stemming from septic systems. Appearing in the Proceedings of the National Academy of Sciences, the study is the largest watershed study of its kind to date, and provides a basis for evaluating water quality and health implications and the impact of septic systems on watersheds.*

*"All along, we have presumed that on-site wastewater disposal systems, such as septic tanks, were working," said Rose, Homer Nowlin Chair in water research. "But in this study, sample after sample, bacterial concentrations were highest where there were higher numbers of septic systems in the watershed area."*

*Until now, it was assumed that the soil could filter human sewage, and that it works as a natural treatment system. Discharge-to-soil methods, a simple hole dug in the ground under an outhouse, for example, have been used for many years. Unfortunately, these systems do not keep E. coli and other pathogens from water supplies, Rose said.*

(1) <https://seagrant.uaf.edu/nosb/papers/2004/seeuonline-septicsystems.html>

(2) <http://www.sciencedaily.com/releases/2015/08/150803154850.htm>

Voice Recording Kathy Panning

10-28-15

Hi I'm Kathy Panning, 812-372-4147, 2614 Chestnut Street, Columbus, 47201 and I am calling the Commissioners to please, please don't inflict CAFOs on us. I read about what happened in Henryville and how the health and the financial abilities of a local farmer were much affected by having a CAFO come in after their farm had been there for a long, long time; over a hundred years. Come from a farm family, agree that it is great to farm, but this is not normal farming. This is factory farming creating lots of waste, and order, and pollution, and bringing all kinds of hazardous conditions and we don't need it in Bartholomew County. I want you to vote for the minority report or less, preferably no CAFOs, and I would be glad to talk to anybody about it. Again it's Kathy and Ron Panning, 812-372-4147. Thank you.

## Impacts of CAFOs on Rural Communities1

John Ikerd2

The only thing that promoters and opponents of large-scale confinement animal feeding operations (CAFOs) agreed on is that CAFOs invariably create conflicts in rural communities. The CAFO promoters accuse the opponents of being emotional, uninformed, radicals, opposed to modern agriculture and to progress in general. The opponents accuse the CAFO promoters of being insensitive, self-seeking bullies, unconcerned about the rights other people in the community. Eventually, virtually everyone in the community lines up on one side or the other of these arguments. Over time, those on one side lose all sense of commonality or community with those on the other. Everywhere CAFOs become a significant public issue, the social fabric of rural communities is ripped to shreds.

CAFOs are invariably promoted to communities as a logical rural economic development strategy and the only means of maintaining a viable local agricultural economy. CAFOs invariably are opposed by community members because of concerns about noxious odors and pollution of streams and groundwater – which ultimately are health concerns – and about the impacts of CAFOs on the overall quality of life in their communities. Local public officials are invariably put in the uncomfortable position of trying to decide whether any potential economic benefits of CAFOs are worth the ecological and social costs.

The promoters of CAFOs tend to target communities that are desperate for economic development, although they may later branch out into surrounding areas. Local leaders are told that the CAFO will add to local employment and the local tax base. The effects of increased local spending for buildings, equipment, feed, and feeder livestock are supposed to multiply as they ripple through the community, resulting in additional expenditures for groceries, clothes, housing, automobiles, healthcare, and other consumer necessities. Increased property tax collections will then pay for better local schools, roads, and other public services. The promoters claim that the CAFOs are a natural result of our free market economy. If they don't locate here they will just locate somewhere else, local farmers will be denied an opportunity to succeed, and the local community will be left without an agricultural economy.

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Initially, most opponents of CAFOs are concerned about the inevitable odors caused by the huge quantities of livestock manure generated by CAFOs. However, as they begin to learn more about CAFOs, they become aware of other environmental risks – pollution of streams and aquifers with biological wastes and the human health risks associated with air and water pollution. They also become aware of growing concerns about the higher risks of E-coli O157:H7 and antibiotic resistant bacteria, including MRSA, and even “mad cow” disease associated with CAFOs. As local opponents begin to communicate with those in existing CAFO communities, they become increasingly concerned about the potential impacts of CAFOs on the overall quality of life in their communities. They also begin to challenge the economic claims of CAFO proponents, because people in other communities have been made the same promises and they have proven to be empty.

Such community conflicts were understandable in the early days of contract livestock production, while the ultimate impacts of large-scale CAFOs on rural communities were still largely unknown. Earlier socioeconomic research had focused on the negative impacts of large, industrial agricultural operations on traditional diversified farming communities.<sup>i</sup> We know now that CAFOs are the epitome of industrial agriculture. But, most of the earlier studies had focused on crop production and there was no *proof* that the earlier studies were also relevant to large-scale confinement animal feeding operations.

Today, however, there is no legitimate reason for these conflicts to continue. Virtually every study done on the subject in the past 20-years has confirmed the inevitable negative community impacts of CAFOs suggested by earlier studies. The research had consistently shown that both the social and economic quality of life is better in communities characterized by small, diversified family farms. Even in cases where larger, specialized farming operations have brought more jobs and total income to communities, they have also brought greater inequity in income distribution. The rich got richer and the communities got more poor people. The economic benefits went to a few wealthy investors, the new jobs were lower-paying than existing jobs, and communities were left with fewer middle-income taxpayers to support the community. The only studies finding anything positive about CAFOs are those that focused solely on their aggregate economic impacts, while ignoring the negative impacts of income inequity on overall quality of life in communities.

A 2006 study commissioned by the North Dakota Attorney General’s Office provides a review of 56 socioeconomic studies concerning the impacts of industrial agriculture on rural communities. It concluded: “Based on the evidence generated by social science research, we conclude that public concern about the detrimental community impacts of

industrialized farming is warranted. In brief, this conclusion rests on five decades of government and academic concern with this topic, *a concern that has not abetted but that has grown more intense in recent years, as the social and environmental problems associated with large animal confinement operations [CAFOs] have become widely recognized* (italics added). It rests on the consistency of five decades of social science research which has found detrimental effects of industrialized farming on many indicators of community quality of life, particularly those involving the social fabric of communities. And it rests on the new round of risks posed by industrialized farming to Heartland agriculture, communities, the environment, and regional development as a whole.”ii

Among the problems associated with increasing income inequity were changes in the social composition of communities. Increasing numbers of poor immigrants in communities, regardless of their ethnicity, bring fundamental changes in the social composition and structure of communities. This typically leads to increasing social conflicts in schools, increased crime, and more family problems. A community “class structure” often emerges, or is amplified, in which some people are accepted as equals within the community and others are not. As a result there is typically a decrease in participation in community social and civic activities and less loyalty to local businesses – the community loses its sense of community and its ability to function for the common good. When some few people benefit at the expense of the community as a whole, it seems to violate an important rural ethic that destroys the sense of community.

Any tax benefits resulting from increased economic activity are more than offset by increasing public expenditures for schools, law enforcement, and social services, in addition to the increased costs of maintaining roads and bridges due to increased truck traffic hauling feed and livestock to and from CAFOs. The research verifies that most of the promised increases in tax revenues never materialize, as most of the jobs go to people from outside the community and CAFOs spend relatively little for feed or other operating needs within their local communities. I have not found a single case where local property tax rates have been reduced or local public services have been improved as a result of CAFOs choosing to locate in a community. Perhaps most compelling, there is not a single community where CAFOs represent a significant segment of the local economy that is looked to by other communities as a model for rural community development.

With respect to the opponents’ arguments, a growing body of scientific evidence has confirmed that the health and environmental concerns associated with CAFOs are justified. Those who continue to deny the existence of sound science indicating significant human health risks are either completely misinformed or have a concept of science that is simply too narrow to address the *actual* health risks of CAFOs. Some CAFO proponents admit that numerous scientific studies have found evidence of health risks but point to other studies that have found no significant linkage between CAFOs to human health. For example, a 2004 Government Accounting office (GAO) report

concluded, “Antibiotic-resistant bacteria have been transferred from animals to humans, and many of the studies we reviewed found that this transference poses significant risks for human health.”<sup>iii</sup> The USDA, an ardent proponent of CAFOs, responded to the draft report by suggesting that the conclusions of existing research on the issue was not conclusive, and suggested that the GAO include more studies that questioned the significance of the linkage of antibiotic resistance to CAFOs. The GAO responded, “We found that only a few studies have concluded that the risk is minimal, while many studies have concluded that there is a significant human health risk from the transference.” The Center for Disease Control was even sharper in its rebuke of USDA’s comments.

In calling for a nationwide moratorium on CAFOs, the American Public Health Association cited more than 40 scientific reports indicating health concerns related to CAFOs.<sup>iv</sup> The citations include research from such prestigious institutions as the University of North Carolina Medical School, the University of Iowa Medical School, and the Johns Hopkins School of Public Health. In testifying before a U.S. congressional committee, the Director of the Johns Hopkins School of Public Health cited scientific evidence concerning the contamination of air, water, soil, and foods with toxic chemicals, infectious diseases, antibiotic resistant bacteria, and E. coli 0157:H7.<sup>v</sup> A prestigious commission funded by the Pew Charitable Trust concluded in their 2008 report, “The current industrial farm animal production system often poses unacceptable risks to public health, the environment and the welfare of the animals... the negative effects of the system are too great and the scientific evidence is too strong to ignore. Significant changes must be implemented and must start now.”<sup>vi</sup> The preponderance of scientific leaves little credible doubt that CAFOs represent significant environmental and health risks to rural residents. The only remaining question is whether rural people have the right to do anything about it.

Rural communities are at a critical point in their history. Many rural communities today are being asked to sacrifice their future to CAFOs so a few local “farmers” and outside corporate investors can benefit economically. The most valuable assets many rural communities possess are their natural environment and their strong sense of community. Many are still places with clean air, clean water, open spaces, scenic landscapes, and opportunities for peace, quiet, and privacy. Many are still places where people have a sense of belonging, friendly places where people know and care about each other, where crime rates are low and a strong sense of safety and security still exists. Such attributes are becoming increasingly scarce in America, and thus are becoming increasingly valuable. Rural communities are sacrificing their futures for CAFOs.

As rural areas become polluted and their sense of community degraded, they are losing their most precious future resource, the next generation, as their children leave for

the cities for better opportunities. In fact, rural parents routinely advise their children to go away to college and get a good education so they won't have to return to the rural community or farm for a living. Thankfully, many rural people are beginning to realize there is no future in turning their communities into dumping grounds for the rest of society – not for CAFOs or for landfills, toxic waste incinerators, and prisons. Unfortunately, many just don't know what else to do. They have been systematically abused for so long they have come to accept the degradation as inevitable.

Federal and state governments are not going to help them; politicians are simply not willing to defy the economic and political power of the agricultural establishment. Obviously, current environmental and health regulations are inadequate to protect rural areas, as seen in repeated and persistently negative health and environmental effects in areas where CAFOs currently operate under such regulations. So, rural people are left with no alternative other than to stand up for themselves – for their basic democratic rights of self-defense and self-determination. Thus far, the courts have upheld the rights of local communities to pass regulations more stringent than federal and state laws, when clearly justified for the protection of public health. The evidence needed to justify local health ordinances would appear to be compelling. It remains only for people in rural communities to make compelling cases for local control of CAFOs. Once the people of rural communities have reclaimed their right to a healthy and clean environment, they can begin the task of rebuilding an economic, social, and ecological foundation needed for *sustainable* community development. The future opportunities of rural communities are virtually unlimited as the industrial era draws to a close. The future of rural communities is in the land and the imagination, creativity, ethics, and honesty of the people of rural communities, not in soliciting or begging for outside corporate investments.

In fact, the most important impact of CAFOs on rural communities may turn out to be that they have sparked a new rural revolution. The future leadership of rural communities is emerging today among the opponents of CAFOs. They are learning to organize and to work together to make a difference in the future of their communities. They certainly aren't winning all the battles but they are slowly winning the war. Now is the time for communities to rise up and reclaim their right to protect their environment from industrial, corporate agriculture. Now is the time for the people of rural communities to invest their time, their energy, their intellect, their money, and their integrity in restoring the health and productivity of their land and their environment. Now is the time for rural communities to demand their democratic right to exert local control over CAFOs, and in so doing, to begin to take control of their own destinies.

# **Raising a Stink: Air Emissions from Factory Farms**

## **Introduction**

Most of the meat and milk consumed by Americans comes from animals grown by large companies on industrial sized factory farms (concentrated animal feeding operations or CAFOs), housing tens of thousands of animals whose growth and slaughter or milk production is carefully controlled by corporate formulas. Such large concentrations of animals create vast amounts of manure in one location, which increases the potential for harm to the environment and to public health. Manure from industrial animal production chokes rivers and streams and also results in emissions of noxious air pollutants like ammonia, hydrogen sulfide and volatile organic compounds. These pollutants are generated by the animals themselves and by their decomposing manure. Public health experts have linked pollution emissions from CAFOs to a suite of illnesses including lung damage and even death.

EPA and States authorized to implement the Clean Air Act (CAA) have the authority to require that CAFOs measure and control their emissions. However, EPA and State regulators have exercised their authority in only a few instances, because industry lobbyists and the United States Department of Agriculture (USDA) have effectively undermined CAA enforcement of CAFOs.

Although CAFOs are required under the CAA to know their air emissions and comply with the law, EPA should require air emissions monitoring at the largest industrial-sized facilities that present the highest risk, and, if necessary, require them to install control technologies. At a minimum, EPA and the States should not continue to permit industrial-scale operations without knowing the environmental or public health consequences, particularly in light of the science documenting the grave health risks posed by these operations' emissions to workers and nearby residents.

## **Harmful Effects of Consolidation**

Due to ongoing consolidation in the animal production industry, the number of U.S. livestock and poultry operations is declining. Increasingly, larger, more industrialized and specialized operations account for a greater share of all market production. For example, in 1997, nearly 40% of hogs produced in the U.S. were owned by just ten companies, and that concentration has steadily increased.<sup>1</sup> Hog processing is even more concentrated than hog production. In 1998, the top four pork processors marketed 57% of all hogs in the country.<sup>2</sup> In the beef sector, 2% of the feedlots in 1997 with over a 1,000 head of cattle produced 80% of the beef sold in the U.S.. In the poultry sector, broiler operations that represented only 11% of the total number of operations accounted for nearly half of annual production.<sup>3</sup>

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<sup>1</sup> Successful Farming Magazine, *Largest Pork Producers 2001* (October 2001).

<sup>2</sup> Iowa State University and The University of Iowa Study Group, *Iowa Concentrated Animal Feeding Operations Air Quality Study* (February 2002).

<sup>3</sup> EPA, *Emissions from Animal Feeding Operations (Draft)* (August 2001).

Larger and more industrialized operations produce enormous amounts of waste at single geographic locations, raising the potential for significant environmental damage. One factory farm in Northern Missouri generates more feces and urine than the entire St. Louis metropolitan area, but without the treatment that cities are required to provide. Primitive lagoons are used to “manage” the manure and wastewater. These “lagoons” or vast holding ponds often crack and leak nitrates and other contaminants into drinking water supplies, or overflow and contaminate surface water.<sup>4</sup> The lagoon levels are periodically reduced through land-application of the waste, sometimes through large spray guns that often saturate the land until manure runs into creeks and onto neighboring property.<sup>5</sup>

In addition to impairing water quality, concentrated animal feeding operations can be significant sources of harmful air emissions. Emissions are generated by the animals themselves and by their manure as it decomposes in lagoons, barns and as it is spread onto land. Emissions can be gases or particles. Gaseous emissions include ammonia, hydrogen sulfide, methane, carbon dioxide and volatile organic compounds, which contribute to odor. Some of these gases persist in the atmosphere for hours or days and may be transported hundreds of kilometers. Ammonia and sulfur compounds also participate in reactions that can form secondary particles (fine dust) and aerosols in the atmosphere. Particulate matter (PM) or dust emitted from CAFOs comes from feed and animal dander. Generally, PM is dispersed rapidly through the atmosphere and ultimately deposits on land.<sup>6</sup>

### **Health and Community Impacts**

Extensive occupational health studies since 1977 have documented acute and chronic respiratory diseases among CAFO workers, especially swine and poultry workers. CAFO workers commonly complain of sinusitis, acute and chronic bronchitis,<sup>7</sup> inflamed mucus membranes and irritation of the nose and throat, headaches, muscle aches and pains.<sup>8</sup> CAFO workers also experience asthma and acute and progressive decline in lung

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<sup>4</sup> EPA has issued several emergency orders to CAFOs whose leaking lagoons contaminated groundwater and in one case may have contributed to miscarriages.

<sup>5</sup> The USDA estimates that the cropland controlled by operations with confined animals has the capacity to absorb only about 40% of the nutrients generated by these operations. Kellog, R.L., Lander, C.H., Moffit, D. and Gollehon, N., *Manure Nutrients Relative to the Capacity of Cropland and Pastureland to Assimilative Nutrients: Spatial and Temporal Trends for the U.S.* (2000) U.S.D.A. Natural Resources Conservation Service, Washington, D.C.. As a result, EPA has identified agriculture as the number one remaining cause of water quality impairment for rivers and lakes. EPA 3-5(b) Report (2000).

<sup>6</sup> Iowa State University and The University of Iowa Study Group, *Iowa Concentrated Animal Feeding Operations Air Quality Study* (February 2002).

<sup>7</sup> *Id.* Chronic bronchitis affects about 25 percent of CAFO workers while acute bronchitis affects as many as 70% of CAFO workers exposed.

<sup>8</sup> Cole D, Todd L, Wing S, *Concentrated swine feeding operations and public health: a review of occupational and community health effects*, Environ Health Perspect 108:685-699 (2000).

function over time.<sup>9</sup> CAFO workers have died from very high emissions of hydrogen sulfide which can occur from the agitation of manure in lagoons, and others have developed severe respiratory impairment.

Although occupational health risks cannot be directly extrapolated to community health risks, those in the general community, including children, the elderly and those with preexisting respiratory problems, can be much more susceptible to CAFO emissions. Many experimental and epidemiological studies of non-CAFO populations have documented adverse health effects among community residents exposed to low levels of ammonia and hydrogen sulfide. Based on these non-CAFO studies, both the EPA and the Agency for Toxic Substances and Disease Registry have recommended ambient exposure limits for ammonia and hydrogen sulfide.<sup>10</sup> These studies have revealed the following health problems associated with the individual chemical components of CAFO emissions:

**Particulates:** The air in and around CAFOs is contaminated with high concentrations of particulates or suspended dust, about one-third of which is respirable (PM10).<sup>11</sup> In addition, particles that settle in the upper airways have been linked to asthma and bronchitis. Studies have also associated smaller particles, which may be absorbed and have systemic effects, to a wide range of adverse health effects, including cardiac death.<sup>12</sup> Further, a number of both occupational and nonoccupational studies have revealed that long-term, cumulative exposure to particulates results in persistent respiratory symptoms and a progressive decline in lung function.<sup>13</sup>

**Ammonia:** Agricultural operations are the largest source of ammonia emissions in the U.S.<sup>14</sup> Ammonia is a component of animal waste and is released from barns, lagoons and from spray-field applications. Ammonia is rapidly absorbed in the upper airways of the human respiratory system. Moderate concentrations (50-150ppm) can lead to a severe cough and mucous production; higher concentrations (>150ppm) may cause scarring of the upper airways.<sup>15</sup> Just two minutes of exposure to high concentrations of ammonia may result in chronic lung disease, and massive exposure to ammonia can be fatal.<sup>16</sup> In

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<sup>9</sup> E.g., Bongers P et. al., *Lung function and respiratory function in pig farmers*. Br J Ind Med 44:819-823 (1987); Donham K et. al., *Acute effects of the work environment on pulmonary functions of swine confinement workers*. Am J Ind Med 5:367-375 (1984).

<sup>10</sup> Agency for Toxic Substances and Disease Registry, Minimal Risk Levels for Hazardous Substances, <http://www.atsdr.cdc.gov/mrls.html>; EPA, Integrated Risk Information System, [www.epa.gov/iris/subst.html](http://www.epa.gov/iris/subst.html). For ammonia, the EPA lists 144 ppb for lifetime exposures and the ATSDR lists 500 ppb for acute and 300 ppb for chronic exposure. For hydrogen sulfide, the EPA lists 0.7 ppb for lifetime exposures and the ATSDR lists 70 ppb for acute and 30 ppb for intermediate exposures.

<sup>11</sup> *Id.* PM10 refers to particles that are 10 microns in diameter or smaller.

<sup>12</sup> *Id.*

<sup>13</sup> Healy J, et. al., *Inhalation Exposure in secondary aluminum smelting*. Ann Occup Hyg 45:217-225 (2001); Dockery DW, Pope CA, *Acute respiratory effects of particulate pollution*. Annu Rev Public Health 15:107-132 (1994).

<sup>14</sup> Abt Associates, *Air Quality Impacts of Livestock Waste* (September 2000).

<sup>15</sup> Close LG, et. al., *Acute and Chronic Effects of ammonia burns of the respiratory tract*. Arch Otolaryngol 106:151-158 (1980); Leduc D, et. al., *Acute and long-term respiratory damage following inhalation of ammonia*. Thorax 46:755-757 (1992).

<sup>16</sup> Sobonya R., *Fatal anhydrous ammonia inhalation*, Hum Pathol 8:293-299 (1977).

addition to pulmonary disease, exposure to ammonia leads to irritation of the eyes, sinuses, and skin.<sup>17</sup>

Ammonia from livestock and dairy waste may also contribute to significant health problems since it is a precursor for fine particulate matter (ammonium nitrate). Decomposing waste at dairies in the San Joaquin Valley accounted for 44% of the total ammonia emissions in 2000.<sup>18</sup> In the Valley, ammonium nitrate represents between 30-50% of the total PM10 concentration during winter when PM10 levels are at the highest.<sup>19</sup> In the eight-county San Joaquin air basin in California, 1,292 deaths occur annually as a result of current PM 2.5 levels.<sup>20</sup>

**Hydrogen Sulfide:** Hydrogen sulfide is a gas that arises from the storage, handling and decomposition of animal waste. Levels greater than 100ppm are considered immediately hazardous to life and health and levels as high as 1,000 ppm have been reported following the agitation of manure lagoons.<sup>21</sup> Epidemiological studies of pulp mill workers exposed to hydrogen sulfide have included reports of increased respiratory symptoms (irritation and cough) as well as increased headaches and migraines.<sup>22</sup> Epidemiological studies of communities exposed to hydrogen sulfide reported symptoms such as asthma, chronic bronchitis, shortness of breath, eye irritation, nausea, headaches and loss of sleep.<sup>23</sup> High exposures of hydrogen sulfide, an asphyxiate, cause loss of consciousness, shock, pulmonary edema, coma and death. In Iowa alone, there have been at least 19 deaths of CAFO workers resulting from sudden hydrogen sulfide exposure from liquid manure agitation.<sup>24</sup>

**Odor:** In addition to epidemiological studies relating to specific chemical emissions, there are three published, peer-reviewed studies of odors experienced by community residents living in close proximity to CAFOs. The first of two North Carolina studies focused on mood states and found that community members exposed to odors from hog facilities experienced more tension, depression, anger, fatigue and confusion than the control group.<sup>25</sup> The second North Carolina study was a population-based survey of three

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<sup>17</sup> McLean JA, et. al., *Effects of ammonia on nasal resistance in atopic and non-atopic subjects*. Ann Otol Rhinol Laryngol 88:228-234 (1979); Latenser BA, Loucktong TA, *Anhydrous ammonia burns: case presentation and literature review*. J Burn Care Rehabil 21:40-42 (2000).

<sup>18</sup> California Air Resource Board, *A Preliminary Assessment of Air Emissions from Dairy Operations in the San Joaquin Valley* (November 15, 2000).

<sup>19</sup> Karen L. Magliano, et. al., *Spatial and Temporal Variations in PM10 and PM2.5 Source Contributions and Comparison to Emissions During the 1995 Integrated Monitoring Study*, Atmospheric Environment 33 (1999).

<sup>20</sup> Renee Sharp and Bill Walker, Environmental Working Group, *Particle Civics: How Cleaner Air in California Will Save Lives and Save Money* (2002).

<sup>21</sup> Donham KJ, Gustafson KE, *Human occupational hazards from swine confinement*. Annals of the American Conference of Governmental Industrial Hyg. 2:137-142 (1982).

<sup>22</sup> Partti-Pellinen K, et. al., *Air Pollution Study: Effects of low level exposure to malodorous sulfur compounds on symptoms*. Arch Environ Health 51(4):315-320 (1996).

<sup>23</sup> United States Public Health Service (1964).

<sup>24</sup> Iowa State University and The University of Iowa Study Group, *Iowa Concentrated Animal Feeding Operations Air Quality Study* (February 2002).

<sup>25</sup> Schiffman SS, Miller EA, Suggs MS, Graham BG, *The effect of environmental odors emanating from commercial swine operations on the mood of nearby residents*. Brain Res Bull 37:369-375 (1989).

rural communities, two that were located near livestock operations and a third that was not. Residents living near a 6,000 head hog operation experienced increased headaches, runny noses, sore throats, excessive coughing, diarrhea, burning eyes and reduced quality of life compared to residents not living near a livestock operation.<sup>26</sup> In addition, an Iowa study found that communities living within two-miles of a 4,000 hog operation experienced increased eye and upper respiratory symptoms.<sup>27</sup>

The following table lists examples of the odor qualities of gases and vapors released from CAFOs<sup>28</sup>:

**Examples of Odor Qualities**

<b>Chemical Name</b>	<b>Smell</b>
Hydrogen Sulfide	Rotten eggs
Dimethyl sulfide	Rotting vegetables
Butyric, isobutyric acid	Rancid butter
Valeric acid	Putrid, fecal smell
Isovaleric acid	Stinky feet
Skatole	Fecal, nauseating
Indole	Intense fecal

Odorous chemicals released from CAFOs include ammonia and hydrogen sulfide as well as volatile organic compounds (VOCs).

Due to intolerable CAFO odors, residents who live near CAFOs have experienced a diminished quality of life because they cannot open their windows or go outside.<sup>29</sup> CAFOs can also shatter rural communities and their economies by destroying the regional tax base and lowering property values.<sup>30</sup>

**State Regulation of CAFO Air Emissions**

Several states have recognized the need to regulate air emissions from CAFOs. The Minnesota Pollution Control Agency has established an ambient air quality standard for hydrogen sulfide at the property line of operations larger than 1000 animal units.<sup>31</sup>

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<sup>26</sup> Wing S., Wolf S., *Intensive livestock operations, health and quality of life among eastern North Carolina residents*. Environmental Health Perspective 108:223-238 (2000).

<sup>27</sup> Thu K, et. al., *A control study of the physical and mental health of residents living near a large-scale swine operation*. J Agric Saf Health 3:13-26 (1997).

<sup>28</sup> Iowa State University and The University of Iowa Study Group, *Iowa Concentrated Animal Feeding Operations Air Quality Study* (February 2002) citing Cheremisinoff PN and Young RA, *Industrial Odor Technology Assessment*, Ann Arbor Science, Ann Arbor, MI (1975).

<sup>29</sup> Wing & Wolf (2000).

<sup>30</sup> Time Magazine, *The Empire of Pigs; A Little-Known Company is Master at Milking Governments for Welfare* (November 1998).

<sup>31</sup> Minnesota Environmental Quality Board, *Final technical work paper for air quality and odor impacts*. (2001).

Minnesota also requires these facilities to include an Air Emission Plan in their water quality permit. The Nebraska Department of Environmental Quality has implemented an ambient air quality standard for total reduced sulfur, which includes hydrogen sulfide, for CAFOs. Although they are not CAFO specific, at least 27 other states have also established standards for hydrogen sulfide or total reduced sulfur.<sup>32</sup>

In addition to air emissions, several states have also recognized the need to regulate odor from CAFOs. Colorado has established a dilution standard of 7:1, meaning that an air sample collected at the CAFO's property line is diluted with seven parts air. If odor can still be detected after dilution by an olfactometer and a panel of smellers, there is a violation.

Missouri uses a dilution standard of 5.4:1 at the property line. As of January 1, 2002, all class 1A (very large) CAFOs in Missouri must have odor control plans that describe their emission control measures.<sup>33</sup> So far, Missouri has approved only one CAFO plan out of 21 plans that have been submitted.

The North Carolina Division of Air Quality uses a complaint response system that requires formal investigation of odor complaints. If a determination of an "Objectionable Odor" is made, then management practices have to be approved and installed. If management practices fail, then the facility must install add-on control technology.

Many states also have nuisance laws that allow citizens to sue for nuisance violations, including objectionable odor.<sup>34</sup> State Attorneys General have also sued CAFO operations for violations of State laws.<sup>35</sup>

### **EPA Regulation of CAFOs**

EPA has the authority to address CAFO air emissions through several federal environmental laws, including the Clean Air Act (CAA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Emergency Planning and Community Right-to-Know Act (EPCRA).

The principal regulatory program established under the Clean Air Act has two basic elements: nationwide air quality goals and individual state plans designed to meet those goals. EPA is required to promulgate health-based national ambient air quality standards (NAAQS) for "criteria pollutants." So far EPA has promulgated NAAQS for sulfur dioxide, particulate matter, nitrogen dioxide, carbon monoxide, ozone and lead. Clean Air Act section 110(a) requires each state to submit for EPA approval a state implementation plan (SIP) for the implementation, maintenance, and enforcement of the NAAQS. The

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<sup>32</sup> Iowa State University and The University of Iowa Study Group, *Iowa Concentrated Animal Feeding Operations Air Quality Study* (February 2002).

<sup>33</sup> Code of State Regulations, 10 CSR 10-3.090.

<sup>34</sup> On September 9, 2001, citizens won a judgment of \$19.2 million against Buckeye Egg Farm for nuisance violations including fly infestations and odor. Dispatch Environment Reporter, *State Fighting Egg Farm Again* (November 2001).

<sup>35</sup> *State ex rel. Nixon v. Premium Standard Farms, Inc.*, (Cir.Ct. Mo., Jackson County, No. CV99-0745).

Administrator retains the power to enforce any applicable standard of performance or requirement set forth in the SIP. The SIP includes the mix of regulatory requirements the State thinks it needs to meet the NAAQS, identifies which sources are regulated, and who must monitor them.

CAFOs fall within the definition of stationary source under the CAA. These sources are subject to the Clean Air Act's New Source Review permit (NSR) program and the Title V operating permit program if they are major stationary sources. A source is a major stationary source depending on how much tonnage of criteria air pollutants it emits and whether or not the agricultural operation is located in an area that is in compliance with the NAAQS.

Section 114 of the CAA authorizes EPA to require any owner or operator of an emissions source to keep records, to report, to monitor, test or sample, and to provide any other information that EPA may require to determine whether a source is violating CAA requirements.

Section 103(a) of CERCLA, establishes a substantive reporting requirement for releases of hazardous substances from sources that emit pollutants above certain thresholds.<sup>36</sup> Section 304(a) (1) of EPCRA, requires reporting of all emissions of an extremely hazardous substances from facilities where hazardous chemicals are produced, used, or stored.<sup>37</sup>

Historically, EPA has only permitted and initiated enforcement actions against CAFOs under the Clean Water Act (CWA), primarily because CWA regulations have been in place since the early 1970s. Even so, noncompliance with the CAFO regulations remains widespread. EPA estimates that at least 13,000 livestock operations require permits, yet EPA and States authorized to administer CWA programs have only issued permits to an estimated 2,520 of these operations.<sup>38</sup> More recently, EPA has recognized that CAFOs do not just threaten surface waters and has issued emergency orders to several livestock operations under the Safe Drinking Water Act (SDWA) and the Resource Recovery and Conservation Act (RCRA) for nitrate contamination of underground sources of drinking water.

### **Undermining of CAA CAFO Enforcement**

With few exceptions, EPA has been unsuccessful in regulating air emissions from CAFOs. The livestock industry has sought to emasculate EPA's enforcement and regulatory efforts by manipulating the image of the small family farm in the media and

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<sup>36</sup> The reporting threshold for ammonia is 100 lbs/day.

<sup>37</sup> EPA can only make a claim under Section 304(a) of EPCRA if a release requires notification under CERCLA section 103(a).

<sup>38</sup> EPA, *National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations*; Proposed Rule (January 2001).

on Capital Hill. Meanwhile, production capacity continually becomes more concentrated in a handful of large corporations.

USDA has played a role in lobbying EPA against permitting, regulation and enforcement of agricultural operations, particularly of air emissions. In 1996, Congress directed the Chief of the Natural Resources Conservation Service to establish the Agricultural Air Quality Task Force (AAQTF) to address air quality issues. The AAQTF was created to “advise the Secretary of Agriculture regarding the scientific basis of the impact of agriculture on air quality.”<sup>39</sup> Its governing regulations direct the task force to determine the extent to which agricultural operations impact air quality and to develop cost-effective ways for the agricultural community to improve air quality. Finally, the task force is charged with coordinating relevant research to insure data quality and sound interpretation of data. In 1998, EPA entered a memorandum of understanding with USDA which includes a USDA commitment to share information received from the AAQTF with EPA.

Despite the fact that the task force is supposed to be engaged in objective science, minutes from the task force meetings reveal other agendas. For example, the AAQTF asked the EPA Administrator to exempt CAFOs from CAA Title V<sup>40</sup> and CERCLA/EPCRA<sup>41</sup> requirements until EPA first develops emission factors.<sup>42</sup> The minutes also referred to ongoing enforcement actions and suggested EPA was acting inappropriately.<sup>43</sup>

While it is difficult to know exactly how much influence the AAQTF has had on EPA decisions, it is probably no coincidence that EPA recently approved a CAA Title V operating permit program in California with an agricultural exemption.<sup>44</sup> It is also not surprising that the regulated community supports AAQTF’s recommendation that EPA

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<sup>39</sup> All authorizing legislation, regulations and meeting minutes can be found at <http://fargo.nserl.purdue.edu/faca>.

<sup>40</sup> Title V permits are operating permits issued by permitting authorities to air pollution sources after the source has begun to operate. Title V permits record in one document all of the air pollution control requirements that apply to the source, and require the source to certify each year whether or not it has met the requirements of its permit.

<sup>41</sup> Section 103(a) of CERCLA, 42 U.S.C. § 9603(a), establishes a substantive reporting requirement for releases of hazardous substances from sources that emit more than 100 lb/day for ammonia and a number of other pollutants. Section 304(a)(1) of EPCRA, 42 U.S.C. § 11004(a)(1), requires, in part, reporting of a release of an extremely hazardous substance if it occurs from a facility at which a hazardous chemical is produced, used, or stored, and such release requires a notification under section 103(a) of CERCLA.

<sup>42</sup> March 27, 2001 AAQTF meeting minutes; Letter from Christine Todd Whitman to Honorable John Boehner dated November 9, 2001.

<sup>43</sup> July 19, 2001 AAQTF meeting minutes.

<sup>44</sup> On February 4, 2002, the Medical Alliance for Healthy Air, NRDC, Sierra Club, Association of Irrigated Residents and Communities for Land, Air & Water, Communities for a Better Environment and Our Children’s Earth Foundation petitioned EPA for review of the final rule approving the California program, challenging EPA’s approval of the program with an exemption for certain agricultural operations. On May 21, 2002, EPA published notice of a proposed settlement with Petitioners for public comment. The settlement requires, among other things, for state-exempt agricultural sources to apply for permits if required by the Clean Air Act.

delay CAA enforcement and permitting of CAFOs during the pendency of a National Academy of Sciences study focused on CAFO air quality issues, which will take a minimum of five years to complete.<sup>45</sup> According to industry lobbyists, the NAS study was proposed by meat production lobbyists as a direct result of a CAA enforcement action initiated by EPA against a large hog operation.

EPA's Office of Air and Radiation not only supports amnesty for CAFO air emissions but also seeks to deregulate CAFOs. At the most recent AAQTF meeting on May 2, 2002, Sally Shaver, Director of the Emission Standards Division, announced that EPA is exploring ways to exempt CAFOs from CERCLA reporting requirements. This is particularly problematic in light of the fact that the Supreme Court recently decided unanimously to uphold tough new CAA standards for fine particulate matter. Studies have concluded that agricultural operations are the largest source of ammonia emissions in the United States and contribute to the formation of ammonium nitrate and ammonium sulfate, two prevalent forms of fine particulate matter. Failure to meet the recently upheld standards means that public health will continue to be at risk. It could also subject counties to sanctions under federal law (such as loss of highway funds). Since many counties are not expected to meet the new PM some may have to include controlling emissions from agricultural operations as part of a control strategy. Exempting CAFOs from reporting ammonia emissions under CERCLA will prevent counties from having information to develop such strategies.

### **EPA Enforcement Actions Against CAFOs**

In October 1999, the United States intervened in a citizen suit filed by Citizens Legal Environmental Action Network, Inc. (CLEAN) against Premium Standard Farms, Inc. (PSF), an industrial-sized hog operation in northern Missouri that produces 2.5 million hogs annually. PSF stores and applies more than 750 million gallons of animal waste annually and land applies it on more than 83,000 acres of land. In addition to alleging violations of the CWA, EPA issued Notices of Violation for CAA permit and emissions reporting requirements.<sup>46</sup> EPA also issued a Finding of Violation alleging violations of the emissions reporting obligations for ammonia set forth in CERCLA Section 103 and EPCRA Section 304.<sup>47</sup>

Despite political pressure, EPA and CLEAN successfully negotiated a settlement and moved to enter a Consent Decree on April 29, 2002 that included an unprecedented CAFO

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<sup>45</sup> EPA contracted with NAS to review the scientific basis for estimating air emissions from CAFOs so that it can develop emission factors. As recognized by AAQTF in its meeting minutes, emissions factors are industry wide averages, not source specific numbers, and they are intended only for State CAA planning purposes, not for CAA applicability determinations. While it may be easier or faster to determine who is regulated with emissions factors, the absence of an emissions factor does not mean that EPA can't or shouldn't enforce the law.

<sup>46</sup> EPA, *Notice of Violation* issued to Premium Standard Farms (April 2000); EPA, *Clarification of Notice of Violation* (September 2000).

<sup>47</sup> EPA, *Finding of Violation* issued to Premium Standard Farms (May 2000).

CAA component.<sup>48</sup> The Consent Decree requires PSF to conduct hydrogen sulfide, ammonia, volatile organic compounds (VOCs) and PM air emissions monitoring, both of baseline emissions and before and after implementation of all experimental technologies, at the barns and lagoons in order to obtain empirical data on air emissions at their facilities. Defendants are also required to continue to report ammonia emissions as required by CERCLA and EPCRA.

PSF is the first CAFO to agree to conduct source-specific emissions monitoring of its barns and lagoons. There was some pressure to do so in addition to the lawsuit since EPA may have ambient air monitoring data demonstrating that they are a public health threat. In September 1999, EPA and Missouri conducted 48 hours of continuous measurements of ammonia and hydrogen sulfide downwind of a PSF site selected to represent public exposure.<sup>49</sup> The Agency for Toxic Substances and Disease Registry, the Missouri Departments of Health and Natural Resources and EPA also conducted an ammonia exposure investigation in 2001. The results of the investigation have not been released yet.

During the pendency of the PSF case, EPA issued a Notice of Violation to Buckeye Egg Farms and ordered Buckeye to test particulate matter emissions at several of its barns.<sup>50</sup> Buckeye Egg, located in Ohio, is one of the nation's largest egg producers. At one time, Buckeye housed 15 million chickens at its operations.<sup>51</sup> Buckeye's own contractor's measurements have demonstrated that the barns tested emit 325 tons of PM per year, exceeding CAA regulatory thresholds. EPA believes that the contractor made an obvious error in airflow calculation, however, so EPA estimates that Buckeye's barn emissions are nearly 770 tons per year.<sup>52</sup>

PSF and Buckeye's willingness to test their air emissions is at odds with industry lobbyist (and AAQTF) arguments that calculating CAFO source emissions is mysterious and technically difficult. According to EPA sources, however, political pressure to fight CAFO CAA enforcement has never been greater. On April 2, 2002, EPA ordered Seaboard Farms in Oklahoma to test its emissions of PM, hydrogen sulfide and VOCs.<sup>53</sup> Seaboard has refused, and EPA staff is uncertain whether EPA will have the political will to enforce its order.

### **Possible Emissions Controls**

There are a number of control technologies available to reduce CAFO air emissions. CAFO emissions from confinement buildings can be reduced either by minimizing the emissions generated in the building or treating them as they are emitted. Frequently

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<sup>48</sup> *CLEAN, Inc. and Untied States of America v. Premium Standard Farms, Inc.* (W.S. Mo.), Civil No. 97-6073-SJ-6.

<sup>49</sup> EPA/MDNR, *Premium Standard Farms Whitetail Concentrated Animal Feeding Operation Air Monitoring Report* (May 2000).

<sup>50</sup> EPA, *Notice and Finding of Violation*, EPA-5-OH-09 (January 2001); EPA, *Request to Provide Information Pursuant to the Clean Air Act*, (January 2001).

<sup>51</sup> The Columbia Dispatch, *Ohio EPA plans to revoke Buckeye Egg's State Permits* (April 2002).

<sup>52</sup> Letter to Bill Glass from Kevin Vuilleumier dated December 11, 2001.

<sup>53</sup> Letter from David Nielson to Rick Hoffman and Jean Tomaselli dated April 2002.

removing manure from the buildings is one of the most effective ways to reduce emissions. For example, frequent, short-term pressure washing of a feeding floor has been demonstrated to reduce dust and odor by up to 70%. In addition, sprinkling canola oil in swine buildings has been shown to control dust, odor and some gases by up to 60%, and is currently being tested by PSF. Treating the air as it leaves the building with biofilters can reduce dust and odors by 90%

For storage lagoons, air emission controls include both permeable and impermeable covers. As part of its settlement, PSF is required to test nitrification/denitrification technology similar to that used by municipal wastewater treatment plants. This technology is expected to not only reduce the nutrient levels of CAFO wastewater that is land-applied by at least 50% but also to substantially eliminate ammonia and hydrogen sulfide emissions. Direct injection of waste with full soil coverage may reduce odors from land application by 90%.

The attached table summarizes emission reducing strategies for CAFO emission sources and compares their effectiveness.<sup>54</sup>

### **Conclusion**

Corporate livestock operations have expanded immeasurably over the last ten years with very little forethought as to the environmental consequences. Moreover, state and federal regulators continue to permit these operations without requiring them to measure and manage their air emissions. While regulators have been lax in enforcing these requirements, the CAA is nonetheless a strict liability statute and it is well-settled that the burden is on the emissions source, not EPA, to know its emissions and comply with the law.

Industry lobbyists have been able to effectively undermine enforcement of the CAA, jeopardizing public health and the environment. If their corporate mantra is that it is not yet possible to estimate emissions, then regulators should not allow new construction of industrial-sized factory farms. This is particularly true considering the ever-growing body of science documenting the grave health threats industrial-scale livestock operations pose to both workers and nearby residents. For existing CAFOs, it is no longer possible to argue that it is technically infeasible to source-test emissions, particularly from barns and lagoons where emissions are capable of being captured and measured. So far, at least two operations, PSF and Buckeye, have managed to do what their political allies claim is impossible.

The Department of Agriculture should not be the gatekeeper of EPA's enforcement and permitting decisions. At a minimum, EPA needs to investigate air emissions at the largest industrial-sized facilities that present the highest risk, seek monitoring, and, if necessary, require them to install control technologies.

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<sup>54</sup> Iowa State University and The University of Iowa Study Group, *Iowa Concentrated Animal Feeding Operations Air Quality Study* (February 2002).

**From:** [Debbie Londeree](#)  
**To:** [Medic, Kris S](#)  
**Subject:** FW: CAFO set backs  
**Date:** Wednesday, June 24, 2015 8:56:37 AM

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A copy for you!

**From:** Bartholomew County Website [mailto:webmaster@bartholomew.in.gov]  
**Sent:** Tuesday, June 23, 2015 9:47 PM  
**To:** Debbie Londeree  
**Subject:** CAFO set backs

From john grace at [jmgrace@mit.edu](mailto:jmgrace@mit.edu)

[Message] Larry Kleinhenz, Carl Lienhoop, Rick Flohr:

Gentlemen, I have been following the discussions on CAFO's that have been seen in the Republic as well as other briefing material assembled by John O'Halloran. I am appalled at the position that Bartholomew County has with regard to set backs for these industrial scale concentrated animal feeding operations vis a vis schools, public areas and buildings and churches. A set back distance of 100 feet from a school etc. seems like an absurdity. Just think of a major industry being able to set up operation 100' from the school your children would attend; and note here this industry has not undergone even rudimentary health evaluations justifying such proximity. Also recall 100' is a third of a football field and a distance where almost any high-school quarterback can throw a football.

When I look at various counties in Indiana, many of whom I did not think had the collective brain power of Bartholomew, but who have significantly higher set back standards it appears to me that something is terribly wrong with our thinking. I also ask what could bias our thinking to be so far out of line with the rationale of other counties. The first obvious answer is to look at who benefits from such an approach and the only ones that I can conceive of who benefit would be few CAFO industrial operators. But then the fundamental question becomes how could such set backs be put into regulations if an open, transparent and knowledgeable citizenry was engaged. It is hard for me to see any enlightened citizen looking at the data as I have who would not conclude that the regulations as presently set are no where commensurate with insuring his/her needs. I must conclude that such citizen involvement has not been seen at least to date.

I would encourage you all to consider the quality and health of life in Bartholomew County and utilize your capabilities to rectify a totally inappropriate set of set back requirements by extending the minimums to 2500'-3000' or roughly a half mile. jmg

**From:** [Debbie Londeree](#)  
**To:** [Medic, Kris S](#)  
**Subject:** FW: CAFO Study Committee  
**Date:** Monday, June 29, 2015 9:15:56 AM

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**From:** Bartholomew County Website [mailto:webmaster@bartholomew.in.gov]  
**Sent:** Monday, June 29, 2015 8:47 AM  
**To:** Debbie Londeree  
**Subject:** CAFO Study Committee

From Dennis Tibbetts at [hdwilliamsco@sbcglobal.net](mailto:hdwilliamsco@sbcglobal.net)

[Message] I've attended the last two of Kris's meetings and I'm a bit disappointed with the process.

I've been on countless committee meetings in the corporate world. Seems like they are always heavily based on data and science. The decision process is almost always consensus because as members review the data coming in, they usually agree on the conclusions.

I'd contrast that with your CAFO committee which began last September with 10 members sympathetic to more CAFOs and 4 members for a tougher ordinance. There are still 10 members against the 4 members and I don't believe a single mind has been changed. It is mystifying to me that my friend Kris will not allow the most pertinent data collected to be discussed by the group:

What do other countys' ordinances say regarding CAFO setback?  
What do the Purdue Odor dispersal models say about needed setbacks?  
What do farmers, residents, other stakeholders say about setbacks?

How can this group claim to be searching for the right balance between CAFO investors and neighbors without discussing this data?

**From:** [Debbie Londeree](#)  
**To:** [Medic, Kris S](#)  
**Subject:** FW: CAFO  
**Date:** Monday, June 22, 2015 4:15:50 PM

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Copy for your records.

**From:** Bartholomew County Website [mailto:webmaster@bartholomew.in.gov]  
**Sent:** Sunday, June 21, 2015 10:56 AM  
**To:** Debbie Londeree  
**Subject:** CAFO

From Winter Bottum at [awinterb@iquest.net](mailto:awinterb@iquest.net)

[Message] As a retired environmental scientist specializing in air pollution control I urge you to change our ordinance to a one mile separation from places where people congregate.

**From:** [Debbie Londeree](#)  
**To:** [Medic, Kris S](#)  
**Subject:** FW: CAFO ordinance  
**Date:** Wednesday, August 12, 2015 2:33:41 PM

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[Comment from the website](#)

**From:** Bartholomew County Website [mailto:webmaster@bartholomew.in.gov]  
**Sent:** Wednesday, August 12, 2015 1:45 PM  
**To:** Debbie Londeree  
**Subject:** CAFO ordinance

From David & Judy Harpenau at [jjhdah@sbcglobal.net](mailto:jjhdah@sbcglobal.net)

[Message] We have followed this issue during the past year. My wife and I live in the City of Columbus, and therefore do not have any "skin" in the game. We are, however, life time Hoosiers, and have relatives who have raised pigs and hogs, and have experienced the stench and horrific odor generated by confined hogs, but on a much smaller scale than a CAFO generates.

Without question, we support significantly increasing the space between a CAFO and rural residences, churches, health facilities, and schools. The committee person who said at the meeting that 8 hours of the stench and odor should be OK for anyone to experience was one of the more illogical and inane statements made at the meeting. I suspect that neither she nor her family would tolerate living under those conditions.

The individuals on the committee advocating for greater set backs seem to have a lot of data, objective evidence and science to substantiate their position, particularly the health risks created. Those who want keep the ordinance as it is or only modify the space by a nominal increase do not have any objective data that health risks would not be created...only his/her opinions.

We heartily endorse a set back of at least 1 mile. Even with this length of a set back, a farmer who wishes to have a CAFO could still have one while the health of Bartholomew County residents, young and old, would be protected. Additionally, property values will be protected.

Thanks you for listening and considering our position.

David and Judy Harpenau  
3207 Overlook Court  
Columbus, IN 47203  
812-379-2642

## CAFO Open House Voice Recording September 28, 2015

1. This is Kristen Whittington and I guess a comment on the process is that we appreciate what has been able to be researched. Bartholomew County is not the only county in the State of Indiana that is going through this process in looking where and how a confined feeding operations can be placed, but believe it's an opportunity for the agricultural sector, those that are looking at raising livestock and those that do not desire to raise livestock, to comment on how ordinances within their county can be changed.

2. I'm Bill Gelfius, I just hope everyone would look at the facts and make a decision based on the facts and not the emotions. That at the end of the day I think that's the best we can do.

3. Good afternoon this is John O'Halloran. I'm a Columbus resident, Bartholomew County resident, and I want to thank you very much for the forum that you folks are putting on here today. I think this was a great idea. I would like to voice a couple of concerns with the CAFO discussions that have been taking place thus far. One concern is property rights. There have been a lot of discussion in the committee meetings about setbacks and whether they should be to the property line or to a residence within the neighbor's property. I feel very strongly that we ought to respect the property owners of the neighbors and not use their property as a buffer for our setback distances. It ought to be to the property line and the neighbors ought to be able to use any part of their property for whatever intended purpose that they have and not have that used by the CAFO operator as the buffer. So I think it is very important that we use the property line as the setback perimeters or boundaries. The second is concern about property values. As we have done research into property values around CAFOs, we see that there is a significant drop in property value as you approach the CAFO. In some counties it is a mile, in others it's as much as three miles. But the bottom line is that there is a significant decrease in property value which affects both the property owner, the neighboring property owners, and the tax base of the county. Given the deficient that we are seeing in the county, I would be very concerned about additional CAFOs coming in and continuing to decrease that tax base of Bartholomew County. So I thank you very much for the opportunity to share a few words and again thank you for the forum that you folks have put on today.

4. My name is Robert Eikenbary. I appreciate the work the committee has done and what they have attempted to do. The majority opinion of a quarter mile from worship facilities, recreational facilities, health care, schools I understand. I don't get the logic of 500 feet from a home because I'm in my church for one hour a week and I get a quarter mile, but I'm in my home all the time and I only get 500 feet. So I would like to see those numbers be the same whatever they are. Thank you.

5. Hi this is Toni Whiteside and I was looking at some of the information provided this evening and a question that I have was on the survey of farmers. I find it disconcerting that there was nothing named. I know that we had a conversation, but it was maybe a five minute conversation with very vague questions and I think that if you are going to submit evidence at the meetings, it needs to be backed up with names and people. If it's confidential then I think it is unreasonable to use that information.

6. I'm Edward Probst a resident of Bartholomew County. I have lived in town. I have lived in the country. People that live in the country should expect certain sounds and smells; it's part of being in the country. It's my opinion that sometimes people move to the country and then they decide they want to have sounds and smells that they have in town and not what's in the country. It seems unfair to me in view of the fact that people who live in the country, particularly the farmers that produce grain and animals, etc., they have been there. They may be outnumbered by people moving in around them, but still their primary function is to provide food etc. in whatever way that farmers do it and it should not be hampered because people have moved out of the city where there are certain sounds and smells into the country where there are likely to be other sounds and smells. Even though those sounds and smells may not be there when people move to the country. They often move there because it is less expensive. They want more land. They want more space. They want the country feel and part of the country feel are the sounds and smells that go with the country. The fact that numbers then override, I saw one letter to the editor that said, there are more people then there are, there are more non-farmers than farmers and therefore the people who are non-farmers should regulate the farmers. That doesn't make any sense any more so than saying there are more people around the airport and therefore the people around the airport should make sure that planes don't fly into the airport because they make noise, sounds and smells and we don't like that. So it's a matter of freedom and choice and I think this whole thing seems to have gotten out of hand in my opinion from what I have read in the newspaper and it seems there should be some common sense. The country is the country and the city is the city and they shouldn't be co-mingled. They are different. This is my opinion.

7. Hi this is Michael Greven, 12870 W 525 S, and I would like to express my opinion and concern. The industrial protein factories need to be placed as far away as possible from any residences, churches or businesses. These are not farms, these are factories and please consider them as such. Thank you very much.

8. I'm Donald Strietelmeier and for years, I'll say ten or twenty years, I cautioned the residential growth in the county and was more supportive of preserving ag land and avoiding some of the conflicts between urban residence out in the county that wanted to live out in the county and that's fine because they felt like it was the right to property ownership. They wanted to sell their land for residence or somebody wanted to move out into the country they ought to have that right to do that. Well now today we've got these residents, all these residents out in the county, so many of them, and now it's presenting conflict with agriculture. That could have been predicted years ago. So I still believe in property rights and I think that people if they want to farm and use their land

for agriculture and food production, they ought to be able to do that. I think you need to have some common sense limitations on what you do and how you do it. You want to protect the environment, you want to protect health and all like that, but then I think we can get to be too protective too. So I think that people who are close to it need to keep in mind that, yea, they want to be protected by the government from something like this, but it might be down the road somebody else will want to do something that they are not comfortable with, as far as taking their property rights away, and that's when you lose your freedom. They just keep chipping away at your freedoms and I don't think that's in the best interest of the future either. So I guess I would be in favor of, probably more of the, I think it's the majority report. I think you need to protect wells, you need to protect water, you need to protect open drains, prevent pollution in our streams, but I don't think we want to be too restrictive either because we got to have food to eat.

**From:** [tom mee](#)  
**To:** [Milo Smith](#); [S1@iga.in.gov](#); [S49@iga.in.gov](#); [S44@iga.in.gov](#); [S28@iga.in.gov](#); [S13@iga.in.gov](#); [S42@iga.in.gov](#); [S2@iga.in.gov](#); [S43@iga.in.gov](#); [cjones@therepublic.com](#); [Medic, Kris S](#); [Tom Heller](#); [charles mitch](#); [Kate O'Connell](#)  
**Subject:** Raising a Stink: Air Emissions from factory farms  
**Date:** Wednesday, February 18, 2015 10:17:54 AM  
**Attachments:** [CAFOAirEmissions white paper.pdf](#)

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Here are Problems that CAFO's make that no one can fix or  
dont wont to fix. Open download

Tom Mee

# ITEMS SUGGESTED FOR FUTURE STUDY



**CAFO/CFO Regulation Study Committee  
Items Suggested for Future Study**

*Items outside of the scope of the Study Committee included things not regulated by zoning. Committee members offer these topics for consideration of further study in the interest of Bartholomew County, its residents and communities.*

**Center pivot application of waste, and its regulation.**

**Satellite manure storage, and its regulation.**

**Deed notifications in areas zoned for Agriculture.**



**CAFO/CFO REGULATION  
STUDY COMMITTEE  
MAJORITY REPORT**



# Bartholomew County CAFO Study Committee – Majority Report

## Issues of Concern and Recommendations for the Bartholomew County Ordinance as determined through the process of the Bartholomew County CAFO Study Committee.

Proposed Suggestions to update Bartholomew County Ordinance regarding Livestock Feeding Operations.

### Definitions related to Confined Livestock Operations

*Explanation: The following will align Bartholomew County Ordinance with existing State and Federal Laws. It will also accurately define the intent of the Bartholomew County Planning and Zoning to have set requirements for livestock operations of a certain size. The following definitions are taken from Indiana Code (IC 13-11 and IC-13-18-10) as it was originally written in 1971 and the Indiana Department of Environmental Management's Confined Feeding Rule (327 IAC 19) as adopted by the Indiana Water Pollution Control Board, becoming effective July 1, 2012.*

#### **"Confined feeding" defined - 327 IAC 19-2-6**

Sec. 6. (a) "Confined feeding", as defined in IC 13-11-2-39, means the confined feeding of animals for food, fur, or pleasure purposes in lots, pens, ponds, sheds, or buildings where:

- (1) animals are confined, fed, and maintained for at least forty-five (45) days during any twelve (12) month period; and
- (2) ground cover or vegetation is not sustained over at least fifty percent (50%) of the animal confinement area.

(b) The term does not include the following:

- (1) A livestock market:
  - (A) where animals are assembled from at least two (2) sources to be publicly auctioned or privately sold on a commission basis; and
  - (B) that is under state or federal supervision.
- (2) A livestock sale barn or auction market where animals are kept for not more than ten (10) days.

### Defining a Confined Feeding Operation (CFO) or a Concentrated Animal Feeding Operation (CAFO)

*Explanation: Once a livestock operation is determined to be in confinement, then a size determination is made between that state (IDEM) and federal (US EPA) jurisdiction. The difference between a Confined Feeding Operation (CFO) and a Concentrated Animal Feeding Operation (CAFO) is based on number of animals. IDEM has requirements for and regulates both size operations. Part of the current Bartholomew County Ordinance indicates it has requirements for only CAFO's, another part indicates the requirements pertain to all livestock operations regulated by IDEM. This would include CAFOs and CFOs.*

*The terms CFO and CAFO relate to the size of the CFO. As defined Indiana General Assembly, all farms with 300 or more cattle, 600 or more swine or sheep, 30,000 or more poultry, or 500 horses in confinement are classified as CFOs. A Concentrated Animal Feeding Operation (CAFO) is a CFO that meets the threshold animal numbers per US EPA (see chart below). IDEM's requirements apply to farms with greater than the CFO number of animals.*

**Animal Feeding Operation (AFO)**, defined by Indiana Department of Environmental Management, is any livestock facility feeding animals not in confinement (ie. Pasture), or confines less than the CFO threshold number of animals.

**"Confined Feeding Operation" or "CFO" defined - 327 IAC 19-2-7**

Sec. 7. (a)"Confined feeding operation" or "CFO", as defined in IC 13-11-2-40, means any:

- (1) confined feeding of at least:
  - (A) three hundred (300) cattle;
  - (B) six hundred (600) swine or sheep;
  - (C) thirty thousand (30,000) fowl; or
  - (D) five hundred (500) horses;
- (2) Animal Feeding Operation (AFO) electing to be subject to IC 13-18-10; or
- (3) Animal Feeding Operation (AFO) that is causing a violation of:
  - (A) water pollution control laws;
  - (B) any rules of the water pollution control board; or
  - (C) IC 13-18-10.

A determination by the department under this subdivision is appealable under IC 4-21.5.

**Concentrated Animal Feeding Operation (CAFO)**, defined by the United States Environmental Protection Agency (EPA), is an animal feeding operation (AFO) that (a) confines animals for more than 45 days during a growing season, (b) in an area that does not produce vegetation, and (c) meets certain size thresholds.

There are roughly 257,000 AFOs in the United States, of which 15,500 meet the more narrow criteria for CAFOs. The relevant animal unit for each category varies depending on species and capacity.

Species/Sector	Threshold Number of Animals	
	CAFO	CFO
<b>Beef:</b>		≥300
Cattle	≥1,000	
Cow/Calf Pairs	≥1,000	
<b>Dairy:</b>		≥300
Mature Dairy Cow	≥700	
Other than Mature Dairy Cows <small>(dairy heifers, dairy calves, veal calves)</small>	≥1,000	
<b>Swine:</b>		≥600
Growers/Finishers/Sows <small>(greater than 55lbs)</small>	≥2,500	
Nursery Pig <small>(less than 55lbs)</small>	≥10,000	
<b>Chickens:</b>		≥30,000
Layers/Broilers <small>(liquid manure handling system)</small>	≥30,000	
Chickens other than Layers <small>(not in a liquid manure handling system)</small>	≥125,000	
Layers <small>(not in a liquid manure handling system)</small>	≥82,000	
<b>Ducks:</b>		≥30,000
Liquid Manure System	≥5,000	
Not in a Liquid Manure System	≥30,000	
<b>Others:</b>		
Turkeys	≥55,000	
Horses	≥500	≥500
Sheep/Lambs	≥10,000	≥600

*Chart Shows Animal Numbers of each species to meet either the CFO or CAFO definitions.*

The term CFO and CAFO are not synonymous. Clear definitions, parallel to state legal definitions need to be used when establishing requirements for permitting and construction in Bartholomew County.

## Proposed Bartholomew County Ordinance Requirements

- 1. IDEM Permit should be required for all Confined Feeding Operations (CFO) and Concentrated Animal Feeding Operations (CAFO).**

*Explanation:* Once a Bartholomew County permit is issued, the CAFO is required to submit to Bartholomew County Planning and Zoning proof of an IDEM CFO permit. Members feel that this is an important step in the process. By including both size operations, CFO and CAFO this broadens the current requirements to all size confinement operations. This also ensures the professionals at IDEM (including engineers and soil scientists) to have reviewed and approved an application prior to construction.

- 2. CFO's and CAFO's should be allowed as a Permitted Use**

- a. Operations must meet all of the applicable criteria requirements (ie. Minimum acreage and set-backs) and verified by the Planning and Zoning Department as an administrative permitting process.**

*Explanation:* Applicants/Producers would have a set list of criteria that an operation must meet to be permitted administratively. If the producer does not meet a specific criteria, they have the option to seek a variance through the Board of Zoning Appeals. All operations would still be required to obtain a permit from the Indiana Department of Environmental Management and meet the requirements set forth in the Confined Feeding Regulations. This would include, but not be limited to the notification of adjacent property owners, and those within a ½ mile radius of the site.

- 3. CFO and CAFO Regulations should NOT be handled differently based on the number and/or species of animals.**

*Explanation:* Implementation will be key to any good ordinance. If an operation is determined to be a CFO or CAFO by definition (regardless of animal species), they should not be handled differently as it relates to zoning. IDEM has the same set of requirements for all CFO and CAFO animal species. Species (animal type) is only used to determine the number of animal threshold.

- 4. CFO and CAFO should not be limited to only Agriculture Preferred (AP) Zoning.**

*Explanation:* Livestock Operations should be sited based on production factors and the ability of the operation to further meet the additional set-back requirements laid out in the Ordinance. Not based on the narrow zoning designation of AP, as it does not include all agricultural ground in Bartholomew County. Ag General (AG) zoning also includes productive agricultural properties. These properties may be even more suitable for livestock production as they are deemed to not contain as fertile of soils as AP Zoned.

- 5. Minimum CFO and CAFO Lot Size = 10 acres**

*Explanation:* Current Ordinance lists 5 acres. Manure utilization is a key component of livestock operations. To obtain an IDEM CFO permit, the applicant must provide documentation showing the amount of manure produced and how it can be land applied at a rate to be utilized by the growing crops. Most livestock operations are located on lot sizes of 10 acres or greater. A Facility setback of 500 feet on all sides would require a minimum of approximately 7-8 acres (depending on the shape of the property). This lot size ensures the CAFO can be properly located, while still allowing for the best utilization of the agricultural ground.

**6. Minimum Setbacks:**

**a. CFO and/or CAFO to Residential Zoning District = ½ mile (2,640 feet)**

- i. Measured CAFO Structure to Zoning District Boundary

*Explanation: Same as current Bartholomew County Ordinance and was agreed on by all voting members of the CAFO Study Committee (as of 8/31/2015).*

**b. CFO and/or CAFO Structure to School / Health Care Facility / Worship Facility / Recreational Facility Property Line = ¼ mile (1,320 feet)**

- i. Measured from CAFO Structure to Property Line of Public Use Facility.

*Explanation: Current Ordinance is 100 feet. Members felt this increase was warranted for the potential protection of those public use locations.*

**c. CFO and/or CAFO Structure to Residential Use in Ag Zoning (regardless of lot size)**

**Property Line = 500 feet** \*\*CHANGED AT LAST COMMITTEE MEETING TO STRUCTURE/STRUCTURE

*Explanation: Current Ordinance is 100 feet. IDEM requirements from existing off-site residential and public buildings is 400 feet (327 IAC 19-12-3). This proposal would increase IDEM's requirement by an additional 25%. By using the property line as a boundary (vs a structure), this would give producers a predictable line from which to measure, and would not change based on the construction of additional buildings on a neighboring property. Members felt this increase was warranted as a way to be more in line with IDEM requirements and to be more cognoscente of residential use in already Ag Zoned areas.*

**d. CFO and/or CAFO Structure to any well = 500 feet**

*Explanation: Current Ordinance lists no restriction. IDEM requirements for on-site wells (those used to provide water to the animals or on-site residence) is 100 feet (327 IAC 19-12-3). IDEM's requirements for off-site wells (those owned or used off-site) is 100 feet for solid manure (ie. poultry) and 300 feet for liquid manure (ie. Swine). This proposal would increase IDEM's requirement by an additional 66%. Members felt this increase would provide a set-back of greater than that established by IDEM for the additional protection of residential use in already Ag Zoned areas.*

**e. CFO and/or CAFO Structure to a State Highway = 100 feet**

*Explanation: Current Ordinance lists no restriction. By default, to meet IDEM regulations, a 100 foot set-back from property lines and public roads is required by IDEM (327 IAC 19-12-3). Members felt this increase would provide a set-back in line with IDEM Requirements.*

**f. CFO and/or CAFO Structure to its own Property line = 100 feet**

*Explanation: Current Ordinance lists no restriction. By default, to meet IDEM regulations, a 100 foot set-back from property lines and public roads is required by IDEM (327 IAC 19-12-3). Members felt this increase would provide a set-back in line with IDEM Requirements.*

Respectfully Submitted by CAFO Study Committee Members:

Heath Beyer - ~~Scott Bunker~~  
Scott Strietelmeier  
Dennis Brook

Tom Runko  
Dan Fleming

Mike Speaha - verbal

**CAFO/CFO REGULATION  
STUDY COMMITTEE  
MINORITY REPORT**



# **Recommendations for Bartholomew County Commissioners Regarding CAFO Regulations**

September 2015

According to the Purpose Statement for the Bartholomew County CAFO Regulation Study Committee, our task as a committee is to incorporate "standards, in the context of past, current, and possible future livestock practices, IDEM regulations, scientific guidance, examples from other communities, natural resource protection, infrastructure considerations, off-site impacts, and public comment" into our recommendations. (Appendix A)

We also wish to state the following as aspects of our decision-making:

- Whereas the County Commissioners represent the entire community of citizens (farmers and non-farmers, rural and city residents) in Bartholomew County – all ~80,000 of them,
- Whereas we wish to promote the preservation of each homeowners' property values against those practices/industries that can negatively affect such values,
- Whereas we wish to promote the health of all county residents against those practices/industries that can bring harm,
- Whereas we wish to promote and support a welcoming and diverse agricultural community that encourages sustainable agricultural entrepreneurs to such a degree that Bartholomew County becomes a model for Indiana,
- Whereas we are determined to create and support a healthy, economically vibrant, socially welcoming community where people are encouraged to grow their dreams while also fulfilling the responsibilities inherent in community,
- Whereas we wish to create zoning that allows Bartholomew County to join the leaders among Indiana counties in quality of life issues,
- Whereas the negative effects of CFO/CAFOs can adversely affect Bartholomew County's ability to grow/maintain economic gains in manufacturing and tourism,
- Whereas the negative effects of CFO/CAFOs can impede the enjoyment of recreation in Bartholomew County, including, but not limited to Anderson Falls, Ceraland, and local waterways,
- Whereas the justification for a CFO/CAFO is often made in terms of economic need, a zoning variance based on economics or financial gain is disallowed, (Indiana Code 36-7-4-918.5 and Bartholomew County Zoning Ordinance 12.3-D)
- Whereas the Purdue Odor Setback model provides a method of creating zoning ordinances based on data, science, and compromise, (Appendix B)
- Whereas the Bartholomew County Comprehensive Plan calls for a balance of goals between agriculture, neighborhoods, and the environment, (Appendix C)

We, therefore, propose the following categories of recommendations:

- Setbacks: Wells, Odor, Residential Property Values, Public Health**
- Minimum Acreage**
- Neighbor Notification**
- Good Character Clause**
- Liability Insurance**

**Setbacks - Wells:**    **2,640 feet** (½ mile) to wells not located on the CFO/CAFO property.

**Setbacks – Using Purdue Odor Setback Model:**

**Single Family Residence:**

**We recommend** that the minimum setback **to a single family residence** shall be determined by the distance from a CFO/CAFO structure, including any building, pens, lagoons, or other manure storage system, to the **property line** of the nearest residence not owned by or associated with the CFO/CAFO **via the Purdue Odor Setback Model on a case-by-case basis.** (Appendix B)

The Purdue Odor Setback Model begins with a compromise between CFO/CAFO owners and their neighbors. Arbitrary limits are applied on odor as a nuisance – how much odor-free time is appropriate at a rural residence, at a school, etc. The model then uses multiple inputs including housing density, number of hogs, and wind speed and direction to arrive at a scientifically based description of where odors are at their minimum and maximum.

If the Commissioners wish to avoid case-by-case determinations for CFO/CAFO placement then our recommendation for setbacks is as follows:\*

- 2200 hogs:    1750 feet
- 4400 hogs:    2480 feet
- 8800 hogs:    3600 feet

\* See USDA Animal Conversion Chart in Appendix D for other species.

**Neighboring Public Facilities:**

**We recommend** that the minimum setback to neighboring public facilities shall be determined by the distance from a CFO/CAFO structure, including any building, pens, lagoons, or other manure storage system, to the **property line** of the neighboring public facility as follows:

- 5,280 feet    schools and healthcare facilities\*
- 2,640 feet    houses of worship, recreation areas, public buildings, cemeteries, state highways

\* "Healthcare Facilities" includes hospitals, nursing homes, physicians' offices, health clinics, and any other facility where people receive/provide care for human physical and/or mental health.

## **Setbacks - Residential Property Values and Public Health:**

The Purdue Odor Setback Model addresses only the issue of odor. Optimal zoning ordinances would result from a thorough examination of multiple issues of concern including, but not exclusive to, property values, public health issues, and neighbors' property rights.

**We recommend that the Bartholomew County Commissioners recognize the negative effects of CFO/CAFOs on all the residents of the county and, using the Precautionary Principle, allow for greater setbacks than those found solely with the Purdue Odor Setback Model.** (Appendix B)

### **Residential Property Values:**

A survey of owners of local real estate companies, real estate salespersons, and appraisers shows a potential loss of residential property values of between 15% (at 1 mile) and 50% (at 500 feet). Multiple additional sources reflect a similar trend on property values. (Appendix E)

**We recommend that the Bartholomew County Commissioners determine the current and potential extent of loss of residential property value to all neighbors within a 1-mile radius of CFO/CAFO sites or potential sites. We also recommend that the Bartholomew County Commissioners determine how these losses will affect the county tax revenues.**

### **Public Health:**

From respiratory disease to MRSA, the effects of CFO/CAFOs on county-wide populations are not inconsequential. According to a commission funded by the Pew Charitable Trust and Johns Hopkins University, "the current industrial farm animal production system often poses unacceptable risks to public health..... the negative effects of the system are too great and the scientific evidence is too strong to ignore." (<http://www.ncifap.org/images/PCIFAPFin.pdf>)

**We recommend that the elected leaders of Bartholomew County create an impartial panel, led by a professional and independent facilitator, to study the full complement of issues of CFO/CAFOs, that this study occur over a period not longer than 6 months, and that the moratorium be reenacted for another year. The intention shall be how to best serve the broadest range of Bartholomew County residents and not how to use Bartholomew County residents to best serve profits and politicians.**

**Minimum Acreage:** We recommend a 40-acre minimum lot size.

### **Neighbor Notification:**

Currently, IDEM requests that neighbors in a ½ mile radius be given 30 days to comment on a CFO/CAFO application. IDEM also requires that the local County Commissioners be notified by applicants for CFO/CAFO permits.

**We recommend that, in addition to the IDEM requirement, the Bartholomew County Commissioners, within 5 business days of such notice, request that the Bartholomew County Planning Department make notification to all neighbors - residents, schools, houses of worship, businesses, etc. - within a 1-mile radius of the proposed CFO/CAFO site. This notification shall be in writing, be given within 5 business days of the Commissioners' notice to the County Planning Department, and be given to each address within a 1-mile radius of the proposed site. We recommend that this notice allow 60 days prior to the scheduled BZA hearing.**

### **Good Character Clause:**

**We recommend** that no CFO/CAFO shall be approved if the applicant has/had a violation in a CFO or CAFO that incurred a final judgment in an administrative, civil, or criminal enforcement action if that violation:

- Resulted in an unpermitted discharge and or released manure that crossed a boundary;
- Was not corrected immediately or within a reasonable time frame as specified in a written notification of the violation by an Indiana Department of Environmental Management (IDEM) representative or comparable local, state, or federal regulatory agency; and
- Occurred within the five (5) years prior to application.

### **Liability Insurance:**

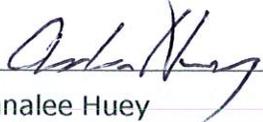
**We recommend that the CFO/CAFO operator(s) shall carry an insurance policy that covers any damage to neighboring properties for the lifetime of the CFO/CAFO operation and manure storage activity. "Damage" includes, but is not limited to, manure spills or runoff, and dried up or contaminated wells.**

As previously stated: A survey of owners of local real estate companies, real estate salespersons, and appraisers shows a potential loss of residential property values of between 15% and 50%. (Appendix E)

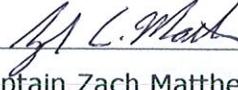
As previously stated: According to a commission funded by the Pew Charitable Trust and Johns Hopkins University, "the current industrial farm animal production system often poses unacceptable risks to public health..... the negative effects of the system are too great and the scientific evidence is too strong to ignore." (<http://www.ncifap.org/images/PCIFAPFin.pdf>)

**We recommend that the Commissioners enact a liability clause in the zoning ordinance to ensure that those responsible for negative economic and/or health consequences shoulder the costs that result.**

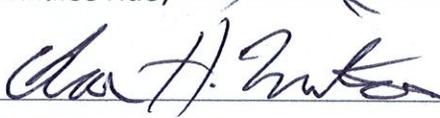
We, the undersigned, having followed the Purpose Statement of the CAFO Study Group and the Bartholomew County Comprehensive Plan, respectfully submit this document.



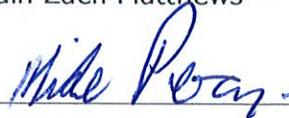
Annalee Huey



Captain Zach Matthews



Charles Mitch, PhD



Michael Percy, PhD

## **Appendices**

Appendix A: Bartholomew County CAFO Regulation Study Committee Membership and Process Outline

Appendix B: The Purdue Agriculture Air Quality Lab

1. Purdue Odor Setback Model
2. Public Health
3. Precautionary Principle

Appendix C: Bartholomew County Comprehensive Plan Considerations

Appendix D: Animal Conversion Table

Appendix E: Residential Property Values

1. Timothy Slaper, PhD; Indiana Business Research Center
2. Effect of CAFOs on Residential Property Values
3. Jackson County Residential Property Values near a CAFO
4. Properties Devalued by Factory Farms: Studies & Reports

Appendix F: Review of Population and Housing Densities

Appendix G: A review of Ordinances from Indiana Counties

Appendix H: Survey of Bartholomew County Farmers

Appendix I: Field Survey of Odor Measurements of Decatur County CAFOs

## Appendix A

### Bartholomew County CAFO Regulation Study Committee Membership and Process Outline



#### Bartholomew County Commissioners

Governmental Office Building Suite 101  
440 Third Street  
Columbus, Indiana 47201

Phone (812) 379-1515  
FAX (812) 379-1797

#### Bartholomew County CAFO Regulation Study Committee

#### Membership and Process Outline

##### Study Committee – Purpose Statement & Scope of Work:

The Bartholomew County CAFO Regulation Study Committee is charged with reviewing, evaluating, and making recommendations for possible revisions to the standards within the Bartholomew County Zoning Ordinance.

The committee will consider these standards in the context of past, current and possible future livestock practices, IDEM regulations, scientific guidance, examples from other communities, natural resource protection, infrastructure considerations, off-site impacts, and public comment. The committee will identify methods for regulating future location of CAFOs that are most appropriate for Bartholomew County, while giving consideration to future options for family farms and land owners.

The committee will focus exclusively on identifying the regulations that are most appropriate for future CAFO/CFO location. The committee's scope of work does not include the review of any specific past, present, or future CAFO application, nor will the committee's scope cover issues not regulated by zoning, such as animal welfare or off-site land application of manure.

The committee will make its final recommendations to the Bartholomew County Plan Commission and the Bartholomew County Commissioners.

The committee will meet in County Council Chambers, 3:30 to 5:30 pm, on the dates indicated. The meetings will be open to the public, with limited time allotted for public comment due to the study nature of the committee's work. Only the CAFO visit or visits will be closed to the public due to the biosecurity measures that must be observed by the host operation.

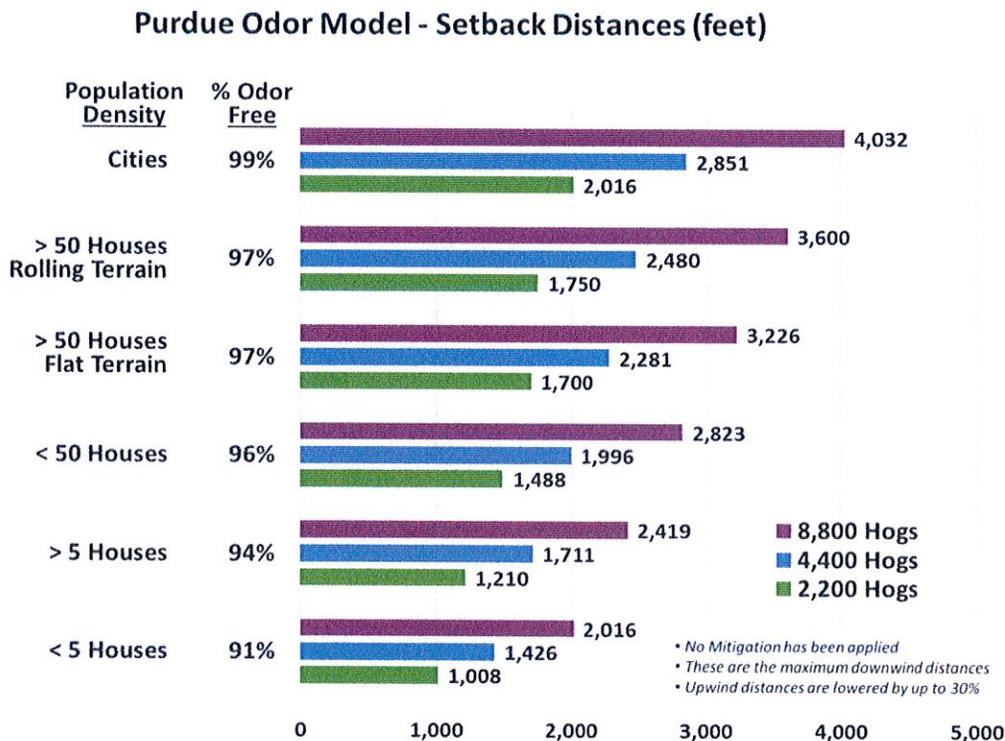
## Appendix B

### The Purdue Agriculture Air Quality Lab

#### 1. Purdue Odor Setback Model

The Purdue Agricultural Air Quality Lab (PAAQL), directed by Al Heber, PhD, has developed an odor dispersion model to aid in the siting of livestock operations. According to the PAAQL website, "The use of atmospheric air to dilute odors from livestock production facilities through appropriate setback distances is a cost-effective odor control strategy." This model has been in use for over ten years. Dr. Heber has worked with over thirteen counties in Indiana using his model. The publication "A Guide for Local Land Use Planning for Agricultural Operations", published by the Indiana State Department of Agriculture, refers to the PAAQL model as a useful tool to determine setback guidelines.

The Purdue Odor Setback model is relatively easy to use and with some practice could be used by a potential CAFO applicant to help guide his choice of site. However, **we recommend that the Bartholomew County Planning Department provide this service to potential applicants.** Their simulations, on a case-by-case basis, shall form the foundation of the Planning Department's acceptability rating of an application.



Similar tools to determine appropriate separation distances are in use in other states. The University of Minnesota Extension has created the Odors From Feedlots Setback Estimation Tool (OFFSET) to estimate the impact of odor from various livestock facilities and manure structures. This information can then be used in siting industrial livestock operations. A paper in the Quarterly Journal of the Hungarian Meteorological Service reviewed and compared several odor dispersion models, including Purdue Odor Setback and the OFFSET models (Odor Setback Distance Calculations Around Animal Farms and Solid Waste Landfills, Vol. 114, No. 4, October-December, 2010, pp 308-313). Mike Percy, a member of the CAFO study group, ran a sample simulation using the OFFSET model. His findings show the setback distances at 91% were very similar compared with those using Purdue Setback model. Distances at 99%, however, were significantly higher with the OFFSET model. An example of how the OFFSET model is being used at the county level can be found in the ordinance of Nicollet County, Minnesota. <http://www.co.nicollet.mn.us/327/Feedlots>.

## 2. Public Health

While the Purdue Odor Setback and OFFSET models are useful, science-based tools for determining setbacks, they deal solely with odor, which is considered a “nuisance” by industrial agriculture. The effect of odors, and the transmission of other air-borne hazards, on property values and public health are not considered under these sorts of tools. A cursory review of the literature finds multiple studies examining the negative impacts on **the respiratory health of**

**Children:** with a correlation of increased cases of asthma relative to the proximity of a CAFO (Sigurdarson & Kline, 2006; Mirabelli et al., 2006, and American Academy of Pediatrics Committee on Environmental Health. “Ambient Air Pollution: Health Hazards to Children.” Pediatrics Vol. 114 (6). December 2004) and of

**The Elderly:** with higher incidents of respiratory ailments and decreased lung function, especially those with compromised immune systems, relative to proximity to a CAFO (Michigan Department of Environmental Quality [MDEQ] Toxics Steering Group [TSG], 2006).

Additionally, a commission funded by the PEW Charitable Trust and Johns Hopkins University found that **“the current industrial farm animal production system often poses unacceptable risks to public health . . . the negative effects of the system are too great and the scientific evidence too strong to ignore.”**

(<http://www.ncifap.org/images/PCIFAPFin.pdf>)

**We recommend the use of the Precautionary Principle as the Bartholomew County Commissioners weighs the impact of industrial meat production on the health of all county residents.**

### 3. Precautionary Principle

From Wikipedia:

*The **precautionary principle** or precautionary approach to risk management states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those taking an action.*

*The principle is used by policy makers to justify discretionary decisions in situations where there is the possibility of harm from making a certain decision (e.g. taking a particular course of action) when extensive scientific knowledge on the matter is lacking. The principle implies that there is a social responsibility to protect the public from exposure to harm, when scientific investigation has found a plausible risk. These protections can be relaxed only if further scientific findings emerge that provide sound evidence that no harm will result.*

*In some legal systems, as in the law of the European Union, the application of the precautionary principle has been made a statutory requirement in some areas of law.*

**[https://en.wikipedia.org/wiki/Precautionary\\_principle](https://en.wikipedia.org/wiki/Precautionary_principle)**

## Appendix C

### Bartholomew County Comprehensive Plan Considerations

The following excerpts from the Bartholomew County Comprehensive Plan are relevant to our goal of providing proper zoning for CFO/CAFOs:

1. Goal 1: Preserve productive farmland and maintain the productive capacity for a strong county agricultural industry.
2. Policy 1-D: Require appropriate buffers to allow the continued full use of adjoining farmland and to reduce conflicts between neighboring uses.
3. Policy 1-F: Direct development away from more productive farmland and agricultural areas.
4. Policy 1-G: Prevent subdivision development from interfering with ongoing agricultural operations.
5. Policy 1-J: Require development to take place in a manner that allows for preservation and conservation of farmland, open land and significant natural features.
6. Policy 1-K: Protect neighboring farmland from increased water runoff (both surface and subsurface), night lighting, sun-blocking interference, trespassing or anything else which might interfere with existing or potential farm operations.
7. Policy 1-Q: Promote development of businesses such as value-added agricultural industries that enhance agriculture and agribusiness while protecting the character and environmental quality of the county.
8. Goal 2: Protect open space such as woodlands, flood plains, and wetlands for environmental, recreational, scenic, and life-style benefits.
9. Policy 2-B: Ensure that development occurs in a manner that preserves farmland, wildlife habitat, woodland, and significant natural features.
10. Policy 2-E: Utilize information about soil and water resources to make wise land use decisions and to prevent damage to the environment.
11. Policy 4-A: Prohibit development in areas where such development would jeopardize health or safety. These areas include but are not limited to floodways, areas with inadequate sewage disposal or water supply, areas with inadequate access, or land with known environmental problems.
12. Goal 7: Maintain and enhance the quality of the water, air, and land. 13. Policy 7-C: Ensure, to the extent possible, that new development does not cause deterioration in water quality or quantity for existing development.

CAFO Regulation  
Recommendations

14. Policy 7-L: Ensure that human and animal waste disposal is carried out in accordance with applicable environmental regulations.

15. Goal 12: Improve Water Quality and Ensure an Ample Supply of Potable Water.

16. Policy 12-A: Protect ground and surface water from contamination by chemicals, industrial waste, septic systems, animal waste, human waste, and sludge.

17. Policy 18-L: Prevent any industries that noticeably deteriorate the air quality from locating in the county.

## Appendix D

### Animal Conversions

The U.S. Department of Agriculture has identified a means by which various animals can be compared for manure/waste production. This is based on the typical animal weight. It calls out the average weight of the animal (in pounds) divided by 1,000 for the number of USDA Animal Units (AU).

The chart below shows the number of head of other animal species that compare with typical wean-to-finish Swine CFO/CAFOs.

Animal Description	AU
<b>Cattle (Beef or Dairy)</b>	
Mature Cow > 1,000 Lbs	1.40
Mature Cow < 1,000 Lbs	1.00
Heifer	0.70
Calf	0.20
<b>Swine</b>	
> 300 Lbs	0.40
55 - 300 Lbs	0.30
< 55 Lbs	0.05
<b>Horse</b>	1.00
<b>Sheep and Lambs</b>	0.10
<b>Chickens</b>	
Laying Hen or Broiler (Liquid Manure Syst)	0.033
Chicken > 5Lbs (Dry Manure System)	0.005
Chicken < 5Lbs (Dry Manure System)	0.003
<b>Turkeys</b>	
> 5 Lbs	0.018
< 5 Lbs	0.005
<b>Ducks</b>	0.010

Animal Description	Size 1	Size 2	Size 3
Swine 55 - 300 Lbs	2,200	4,400	8,800
Beef or Dairy Cattle > 1,000 Lbs	471	943	1,886
Beef or Dairy Cattle < 1,000 Lbs	660	1,320	2,640
Horse	660	1,320	2,640
Sheep and Lambs	6,600	13,200	26,400
Laying Hen or Broiler (Liquid Manure Syst)	20,000	40,000	80,000
Chicken > 5Lbs (Dry Manure System)	132,000	264,000	528,000
Chicken < 5Lbs (Dry Manure System)	220,000	440,000	880,000
Turkey > 5 Lbs	36,667	73,333	146,667
Turkey < 5 Lbs	132,000	264,000	528,000
Duck	66,000	132,000	264,000

## **Appendix E**

### **Residential Property Values**

**1: Timothy Slaper, PhD; Indiana Business Research Center**

**2: Effect of CAFOs on Residential Property Values**

**3: Jackson County Residential Property Values near a CAFO**

**1: Timothy Slaper, PhD; Indiana Business Research Center**

Dr. Timothy Slaper, of the Indiana Business Research Center, published a paper on farm property values in Decatur and Hancock counties. ("The Effect of Regulated Livestock Operations on Property Values in Selected Indiana Counties," Prepared by the Indiana Business Research Center, September 2008) CAFO proponents cite this paper as evidence that residential property values go up when a CAFO is built nearby. Dr. Slaper vigorously disputes this conclusion and calls it a complete misreading of his work. His response to a Bartholomew County CAFO Study Group member, when asked about the likelihood of a 50% reduction in nearby home values, was that that "would be about right." (telephone conversation September 2015) At the time of this writing, Dr. Slaper is planning to speak as an expert witness on the side of home owners in Jackson County in order to refute CAFO proponent claims that a CAFO won't cause a decrease in residential property values.

The minority members of the Bartholomew County Study Group repeatedly requested that the group facilitator include a review of economics and property values in the group's agenda. These were denied. After the most recent request to review residential property values, Dr. Slaper's paper was referenced as conclusive that property values went up and that there was no need to study this issue. Independently, the minority members took on a review of this topic and shared the overall result, that residential property values decrease with proximity to a CAFO, with the larger group at the September 10, 2015 meeting.

## **2: Effect of CAFOs on Residential Property Values – A Survey in Bartholomew County**

### **Question:**

Seven local real estate professionals,  
(real estate company owner, agents, and assessors), were asked:

**“What would be the effect on residential property value  
if a 4400 hog CAFO was constructed within  
500 feet of the residence property line?”**

### **The responses:**

1. All said that property values would decrease.
2. All said that it would make any house much more difficult to sell.
3. One real estate company owner said the value would drop by 50%.
4. The average all 7 responses: House value would drop by 33%.
5. One assessor noted that for the reduction in value to be minimal, (5%), the house would need to be 1 mile away
6. Two agents gave very recent examples of two separate homes for sale in Clifty Township. Each property had a solid offer that fell through when the buyers learned of an approved CAFO in the neighborhood. Both houses were more than 1 mile away from the approved CAFO site.

### 3: Jackson County Residential Property Values near a CAFO

A more detailed study has been done in Jackson County. Ten homes were professionally assessed by three different assessors working independently of each other. These homes are within a mile of a recently-permitted CAFO site. The reduction in value varied between 44% for homes nearby to 5% for those further away. These homes dropped in value from 100% before installation of the CAFO to as little as 56% of their original value. The table below show the values and distances from the CAFO site.

Property Address of Jackson County Residence	CAFO Bldg to Residence (feet)	Residence Appraised Value Before CAFO (\$)	Residence Appraised Value with CAFO (\$)	Loss of Value (\$)	% Loss	Remaining Value
1800 S Co Rd 1050 E	557	\$25,000	\$14,000	\$11,000	44%	56%
10314 E Co Rd 200 S	800	\$25,000	\$14,000	\$11,000	44%	56%
1868 S Co Rd 1050 E	855	\$80,000	\$45,000	\$35,000	44%	56%
2000 S Co Rd 1025 E	859	\$85,000	\$48,000	\$37,000	44%	56%
1918 S Co Rd 1050 E	995	\$175,000	\$121,500	\$53,500	31%	69%
1488 S Co Rd 1060 E	1,380	\$127,000	\$98,000	\$29,000	23%	77%
1685 S Co Rd 1060 E	1,664	\$135,000	\$98,000	\$37,000	27%	73%
2468 S Co Rd 1025 E	3,396	\$395,000	\$376,000	\$19,000	5%	95%
11314 E Co Rd 200 S	5,280	\$175,000	\$150,000	\$25,000	14%	86%
11372 E Co Rd 200 S	5,755	\$92,000	\$75,000	\$17,000	18%	82%
Total		\$1,314,000	\$1,039,500	\$274,500	21%	79%

10 Appraisals from 3 Appraisers: Brandi Wallace, Jim Meyers, John Dickerson

## 4: Properties Devalued by Factory Farms

### Examples of Properties Devalued by Factory Farms

#### Studies & Reports

In describing the economic costs of CAFOs to rural communities, the recent Union of Concerned Scientists report stated that “because property values are reduced near CAFOs, the residential tax base may suffer as well.”

~ Doug Gurian-Sherman, Union of Concerned Scientists, *CAFOs Uncovered: The Untold Costs of Confined Animal Feeding Operations*, at 61 (April 2008).

The recent Pew Commission report on industrial farm animal production described the various negative impacts that factory farm facilities have on the environment, public health, animal welfare, and rural communities. The report did not directly address declining property values, but did note the negative influence factory farms have on rural social capital and the rights of neighbors to enjoy their own properties.

~ Pew Commission on Industrial Farm Animal Production, *Putting Meat on the Table: Industrial Farm Animal Production in America*, at 40-49 (April 2008).

A 2012 report by Dr. John Kilpatrick of Greenfield Advisors evaluates a Colorado property and the impacts a nearby CAFO has on its value. The report explains that the principles within the report would be applicable to the appraisal of any property near a CAFO.

~ John A. Kilpatrick, *In re: Delta County* (Aug. 22, 2012).

This report was prepared to assist local boards of health who have concerns about CAFOs in their communities and to help them “understand their role in developing ways to mitigate potential problems associated with CAFOs.” The report states that “[t]he most certain fact regarding CAFOs and property values are that the closer a property is to a CAFO, the more likely it will be that the value of the property will drop.” It also noted that “[d]eclines in property values can . . . cause property tax rates to drop, which can place stress on local government budgets.”

~ Carrie Hribar, National Association of Local Boards of Health, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, at III, 11 (2010).

A technical report for the Pew Commission report discussed various CAFO studies and found that: “Industrialization of animal agriculture leads to the reduced enjoyment of property and the deterioration of the surrounding landscape, which are reflected in declining home values and lowering of property tax assessments. Recurrent strong odors, the degradation of water bodies, and increased populations of flies are among the problems caused by CAFOS that make it intolerable for neighbors and their guests to participate in normal outdoor recreational activities or normal social activities in and around their homes.”

~ Pew Commission on Industrial Farm Animal Production, *Community and Social Impacts of Concentrated Animal Feeding Operations*, at 31.

## CAFO Regulation Recommendations

The National Association of Realtors has put together a “field guide” that explains what CAFOs are and how they can impact property values. The guide lists several studies and notes that, while a few studies have found a positive impact, “most studies have found a negative relationship between feedlots and property values.”

~ National Association of Realtors, *Field Guide to Impacts of Animal Feedlots on Property Values* (Sept. 2013).

In Iowa, one 1996 study found that proximity to a hog CAFO decreased neighboring property values in the following order: 40% within ½ mile; 30% within 1 mile; 20% within 1.5 miles, and; 10% within 2 miles.

~ William J. Weida, *The CAFO: Implications for Rural Economies in the U.S.* 1 (Colo. College & GRACE Factory Farm Project 2004) (citing Padgett & Johnson).

Another Iowa study found that there may be a 1-10% reduction in property values of residences upwind of new CAFO facilities, and that the drop in value “helps explain opposition by rural residents to largescale feeding operations.”

~ Joseph A. Herriges et al., *Living with Hogs in Iowa: The Impact of Livestock Facilities on Rural Residential Property Values* 19-20 (Iowa State Univ. Ctr. for Agric. Dev. Working Paper 03-WP 342 (Aug. 2003)).

A 1999 study in Missouri found that the average loss of land value within three miles of a CAFO was \$112/acre.

~ Mubarak Hamed et al., *The Impacts of Animal Feeding Operations on Rural Land Values* 2 (Cmty. Policy Analysis Ctr., Univ. of Mo., May 1999) (finding that “there is a relationship between proximity to a CAFO and the value of property”).

Studies cited by Dakota Rural Action found that property within a 3-mile radius of a CAFO loses 6.6% in property valuation, and property within 0.10 mile of a CAFO loses up to 88% in property valuation.

~ Dakota Rural Action, *CAFO Economic Impact* (June 2006) (citing North Central Regional Center for Rural Development (1999:46); Siepel et al. (1998)).

A Sierra Club study reported that county assessors in at least eight states lowered property taxes for neighbors of factory farms.

~ William J. Weida, *Nutrient Management Issues* (GRACE Factory Farm Project, Apr. 4, 2001) (citing Sierra Club, *Property Tax Reductions* (Mar. 13, 2000)).

A study in Berks County, Pennsylvania evaluated the impact of potential local disamenities on neighboring properties. It found that the impacts of CAFOs on neighboring property values did not vary significantly by species or by differences in the sizes of the operations.

~ Richard Ready & Charles Abdalla, *The Impact of Open Space and Potential Local Disamenities on Residential Rural Property Values in Berks County, Pennsylvania* i (Penn. State Univ., Staff Paper No. 363, June 2003).

## CAFO Regulation Recommendations

This study evaluated the influence of proximity to swine facilities on the sale price of residential properties, using a GIS-based hedonic model. The study reported that “[r]esults indicate a negative and significant impact on property value from hog operations.” The study also found that the modeling “may be a promising technique for establishing setback guidelines, for assessing property value damages resulting from animal operations, and for evaluating potential property value impacts to surrounding properties when siting a new CAFO.”

~ Milla et al., *Evaluating the Effect of Proximity to Hog Farms on Residential Property Values: A GIS-Based Hedonic Price Model Approach*, 17 URISA Journal 27, 30–31 (2005).

A Putnam County, Missouri study found a \$58/acre loss of value for properties within 1.5 miles of a CAFO facility.

~ William J. Weida, *The Evidence for Property Devaluation Due to the Proximity to CAFOs* 6 (Col. College & GRACE Factory Farm Project, Jan. 21, 2002).

Three different North Carolina studies, described in a presentation at the University of Kentucky, found that proximity and animal density have significant, negative impacts on the market values of residential properties.

~ Michael Thomas et al., *A Comparison of Three Recent Hedonic Models of Hog Farm Discommodity in Coastal North Carolina: Evidence of Diseconomies of Scale and Brown Zones* (May 2003) (citing studies of Bruton, Ansine etl al., and Kim).

A 2008 University of Northern Iowa study analyzed house sales in Black Hawk County, Iowa to determine the effect of hog CAFOs on property values. It found “large adverse impacts suffered by houses that are very close (within 3 miles) to and directly downwind from a CAFO.”

~ H. Isakson & M. D. Ecker, *An Analysis of the Impact of Swine CAFOs on the Value of Nearby Houses* 19 (Univ. of N. Iowa Technical Report, July 23, 2008).

A 1996 newsletter from EPA’s National Center for Environmental Economics reported on an early North Carolina State University study that used hedonic analysis to make various findings on factory farms and their negative impacts on residential land values.

~ USEPA, National Center for Environmental Economics, *Effects of Hog Operations on Residential Property Values*, 3:12 Newsletter (Dec. 1996).

A recent white paper by the Institute of Science, Technology and Public Policy reported on the negative impacts hog CAFOs have in Iowa, including “marked[] and consistent[]” decreases in land values and quality of life in areas near CAFOs. The report noted a study finding that “[p]roximity to a CAFO can reduce the value of a home by 40%.”

~ Institute of Science, Technology and Public Policy, *Concentrated Animal Feeding Operations (CAFOs): Assessment of Impacts on Health, Local Economies, and the Environment with Suggested Alternatives* 3, 6 (post February 2007) (citing study of Park, Lee, and Seidl).

### Articles

This 2001 article in the *Appraisal Journal* explains how CAFOs can negatively impact proximate property values, and lists several factors that should be considered in valuing those properties.

~ John A. Kilpatrick, *Concentrated Animal Feeding Operations and Proximate Property Values*, 39:3 *Appraisal J.* 301 (2001).

A 2012 press release reported that property owners in Illinois were awarded a 12.5% reduction in their property value based on the effects of a neighboring swine CAFO. The reduction applied retroactively from the time the CAFO was constructed.

~ CRAPC & ICCAW, *Neighbors of Illinois Swine CAFO Claim Victory in Property Tax Appeal* (Sept. 6, 2012).

A 2007 article in the *Agriculture and Human Values* journal evaluated studies on industrialized farming and community impacts from the 1930s forward. It reported predominantly detrimental effects, including a decline in real estate values for residences close to hog CAFOs.

~ Lobao & Stofferahn, *The Community Effects of Industrialized Farming: Social Science Research and Challenges to Corporate Farming Laws*, *Agric. & Human Values* (2007).

In Waseca County, Minnesota, a county assessor designed a “smell location chart” to determine reductions in values of properties near feedlots. Factors in the percentage of reduction allowed included the proximity to the feedlot, the number of animals, and the presence of a manure lagoon.

~ Douglas Clement, *Knee Deep in Feedlot Feuds*, *FedGazette*, July 2001.

In January 2007, Indiana residents turned out to testify before the state legislature on a CAFO moratorium bill. One woman testified that a businessman was “driven to suicidal thoughts because he was unable to sell his home after six years because of the odor from a nearby CAFO.” Another testified that “[d]eclined property value because of CAFOs mean [sic] decreased revenue from property taxes, which means less money for our schools.”

~ Jondi Schmitt, *Hoosiers Voice CAFO Concerns: Proposed Bill Would Put Three-Year Moratorium on Start of Construction*, *South Bend Tribune*, Jan. 30, 2007.

The Indiana House passed a bill in February 2007 that would prohibit new CAFOs within 1 mile of cities, towns, schools, and health facilities. One representative who supported the bill said he “want[ed] the pork industry to grow” in Indiana, but that growth could happen “while having respect to our neighbors.” “CAFOs do decrease property values,” he said.

~ Niki Kelly, *General Assembly: House Restricts Feed Farms*, *The Journal Gazette*, Feb. 22, 2007.

A Michigan Land Use article reported that a tax tribunal reduced the assessments for properties adjacent to CAFOs. It ordered local officials to reduce the taxable values of at least five rural homes by 35% based on problems with stench from a hog livestock factory, and on “slim sale chances” for the homes.

~ Patty Cantrell, *Michigan Tax Tribunal Recognizes Hog Factory Stench* (*Mich. Land Use Inst.*, Dec. 7, 1999).

## CAFO Regulation Recommendations

This 2004 paper debunked assumptions underlying CAFO-proponent arguments, including those regarding CAFOs and property use. It noted: "CAFOs generate odor, air and water pollution, all of which have a direct impact on neighboring properties. The closer the neighboring property, the more severe the impact is likely to be. . . . The resulting loss of exclusive use by neighboring properties lowers their values and ultimately also lowers the taxes generated from these properties. Suing the offending party for these nuisance activities could potentially compensate the neighboring property owners. To prevent this, factory farming interests have attempted to sponsor legislation to prohibit nuisance suits for agricultural pollution."

~ William J. Weida, *Considering the Rationales for Factory Farming* (for presentation) 10 (Mar. 5, 2004).

Clark County, Illinois established assessment abatements for fifty residential homes around a hog CAFO in the following order: 30% reduction within ½ mile; 25% reduction within ¾ mile; 20% reduction within 1 mile; 15% reduction within 1 ¼ miles; 10% reduction with 1 ½ miles.

~ William J. Weida, *The Evidence for Property Devaluation Due to the Proximity to CAFOs* 6 (Col. College & GRACE Factory Farm Project, Jan. 21, 2002).

A 2006 article in the *Journal of Ecological Anthropology* recognized the ill effects of factory farms on neighboring properties: "In addition to their negative effects on the local economy and tax base, large corporate operations are the source of environmental issues that threaten the property values of rural and urban residents. This strains the economic base and places higher burdens of taxation on remaining residents."

~ Barbara J. Dilly, *Tax Policy and Swine Production in Iowa, United States*, 10 *J. Ecological Anthropology* 45, 48 (2006).

A Peoria, Illinois newspaper reported that county officials lowered property values for at least 20 people with homes within two miles of a large sow farm and its odor. The tax board decreased assessments by

30% for neighbors with 1 ½ miles of the operation, and 10% for those within 2 miles of the facility.

~ *Board Smells Lower Land Values near Hog Farm*, *The Journal Star*, May 6, 1998, at A1.

An Iowa paper reported on the results of the University of Northern Iowa study mentioned above. One interviewee said that his neighbor had been offered \$1 million for his land before plans for a hog lot were announced, but that after the announcement, "the would-be buyer walked away." "He lost almost \$1 million right there . . . . And it's not necessarily smell. It's psychological . . . . They don't want anything to do with them (hog lots) if they see them." Another interviewee, who had recently bought land in the area, said she "would not have bought the house and all the surrounding property . . . at above market value . . . if a CAFO was going to be built a mile away. . . . And to tell you the truth, I'll sell my property at a huge loss to move away if they build these things."

~ *UNI Study: Hog Lot Cuts up to 15% off Nearby Home Values*, *Waterloo Courier*, Mar. 12, 2007.

## CAFO Regulation Recommendations

A 2006 Letter to the Editor in opposition to proposed legislation that would weaken Michigan's environmental laws described the "severe pollution" that CAFOs cause. The author explained that the growing number of CAFOs in Michigan was "threatening our public health, our rural communities and the viability of Michigan's 52,000 farms." She also noted that "[t]he stench from CAFOs has led to reductions in property values of up to 70 percent by the Michigan Tax Tribunal for nearby residents no longer able to enjoy or sell their homes."

~ Anne Woivode Letter to the Editor, *Animal Sewage from Livestock Farms Threatens Communities*, Kalamazoo Gazette, May 15, 2006.

In February 1998, residents of Caribou, Maine petitioned the city council for a temporary ban on factory pig farms. Among concerns were "strong odor from waste, surface and ground water contamination and plummeting property values."

~ Gloria Flannery, *Caribou Councilors Seek Ban on Piggery; Fears of Pollution, Odor Lead to Ordinance Proposal*, Bangor Daily News, Feb. 25, 1998.

In an article summarizing newspaper coverage of concerns about large-scale swine facilities (LSSF) in Illinois, a "distinct undercurrent" of claims against the facilities was that they were "difficult for communities." Specifically, "[s]ources were concerned that LSSF were socially disruptive: they went against traditional community values, destroyed the community's history, violated ethics of neighborliness, and created community conflict. In addition, they were concerned that the community would have to develop infrastructure capacity to handle the effects of LSSF, paying for social services, schools, and health care for migrant workers and cleaning up spills and abandoned lagoons. Those opposed to LSSF also maintained that the large-scale operations had no overall economic benefit for communities because they displaced more jobs than they created, decreased property values and made alternative industries, such as tourism, less viable."

~ A.E. Reisner, *Newspaper Coverage of Controversies about Large-Scale Swine Facilities in Rural Communities in Illinois*, 83:11 J. Animal Sci. (Nov. 1, 2005).

Coverage of the 2007 Food and Family Farm Presidential Summit in Iowa noted that "many neighbors say the [CAFOs] stink up the air and foul the water, devastate their property values, and drive small farmers out of business."

~ Jennifer Jacobs, *Candidates Tout Their Farm Credentials*, Des Moines Register, Nov. 11, 2007.

### Cases

In a 2013 decision by the Idaho Board of Tax Appeals, a property owner was awarded a 20% reduction in his residential property assessment due to his property's proximity to a CAFO. As evidence, the property owner explained that his property was and would be negatively impacted by the CAFO because of dust and odors, impaired views, nearby (or migrating) contamination and disease, loud noises, etc. He also presented an appraiser working paper that summarized CAFO impacts on nearby property values, a summary of a study done in a neighboring county that quantified property value decreases based on proximity to CAFOs, and a real estate broker's letter that estimated a decrease in his property's value of 20-30%. The Board found that the County should have made appraisal adjustments based on these factors, and ordered a 20% reduction relying primarily on the neighboring county study, the appraisal paper, and the real estate broker's statement.

~ *In the Matter of the Appeals of Joe Morton*, Nos. 12-A-1377 & 12-A-1379 (Idaho Bd. of Tax Appeals, April 22, 2013).

## CAFO Regulation Recommendations

In a 1997 Indiana Tax Court case, property owners asserted that a state board did not adequately consider the negative effects a proximate hog operation had on their neighborhood when assessing their property. To support their claim that odors from the operation impaired the enjoyment of their property, the plaintiffs presented two jars of air taken from their yard to the hearing officer. The Tax Court held that the plaintiffs met their burden of proving their assessment was incorrect based on the proximate hog operation's effect on the desirability of their neighborhood. Relevant evidence that the plaintiffs presented included the two jars of air "redolent with swine" (though unopened, the hearing officer conceded they would smell bad), and verbal testimony about how the odor impaired the enjoyment of their property (they were unable to play tennis, open windows, or hang clothes out).

~ *Corey v. State Bd. of Tax Comm'rs*, 674 N.E.2d 1062, 1063, 1065-66 (Ind. Tax. Ct. 1997) (reversing state board's assessment on these grounds).

In a case before Indiana's Court of Appeals that was basically a zoning challenge to a proposed CAFO, some people who lived near the proposed CAFO presented evidence that their property values would decline if the CAFO were built. They presented testimony by their Township Assessor, who said:

The first thing that has to happen if this hog operation goes in, is the neighborhood value will have to be lowered from a good to a fair or a poor . . . . [T]here's some houses like Flynns [sic], Bowmans and Jerry Marsh's, David Helt's there's some of them that the Sexton's house, there's two of them there that are pretty new houses, Steve Bowman's sister just built a new house up there. I wouldn't be surprised if they wouldn't drop 30 percent, I don't think it would be out of the question. So the property values will decrease in this area.

The Court held that the testimony was enough to show that the people near the proposed CAFO would "suffer a pecuniary loss" if the CAFO permit were granted.

~ *Sexton v. Jackson County Bd. of Zoning Appeals*, 884 N.E.2d 889, 893-94 (Ind. App. 2008).

In 2002, a Nebraska Court held that a tax commission should have considered the effect of a nearby factory farm on a taxpayer's property value. The taxpayer presented evidence from an appraiser who "considered that a potential buyer would take into account the odor produced by the hog farrowing facility," and adjusted the property's value downward for that and other reasons. The Court made several strong statements illustrating its conviction that factory farms impact neighboring property values:

In the context of negotiations between a willing buyer and seller to arrive at fair market value, the neighboring hog facility and the house's location would unquestionably affect the market value of Livingston's house. Any other conclusion would mean that two identical houses, one located next to the railroad switching yard and the other next to the country club golf course, have identical values – an obviously arbitrary and illogical conclusion that no reasonable person would reach. . . . That many potential buyers would not look favorably upon the hog facility, and judge the home's value with reference thereto, is demonstrated by some well-known Nebraska cases in which homeowners have successfully sued hog facility owners for damages caused by interference with the use of their nearby homes. . . . No reasonable fact finder could conclude that in the real estate marketplace, a potential buyer would not notice, and react economically, to having a large hog facility very nearby while living in a remote location.

~ *Livingston v. Jefferson County Bd. of Equalization*, 640 N.W.2d 426, 431, 437 (Neb. Ct. App. 2002).

## CAFO Regulation Recommendations

In another Nebraska tax case, the state Supreme Court held that an assessor's valuation was "arbitrary and unreasonable" because it did not apply external/locational depreciation to a home that was near a cattle feedlot. The property owner provided testimony about problems with dust, trucks, and flies from the nearby feedlot. In addition, the well for the home was connected to the cattle-watering facility.

~ *Darnall Ranch, Inc. v. Banner County Bd. of Equalization*, 753 N.W.2d 819, 830-32 (Neb. 2008).

In a 1999 South Dakota case, the Court upheld the decision of a land commission to deny a permit for the siting of a hog confinement facility based on, among other things, devaluation of surrounding real estate.

~ *Coyote Flats, LLC v. Sanborn County Comm'n*, 596 N.W.2d 347, 352, 356 (S.D. 1999).

An appellate court in Illinois has recognized that factory farms can decrease neighboring property values. In *Nickels v. Burnett*, the Court upheld a preliminary injunction against building an 8,000-head hog CAFO based in part on "extensive evidence in the form of affidavits and scholarly articles authored by the expert affiants demonstrating that, if the hog facility were to begin operation, plaintiffs would experience substantially harmful health effects and a significant loss of value to their land." The Court found the "harms described were substantially certain to occur should the hog facility begin operations in its present proposed location."

The neighboring plaintiffs alleged that the facility would devalue their properties (among other things). The plaintiffs introduced the affidavit of a professional appraiser, who stated that neighboring property values would be reduced by 18-35%. They also presented affidavits from two doctors who concluded, respectively, that "years of downwind exposure to Hydrogen Sulfide even in low doses can cause permanent brain damage and . . . any exposure must be avoided;" and that "locating the proposed hog facility 3/4 of a mile or less away from homes is likely to cause medical and psychological symptoms to the people living in those homes." Another expert opined that "subjecting the Schmidt and Klein families (the families living closest to the site of the proposed hog operation), to the hog operation odors will significantly increase the likelihood that the two families will experience health problems and that it will cause significant detrimental effects on the quality of their lives." In his opinion, "subjecting the other 13 families, whose homes are located within 3/4 of a mile from the proposed hog operation, to the emissions generated by the proposed hog operation will increase their risk of health problems."

~ *Nickels v. Burnett*, 798 N.E.2d 817, 820, 826 (Ill. App. Ct. 2003); Brief of Appellees at 7-10.

In Pasco, Washington, an appraisal done for litigation purposes found an over 50% reduction in value of a family farm impacted by neighboring CAFO dust, flies, fecal matter, and odor. The CAFO settled the lawsuit by relocating the plaintiffs and buying their farm.

~ John A. Kilpatrick, *Concentrated Animal Feeding Operations and Proximate Property Values*, 39:3 Appraisal J. 301, 305 (2001).

In Michigan, a horse farm appealed its property tax assessment because it was located near a large scale pork processing facility. The horse farm got a 50% reduction based on airborne externalities and flies.

~ John A. Kilpatrick, *Concentrated Animal Feeding Operations and Proximate Property Values*, 39:3 Appraisal J. 301, 305 (2001).

## CAFO Regulation Recommendations

In a 2002 Iowa nuisance case, the Court ordered a pork company to pay \$100,000 to homeowners when their home dropped \$50,000 in value after a nearby CAFO was built. The plaintiffs had alleged that the CAFO attracted bugs and harmed their physical and emotional health.

~ Associated Press, *Judge Awards Iowa Couple \$100,000 in Hog Lot Lawsuit*, Amarillo Globe-News, Jan. 12, 2002.

In 1998 in Cedar County, Nebraska, property owners received an assessment reduction based on a neighboring CAFO. On the protest form to the tax board, the property owners stated: "Our neighbor has built a hog confinement and lagoon across the road from our house. This same neighbor has runoff from his cattle yards in to the road ditch 100ft from our well. The nitrates in our water ha[ve] increased making it not safe to drink. We feel a valuation increase of \$35,340 is unfair." The board looked at the property and decided to assess a 25% locational depreciation.

~ Great Plains Environmental Law Center, Case Studies, Cedar County, Property Valuation Protest Form (1998).

In January 2002, in Calhoun County, Iowa, a jury awarded \$76,400 in damages to four property owners who claimed a 4,000-hog operation within a mile of their properties diminished their property values. In another Iowa county, a Court had recently awarded \$100,000 to other property owners for decreased property values from a nearby hog feeding operation.

~ Jerry Perkins, *Jury Sides against Hog-lot Firm: A Total of \$76,400 Will Go to Residents Near the Facility*, Jan. 26, 2002.

A 1998 newsblurb from Kansas reported that a jury awarded \$15,000 to retired farmers who live near a feedlot for diminished property values and loss of peace of mind.

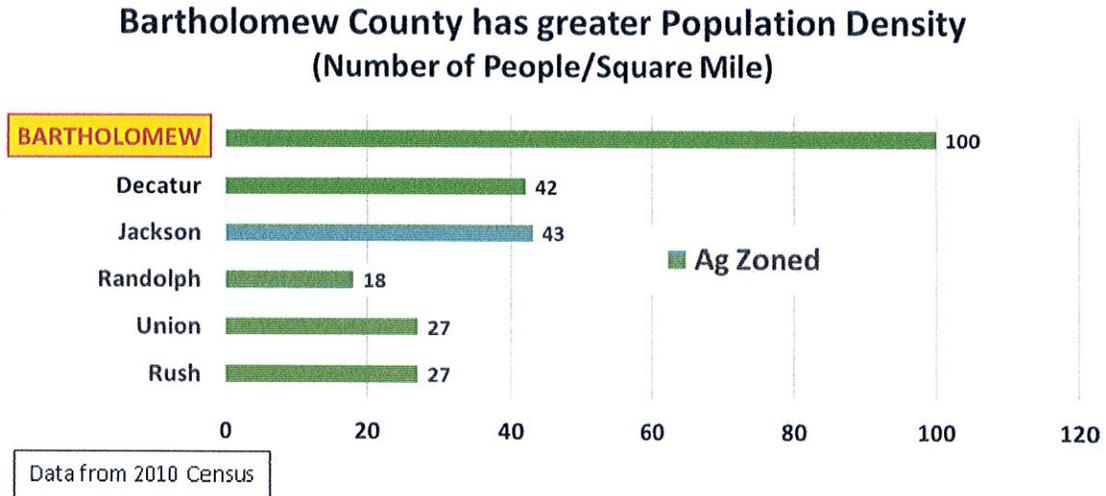
~ *Across the USA: News from Every State*, USA Today, June 22, 1998.

*This document does not contain legal advice.  
Please consult a licensed attorney if you wish to obtain legal advice.*

## Appendix F

### Review of Population and Housing Densities

Bartholomew County is a very densely populated county. Compared to neighboring counties it has two to five times more people and houses in agriculturally zoned areas.



One of the contributing reasons for this is that our county was zoned residential until 2008. As a result, residents could build houses anywhere in the county with little or no restrictions, and they did. The expansion of strip housing and small subdivisions can be seen all over the county. These houses were built from the 1950's onwards to accommodate the expansion of the manufacturing sector in Bartholomew County.

In 2008 the County Commissioners approved an ordinance that zoned approximately 66% of the county as general or preferred agricultural.

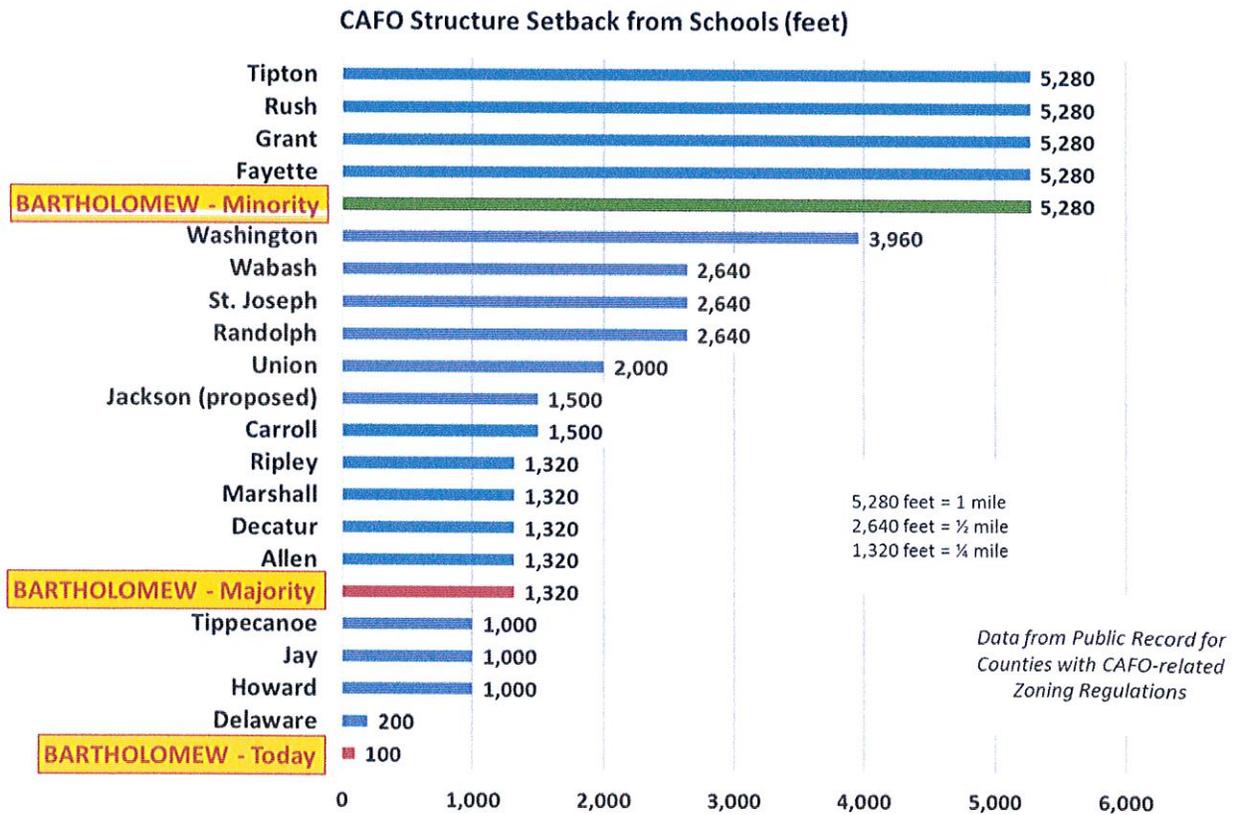
There are now 11,350 houses in the agriculturally zoned areas. Approximately 6,050 are in the half-mile buffer zones around residentially zoned areas. These houses get some protection from being in the buffer zone. The remaining 5,300 houses, almost all built decades prior to the 2008 zoning change, are rural residences outside any buffer zone.

We are now left with little room to both put in CAFOs and have reasonable setbacks for 27,000 rural residents. To choose extremely low setbacks to residences is to show no regard for the property values, the property rights, and the health and safety of tens of thousands of county residents, including farmers. It is the responsibility of the County Commissioners to balance the needs of all residents and not just support powerful special interest groups.

## Appendix G

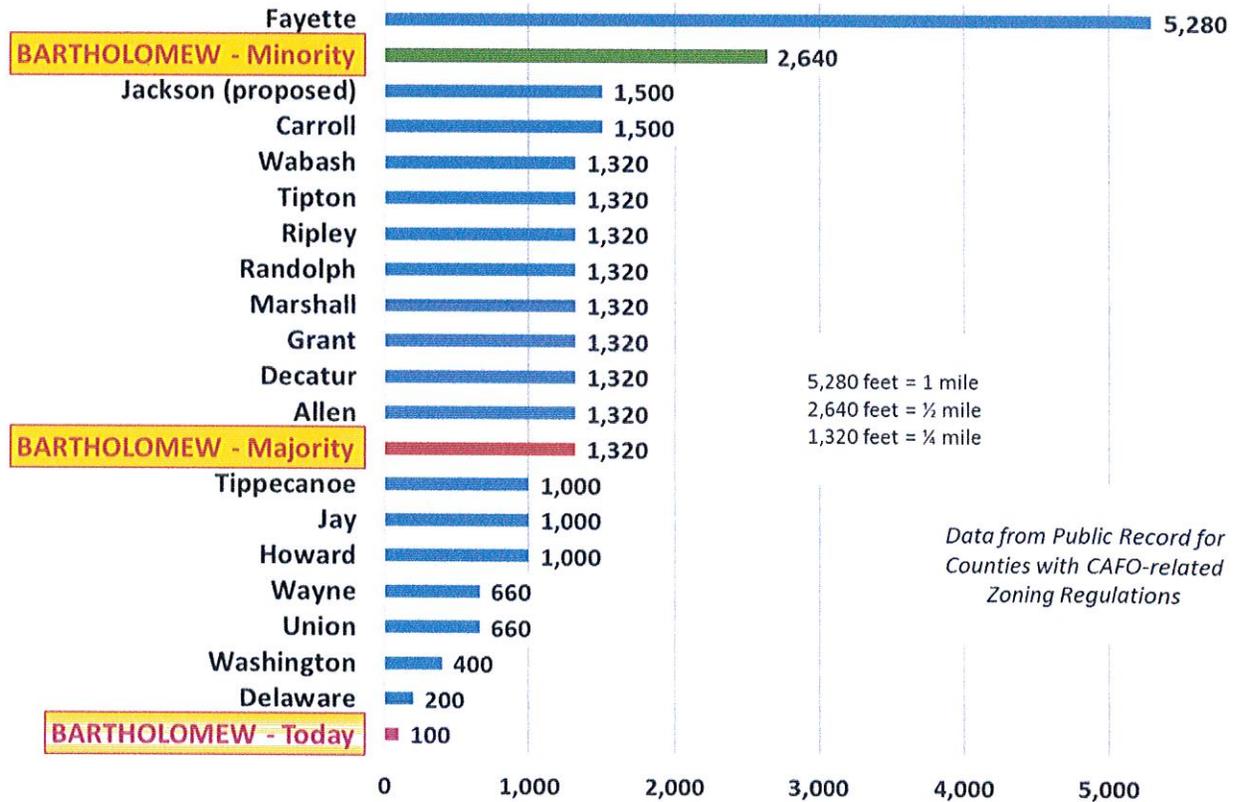
### A review of CAFO-related Zoning Ordinances from Indiana Counties

The following charts illustrate the CAFO-related Zoning Setback Regulations from other Indiana counties that have such regulations. Information is available via Public Record.



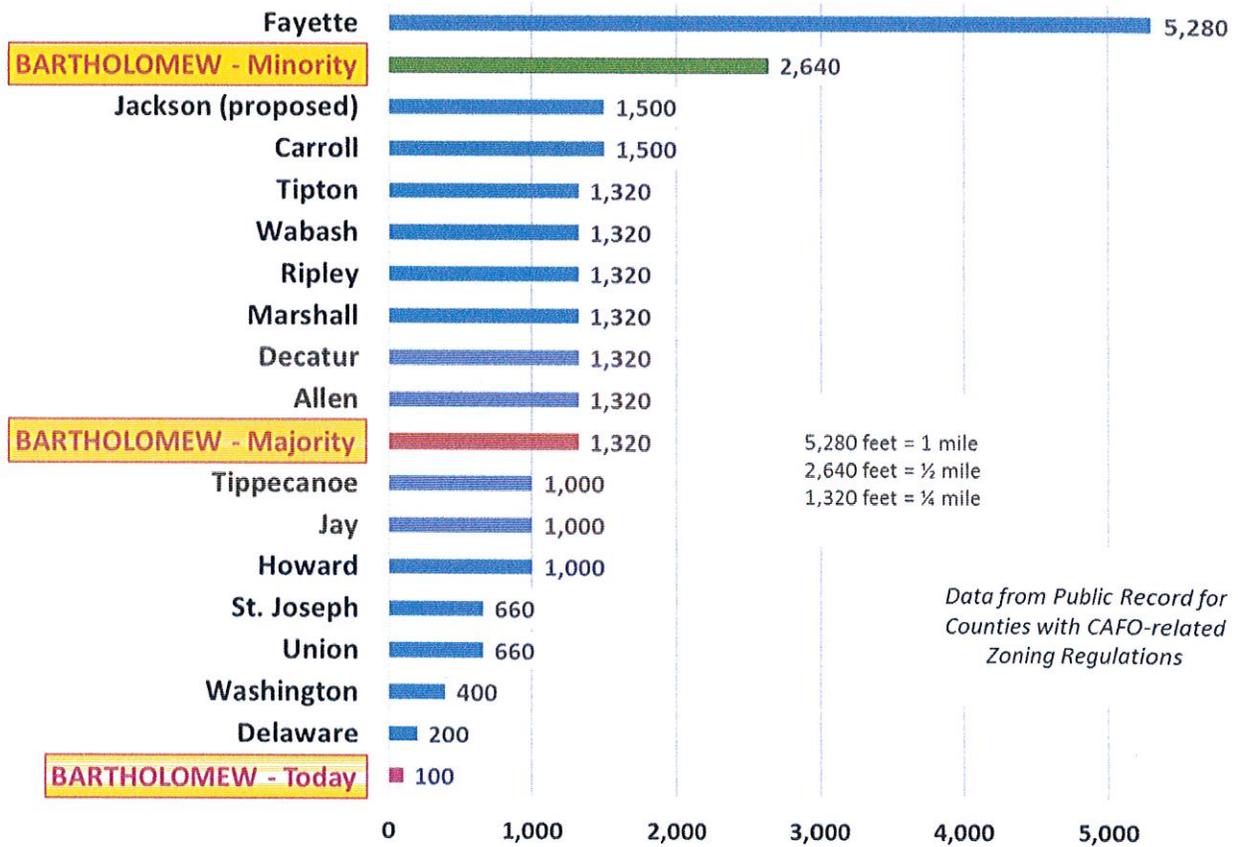
The chart above illustrates Zoning Setbacks, established in various Indiana counties, from CAFO Structures to Schools (in feet).

### CAFO Structure Setback from Public Areas/Buildings (including Parks & Recreation) (feet)



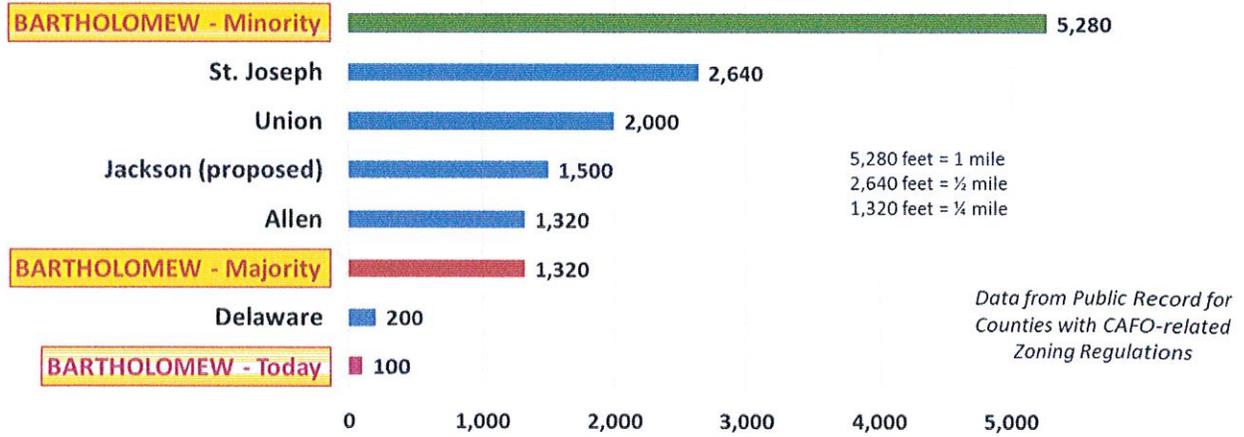
The above chart illustrates Zoning Setbacks from CAFO Structures to Public Areas and Public Buildings, including Public Parks and Recreation Areas (in feet).

### CAFO Structure Setback from Worship Facilities (feet)



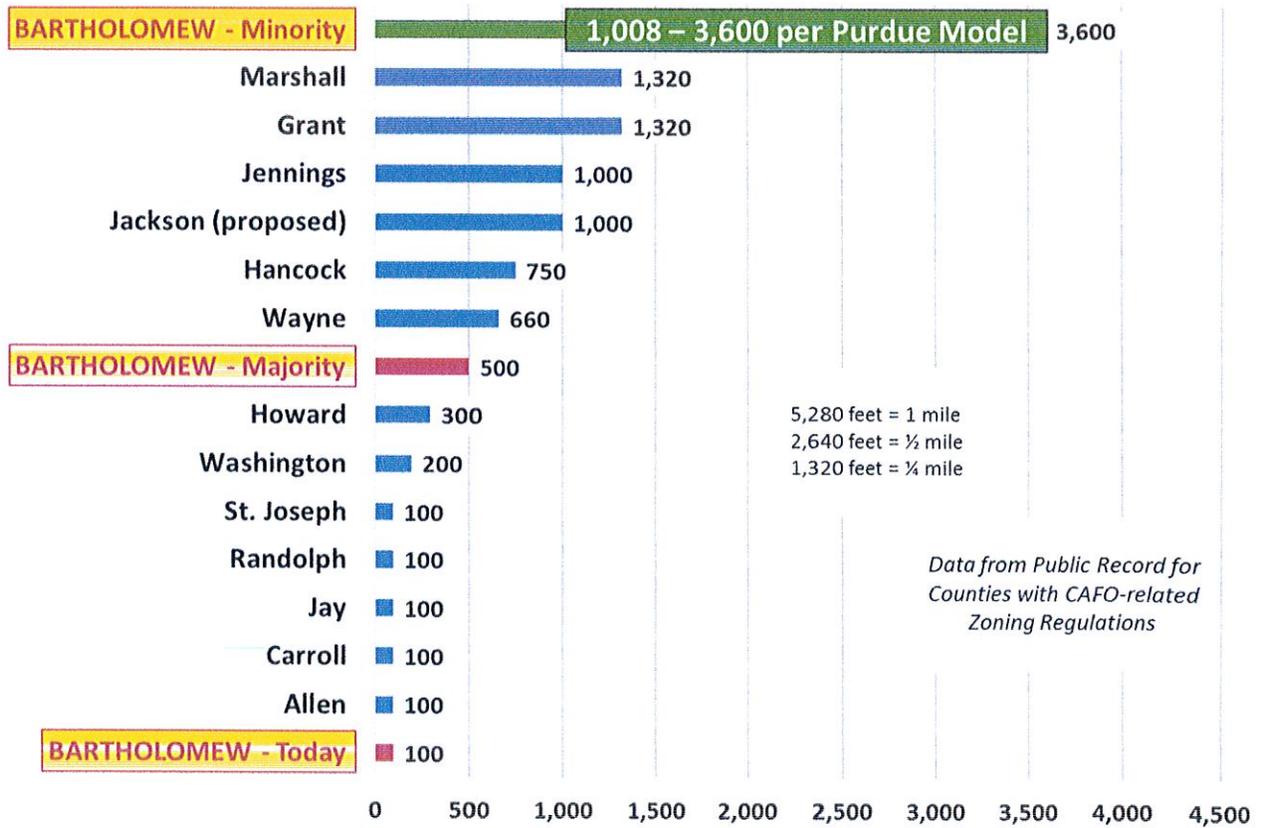
The above chart illustrates Zoning Setbacks from CAFO Structures to Churches and other places of Worship (in feet).

### CAFO Structure Setback from Healthcare Facilities (feet)



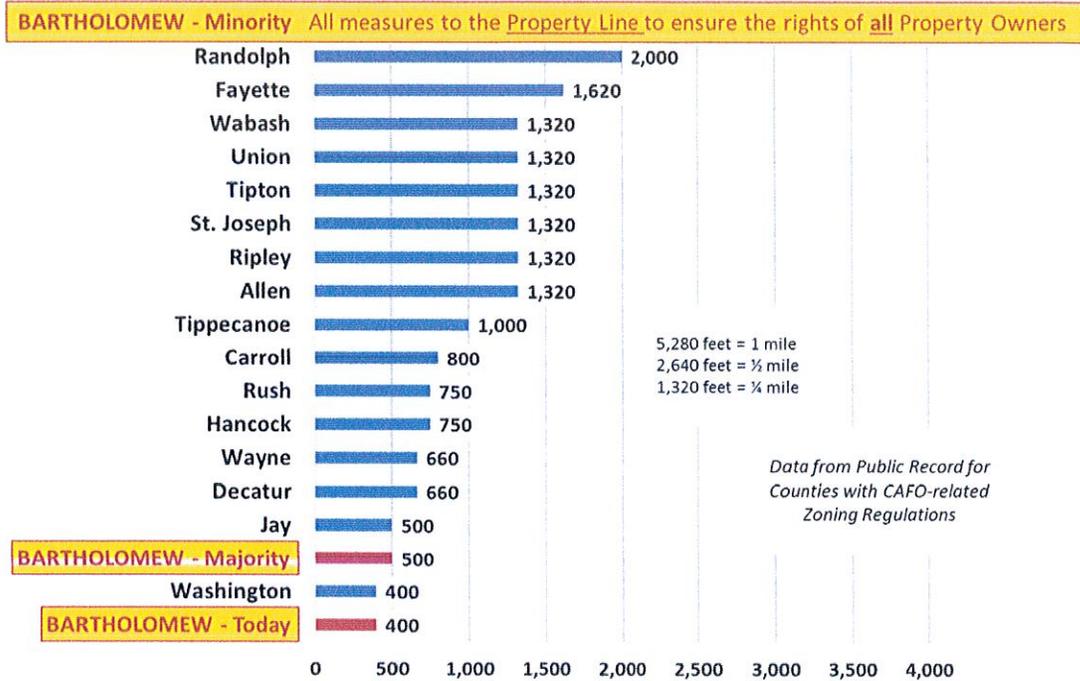
The above chart illustrates Zoning Setbacks from CAFO Structures to Healthcare Facilities including Hospitals, Nursing Homes, and Health Clinics (in feet).

### CAFO Structure Setback from Residence Property Line (feet)

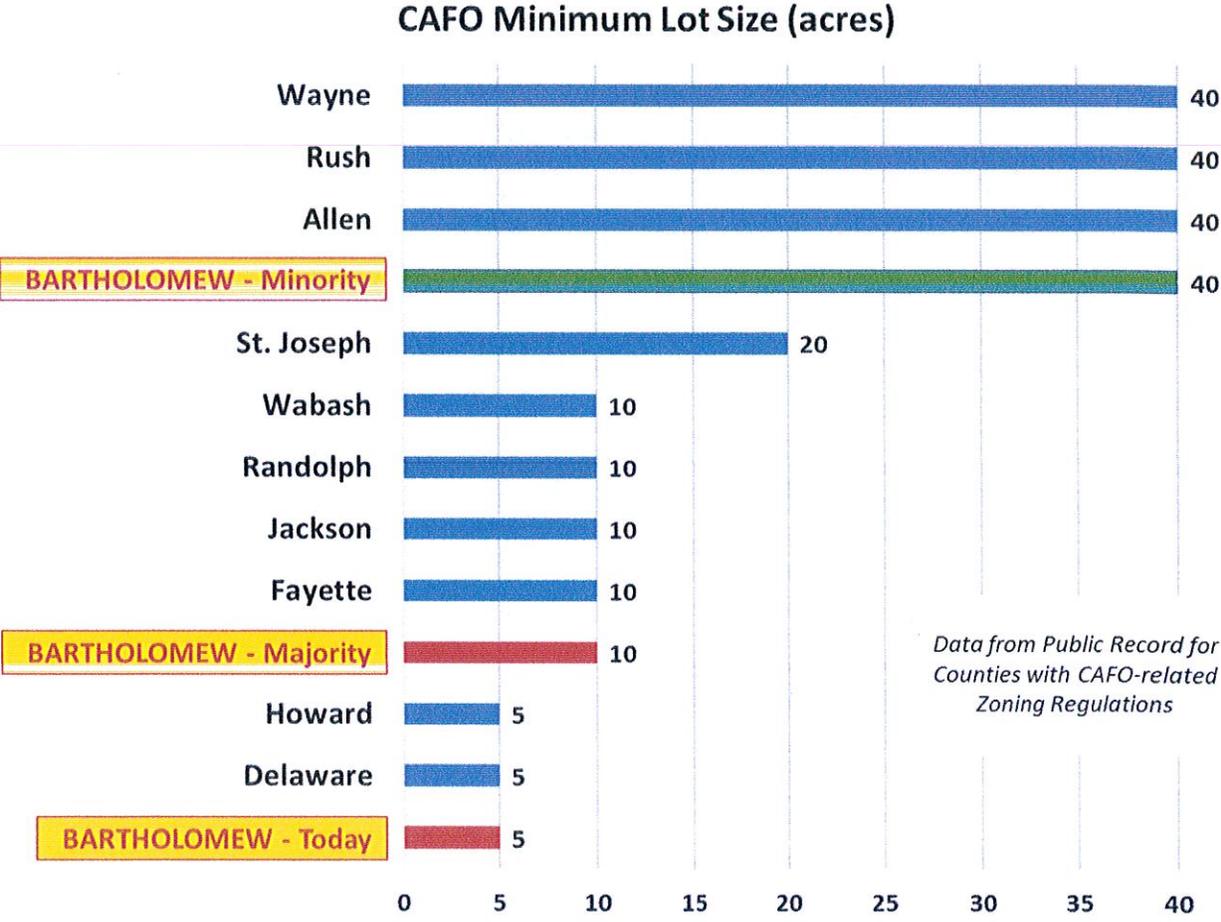


The above chart illustrates Zoning Setbacks from CAFO Structures to the Property Line of Residences (in feet).

**Setback from CAFO Structure to Residence (feet)**



The above chart illustrates Zoning Setbacks from CAFO Structures to a Residence (in feet).



The above chart illustrates Zoning requirements for minimum Lot Size upon which a CAFO can be situated (in acres).

## **Appendix I**

### **Survey of Bartholomew County Farmers**

September 2014 – August 2015

Farmers, in a 30-square-mile area in the eastern portion of the county, were surveyed to assess what they thought was a reasonable setback distance to a residence from a CAFO.

#### **Participants:**

- 19 Farmers; names kept confidential.
- 2 farmed 60+ acres.
- 6 farmed 300+ acres.
- 11 farmed between 700 and 1700 acres.

#### **Survey Questions:**

**“What should CAFO setbacks be from a house?”**

**“Do you have plans for a CAFO?”**

#### **Responses:**

- 2 reluctant to answer setback question.
- 4 said ¼ mile. (1,320 ft)
- 8 said between ¼ mile and ½ mile. (1,320 – 2,640 ft)
- 5 said ½ mile or more. (2,640 ft)
- None said less than ¼ mile (1,320 ft)
- None had any plans to operate a CAFO

#### **Conclusions:**

- All farmers were very knowledgeable about CAFOs and issues.
- All pleased that the Study Group was working on a CAFO Ordinance.
- No enthusiasm for CAFOs from any of the 19; Strong opposition to CAFOs from 6
- 7 farmers claimed, without prompting, a strong commitment to their neighbors.
- “I wouldn’t do that to my neighbors” was a common sentiment.
- 4 farmers concerned about future food production.
- Most farmers concerned about serious odor problems.
- 7 farmers concerned about health effects.

A statistical analysis of the data is as follows: If every farmer in the county were polled, the average of their answers would be between 1,763 ft. and 2,274 ft. with a 95% confidence level.

## Appendix J

### Survey of Odor near Western Decatur County CAFOs

Fall 2014

Several residents of Bartholomew County toured western Decatur County in the fall of 2014 to better understand odor issues arising from swine CAFOs. Using IDEM information about location of 15 swine CAFOs, but not knowing if animals were currently housed or manure still stored, each person rated his/her odor perception on a scale of 1 to 10. Three to five people were involved and each made their ratings on multiple sites and on multiple days for a total of 60 person/CAFO visits. Estimates of wind speed, direction, and distance to CAFO site were made for a comparison to the Purdue Odor Setback Model.

#### Testing protocol:

- locating the worst odor, from the nearest public access point and in a 360<sup>o</sup> circumference of each swine CAFO
- estimating wind speed and direction
- estimating actual distance from CAFO
- visits to multiple sites over multiple days
- each person evaluated odor on a scale from 1 - 10

#### Results:

- 45% of CAFO sites: 1 - 4; tolerable
- 35% of CAFO sites: 5 - 7; would not want to live near
- 20% of CAFO sites: 9 - 8; unbearable

#### Conclusion:

Even with the lack of knowledge of how many animals, whether mitigation techniques were used, etc., the outcome of this study show very similar results to Dr. Heber's model. Distance and wind speed had significant effects on the level of odor and the resulting negative experience. This field experience, plus extensive conversations with Dr. Heber, as well as running more than 100 simulations with the Purdue Odor Setback Model, justifies our recommendation that the Purdue Odor Setback Model be used in determining setbacks.

We can make no judgement about the 45% with low odor levels as it is unknown if there were no or very young animals present or if once the manure present was agitated/moved, the odor would be elevated to an unpleasant or unbearable level.

55% of the CAFO sites had an odor level so unpleasant as to be described as "would not want to live near" or "unbearable."



**CAFO/CFO REGULATION  
STUDY COMMITTEE  
MEMBERS**



## Columbus & Bartholomew County CAFO Regulation Study Committee

### Members and Affiliations

<b>Name</b>	<b>Affiliation</b>
Rick Flohr	Board of County Commissioners / Bartholomew County Plan Commission/raises some cattle
Kris Medic	Bartholomew County Plan Commission / Purdue Extension
Tom Finke	Bartholomew County Surveyor's Office / Bartholomew County Plan Commission/raises crops
Scott Strietelmeier	Bartholomew County Health Department/Raises crops and livestock
Dennis Brooks	Bartholomew County Soil and Water Conservation District/ Raises Crops/Retired Columbus Firefighter
Scott Bonnell	President, Bartholomew County Farm Bureau Board/Columbus Firefighter/Raises crops and some livestock
Leah Beyer	Elanco Animal Health/raises crops and livestock
Mike Ferree	Purdue Extension, Retired
Dan Fleming	Flatrock-Hawcreek School Corporation teacher/Beef Cattleman
Annalee Huey	Homemaker/Community Volunteer
Zach Matthews	IDNR Conservation Officer/Raises beef cattle
Charlie Mitch	Eli Lilly and Co., Retired
Mike Percy	Cummins, Inc., Retired
Mike Speaker	Kent Nutrition Group, Inc./Pork Producer

