115TH CONGRESS
2D SESSION

S. 2421

To amend the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to provide an exemption from certain notice requirements and penalties for releases of hazardous substances from animal waste at farms.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 13, 2018

Mrs. FISCHER (for herself, Mr. DONNELLY, Mr. BARRASSO, Mr. ROUNDS, Mr. ROBERTS, Ms. HEITKAMP, Mr. COONS, Mr. CARPER, Ms. DUCKWORTH, Mr. ISAKSON, Mr. WARNER, Mrs. ERNST, Mrs. MCCASKILL, Mr. INHOFE, Mr. MANCHIN, Mr. MORAN, Ms. KLOBUCHAR, Mr. WICKER, Ms. SMITH, Mr. HOEVEN, Mr. CASEY, and Mr. BENNET) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To amend the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to provide an exemption from certain notice requirements and penalties for releases of hazardous substances from animal waste at farms.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Fair Agricultural Reporting Method Act" or the "FARM Act".

SEC. 2. EXEMPTIONS FROM CERTAIN NOTICE REQUIREMENTS AND PENALTIES.

Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9603) is amended by striking subsection (e) and inserting the following:

"(e) APPLICABILITY TO REGISTERED PESTICIDE PRODUCTS AND AIR EMISSIONS FROM ANIMAL WASTE AT FARMS.—

"(1) IN GENERAL.—This section shall not apply to—

"(A) the application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.) or the handling and storage of such a pesticide product by an agricultural producer; or

"(B) air emissions from animal waste (including decomposing animal waste) at a farm.

"(2) DEFINITIONS.—In this subsection:

"(A) ANIMAL WASTE.—

"(i) IN GENERAL.—The term 'animal waste' means feces, urine, or other excrement, digestive emission, urea, or similar substances emitted by animals (including any form of livestock, poultry, or fish).

"(ii) INCLUSIONS.—The term 'animal waste' includes animal waste that is mixed or commingled with bedding, compost, feed, soil, or any other material typically found with such waste.

"(B) FARM.—The term 'farm' means a site or area (including associated structures) that—

"(i) is used for—

"(I) the production of a crop; or

"(II) the raising or selling of animals (including any form of livestock, poultry, or fish); and

"(ii) under normal conditions, produces during a farm year any agricultural products with a total value equal to not less than $1,000.".

SEC. 3. APPLICATION.

Nothing in this Act or an amendment made by this Act affects, or supersedes or modifies the responsibility or authority of any Federal official or employee to comply with or enforce, any requirement under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq.), other than the hazardous substance notification requirements under section

103 of that Act (42 U.S.C. 9603) with respect to air emissions from animal waste at farms.

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Testimony

on behalf of the

National Cattlemen's Beef Association

with regards to

"Legislative Hearing on S. 2421, the Fair Agricultural Reporting Method Act"

submitted to the

United States Senate
Subcommittee on Superfund, Waste Management, and Regulatory Oversight
Committee on Environment and Public Works
Mike Rounds, Chairman

submitted by

Todd Mortenson
Mortenson Ranch
Member
National Cattlemen's Beef Association

March 8, 2018
Washington, DC

NCBA National Cattlemen's Beef Association

Good morning, my name is Todd Mortenson. I live with my wife Deb on a ranch located in west central South Dakota in Stanley County, along the Cheyenne River. My grandfather, Ben Young, started the home ranch in the 1930s and added ground in Ziebach county when the Oahe dam was built, flooding their bottom lands in the late 1950s.

I am a member of the South Dakota Cattlemen's Association and the National Cattlemen's Beef Association, and I'm testifying before you today representing cattle producers and family ranchers, each of whom have a stake in protecting the environment. Thank you, Chairman Rounds and Ranking Member Booker, for allowing me to testify today on the issue of CERCLA reporting for agriculture, and the importance of the FARM Act.

American cattlemen own and manage considerably more land than any other segment of agriculture— or any other industry for that matter. Ranchers graze cattle on approximately 666.4 million acres of the approximately two billion acres that makes up the United States' land mass. In addition, the acreage used to grow hay, feed grains, and food grains add millions more acres of land under cattlemen's stewardship. Some of the biggest challenges to our industry come from urban encroachment, natural disasters, and government overreach. Since our livelihood is made on the land, through the utilization of our natural resources, protecting the land not only makes good environmental sense; it is fundamental for our industry to remain strong. Cattle producers pride themselves on being good stewards of our country's natural resources. We maintain open spaces, healthy rangelands, provide wildlife habitat and feed the world. But to provide all these important functions, we must be able to operate without excessive federal burdens, like the one we are discussing today.

Farmers and ranchers truly are America's original environmentalists. In fact, I would say we care more than anyone about the land we manage, because our operations directly impact not only the health of our livestock, but the water we drink and the air we breathe. I work hard to implement conservation practices that improve the environmental sustainability of my operation, ensuring that I'll be able to pass my ranch on to the next generation. For example, we move cattle to the uplands during summer months, allowing increased native plant growth and decreased sediment flow through ranch creeks. Additionally, in the spring, our herds graze on grasses in riparian areas while stamping seeds into the ground to help increase future vegetation growth.

While I fully support conservation practices that benefit and improve environmental quality, I cannot support needless requirements that burden the agricultural community while providing no environmental or public health benefit. A prime example of this is the burdensome reporting requirement under CERCLA, which requires farmers and ranchers to report manure odors to multiple agencies within the federal government for emergency response coordination. On my pasture-based cow/calf operation, I manage 1,295 cattle on 19,000 acres of land. The concentration of emissions is extremely low, because my cattle are spread over such a large area. However,

CERCLA reporting requirements do not take concentration into account – only release. It makes no difference whether my cattle are spread over 10 acres or 10,000 acres. If my 1,295 cattle emit over 100 pounds of ammonia or hydrogen sulfide per day, I am required to report their emissions to the US Coast Guard and EPA. Our best estimation of how many beef cattle it takes to trigger the reporting requirement is 208 head of cattle. Clearly, I would fall under these reporting requirements.

It is clear that Congress never intended this law to govern routine manure odors from everyday farm and ranch activity. The EPA understands this and, in 2008, exempted agricultural operations from reporting requirements under the Superfund law. While the exemption was put in place by the Bush W. Administration, it was defended in court by the Obama Administration for eight years. In defending the exemption, the Obama EPA argued that Congress did not include an exemption for manure emissions because they never considered that these low-level releases would fall into the possible realm of regulation. However, in April 2017, environmental groups won their lawsuit when the D.C. Circuit court found that Congress provided no exemption for agriculture. When the mandate issues on May 1, 2018, over 200,000 farmers and ranchers will be required to report low-level manure odors to the federal government.

Reporting is no simple task. It is a three-step process that spans, at minimum, one year. The first step is an initial call to the Coast Guard, the agency tasked with coordinating emergency response for the nation's oil spills, chemical plant explosions, and other hazardous emergencies. The Coast Guard is on record stating that these reports do not help them at all – in fact, they only hurt their ability to respond to true environmental and public health emergencies. In a November 14, 2017 declaration to the D.C. Circuit Court, Director of Incident Management and Preparedness for the USCG Dana Tulis indicated that early reports from livestock operations "increased [call volume] from approximately 100-150 calls per day (not associated with air releases from farms) to over 1,000 phone calls per day."[1] This influx of non-emergency reports negatively impacts the Coast Guard's ability to coordinate response for true emergencies. The Coast Guard further indicated the abundance of farm calls meant that "wait times have been up to two hours for calls, many of which require immediate attention."

The initial call to the Coast Guard is followed by two written reports sent to the EPA, over the span of one year. These reports require specific, detailed information regarding my cattle's emissions – information that I simply don't have. Research in this area is limited, to say the least. Only two land-grant universities have completed studies related to calculating emissions from livestock on a per-pound basis, and the EPA has completed no research in the area.[2] Further, those who are considered experts in this area are not confident that available reporting methodologies

[1] Tulis Aff. 2 (*Waterkeeper Alliance v. EPA*, 853 F.3d 527 (2017)).

[2] R. Stowell and R. Koelsch, *Ammonia Emissions Estimator*, University of Nebraska-Lincoln (2009); S. Preece, N. Cole, and B. Auvermann, *Ammonia Emissions from Cattle Feeding Operations*, Texas A&M (2012).

should be widely depended upon. According to Dr. Rick Stowell, co-creator of the University of Nebraska Lincoln's Ammonia Estimator Worksheet, "While I can place some confidence in differentiating between a 1,000-head feedlot and a 200-head feedlot, given all of the variability involved on AFOs and in research, I would not place much confidence in saying that a 300-head lot is definitely emitting more NH3 than the neighboring 200-head lot or that we can be certain that either is above or below the threshold."[3] For pasture-based livestock, no research exists quantifying per-head ammonia or hydrogen sulfide emissions. However, research does indicate that ammonia emissions differ significantly based on diet and confinement. Requiring pasture-based operations to report using tools provided on EPA's webpage (research that focuses exclusively on grain-fed animals) is inadequate, and will lead to substantially inaccurate reporting. It should also be noted that this reporting requirement is not a "one and done" obligation. Any time I decide to increase the size of my heard, I have to file additional paperwork with the government.

In addition to concerns I have related to the accuracy of my reports, I also worry that I will be providing my specific residential location information to the EPA – an agency with an established record of farm location information misuse. The widespread collection and dissemination of farm location information by the government will put the privacy of producers and safety of our food system at risk, as individuals will have unfettered access to farm and residential location data. Many of the families who manage livestock operations live on their farms, so any data required by the government, like the data required for CERCLA reporting, creates a situation ripe for abuse.

To clarify these exemptions, Congress needs to change the law to reflect its intent that livestock producers are exempt from CERCLA reporting requirements. The FARM Act, introduced on February 13, 2018, provides the relief that farmers, ranchers, and first responders need under CERCLA, and carries strong bipartisan support, as was exhibited by the Bush and Obama Administrations. In 2018, its not often that Republicans and Democrats can agree on anything, and I for one am proud of you all for putting aside your differences and making your constituents a priority. CERCLA truly is one of our most vital environmental statutes – it provides the tools we need to efficiently and effectively cleanup releases that harm both the environment and public health. Unfortunately, we all know that environmental agencies are given low funding priority at both the federal and state level. The FARM Act will ensure that precious time and monetary resources are not siphoned from important cleanup efforts to address a paperwork requirement with no environmental or public health benefit.

In addition to maintaining my ranch, I also volunteer with the Hayes volunteer fire department and EMS First Responder in Stanley County, South Dakota. While I did not receive EPCRA reports from agricultural operations in 2009, because there are no large CAFOs in my county, the receipt of this paperwork would in no way improve my ability to do my job as an emergency responder.

[3] Statement made by Dr. Rick Stowell in an email to Scott Yager, Chief Environmental Counsel for the National Cattlemen's Beef Association (Communication on November 7, 2017).

Rather, like the CERCLA reporting requirements, it would impose a burdensome paperwork requirement with no environmental or public health benefit. Rural emergency response teams are already stretched for time and resources – requiring additional, needless paperwork would only compound this burden.

Thank you for taking the time to hear my concerns, and for listening to livestock producers around the country. As the May 1, 2018 reporting deadline quickly approaches, only Congress can ensure that the agricultural community is protected from this reporting burden, the reliability of our emergency response coordination is maintained, and the integrity of the Superfund law is not degraded. The key to environmental sustainability is working together with stakeholders, not fighting us. Thank you for your time, and thank you for your support of the FARM Act.

Written Testimony of Bill Satterfield

Senate Committee on Environment and Public Works

Subcommittee on Superfund, Waste Management, and Regulatory Oversight

March 8, 2018

Good morning, Chairman Rounds, Ranking Member Booker and members of the subcommittee. I am Bill Satterfield and I am the Executive Director of the Delmarva Poultry Industry Inc., an 1,800-member trade association working for the meat chicken industry in Delaware, the Eastern Shore of Maryland, and Virginia's Eastern Shore. On behalf of America's chicken, turkey and egg farmers, I thank Senators Fischer, Donnelly, Heitkamp, Chairman Barrasso and Subcommittee Chairman Rounds for introducing the Fair Agricultural Reporting Method Act (FARM Act). I also extend a special thanks to our Delmarva Peninsula Senators, Ranking Member Carper, Senator Coons and Senator Warner for their leadership on this issue and their support of the poultry farmers on the Delmarva Peninsula. This significant breakthrough legislation will restore the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) reporting requirements to their intended purpose which was not low-level animal manure emissions. We in the poultry industry look forward to working with the committee to enact this united legislative effort that has been nearly 15 years in the making.

This piece of legislation is needed because EPA's original exemption was challenged in court and in its decision the court adopted a strict reading of the CERCLA statute and concluded that Congress did not authorize EPA to create the exemptions it did. Therefore, failure to amend the CERCLA statute to remove the reporting requirement for emissions of animal manure will subject thousands of poultry and egg farmers to a paperwork exercise that has no environmental or health benefit to the public. In fact, we estimate that more than 200,000 or more farmers and ranchers could be to be subjected to these reporting requirements if this bi-partisan legislation is not enacted into law. To prevent practical reversal of this important rule and expedite emergency response personnel's ability to respond to genuine hazardous releases and emergencies, Congress needs to act to clarify its intention and the FARM Act will effectively codify the EPA's vacated standard. The poultry industry and all of animal agriculture look forward to working with Congress to pass this legislation immediately and avoid unjustified reporting.

As you know, CERCLA was enacted by Congress in December 1980 to provide broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. Section 103 of the CERCLA statute requires any person in charge of a facility to report the release of a hazardous substance in a quantity that meets or exceeds the reportable quantity in any 24-hour period for the hazardous substance released. Immediately upon gaining knowledge of a reportable release the person in charge must notify the National Response Center (NRC) which the Coast Guard oversees and is charged with handling reports of tanker, pipeline, and other significant volumes that are truly an emergency.

Section 103(f)(2) provides a mechanism for reporting continuous releases of hazardous substances that exceed the reportable quantity. There is also a continuous release reporting protocol that requires the person in charge to notify the NRC immediately upon gaining knowledge of a continuous release. Following the initial notification to the NRC, the person in charge must submit a written notification to regional EPA office within 30 days of the initial notification. Finally, the person in charge must submit a follow-up report within 30 days of the anniversary of the initial written report. If the facility undergoes any modification that increases the releases significantly, they must report those releases in a new report. All of these requirements for a normal agriculture operation was not the intent of CERCLA and provides no additional benefit to the public.

While CERCLA is a highly valuable tool that helps to protect the public and the environment from accidental releases of hazardous substances; as stated above, it is hard to believe it was the intent of Congress to extend the reporting requirements to farms that incidentally release ammonia that is generated as manure decomposes. This belief guided the poultry and egg industry's petition to the Environmental Protection Agency in 2005 requesting an exemption from CERCLA reporting. After considering the request and proposing a rule that followed the requirements of the Administrative Procedures Act, EPA developed a rule that provided a narrow exemption for farms that raise animals from reporting low level continuous emissions of ammonia and hydrogen sulfide into the air. EPA's rationale for providing the exemption was based on Congress's intended purpose of notifying the NRC when a truly hazardous substance is released and then the likelihood that a response to that notification would be acted upon by any government agency based on that information. EPA noted that it has never initiated a response to any NRC notifications of ammonia, hydrogen sulfide, or any other hazardous substances released to the air where animal manure at farms is the source of that release, and it should be noted that the NRC and the Coast Guard have indicated on several occasions that they do not intend to do anything with this information if the court ultimately rules to move forward with reporting animal farms.

While it is true that ammonia, which in significant concentrations and volumes is a substance reportable under CERCLA, it is a byproduct generated as manure naturally decomposes. The concentrations that occur on poultry and eggs farms are at very low levels and they dissipate rapidly into the air. A 2009 study by researchers at the University of Georgia found that ammonia concentrations were lower as distance from the poultry house increased, with ammonia levels at 100, 200, 300 and 500 feet being less than 1 part per million in approximately 60, 75, 85 and 90 percent of the observations taken during the study, respectively. Researchers found that at no time during the study did the measured ammonia levels meet or exceed the Occupational Safety and Health Administration – USEPA ammonia odor detection threshold values. This study underscores EPA's rationale for providing the exemption in 2008 because it could not foresee the agency initiating a response as a result of any such notification. Similarly, we cannot

imagine that local emergency response agencies would do anything from such notifications, if they receive them, other than scratch their heads and wonder what they are supposed to do.

As it turns out the Agency's anticipation was entirely correct. In November of 2017, a handful of poultry producers from the Delmarva Peninsula and other parts of the country attempted to initiate the CERCLA reporting process before the court issued the reporting mandate because they were fearful of potential violations. One such producer is Sharon who operates a poultry farm near Marydel, Maryland. Upon telephoning the NRC to provide an initial notification of a continuous release, she heard a recording informing her that the NRC would not be accepting telephone notifications. As feared, the NRC was not capable of handling the increased call volume prompted by the reporting requirement. The recording further directed her to submit the initial notification by email to the NRC. You need to understand that many of our farmers members do not have or use email regularly, so requiring an email notification is not practical and could result in farmers wishing to be compliant to be in violation of the CERCLA statute. Sharon is 73 years old and never has owned a computer or used email, so this was not an option for her. We received several telephone calls from our members that week with similar messages and concerns, including one that tried sending the email several times in one day, received an error message each time, and then was not able to reach anybody by telephone. This course of action by the NRC verifies that the Center fails to recognize the report as an emergency that requires a response, much less an immediate action. Further, it demonstrates the entire process is nothing more than an exercise in paperwork that could distract the NRC and other emergency response personnel from focusing on incidents that truly need emergency attention.

While the reporting requirements sound uncomplicated, just the opposite is true. In fact, the many variables that affect the generation of ammonia make calculating emission values very complicated. To address this issue in 2007, the animal agriculture industry funded the National Air Emissions Monitoring study hoping to develop emission factors that would allow poultry and livestock producers to calculate emissions on their farms. From 2007 until 2009, numerous data points, including ammonia concentration and volume, were collected each minute for the study. While the data collected to develop estimation methodologies was informative, the scientific advisory committee established by EPA to review the process determined that the data lacked the robustness to develop any verifiable test for farmers to report given the many variables that contribute to the generation of ammonia as animal manure decomposes. Despite recognizing this, EPA's current guidance documents, as required by the court order, indicate the need for poultry and egg producers to calculate emissions generated on their farm. Specifically, the reporting forms provided by EPA require a farmer to report a lower threshold of emissions, an upper threshold of emissions, and total quantity released over the past year – all values that are virtually impossible to calculate with any certainty. Simply put, CERCLA was never intended to force farmers and ranchers to report low level emissions from normal everyday agricultural operations.

On behalf of the Delmarva Poultry Industry Inc., and the entire poultry industry, I thank this committee for introducing the "Fair Agricultural Reporting Method Act." This bill will provide enormous regulatory relief to countless poultry and livestock farmers across America and give them more time to focus on their vocation - producing an economical, safe and wholesome supply of food for the United States and the world.

I appreciate the opportunity to provide this testimony and I am happy to answer any questions you may have.

Written testimony of Floyd County, Iowa Board of Supervisor member Mark Kuhn

March 8, 2018

Senate Committee on Environment and Public Works

Subcommittee on Superfund, Waste Management, and Regulatory Oversight Hearing

S. 2421, the Fair Agricultural Reporting Method Act.

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Thank you, Chairman Rounds and Ranking Member Booker, for inviting me to testify before the Subcommittee on Superfund, Waste Management, and Regulatory Oversight regarding S. 2421, the Fair Agricultural Reporting Method Act.

I am a farmer and current member of the Board of Supervisors from Floyd County, Iowa. I served six terms as a state representative and was one of 12 legislators who drafted the last change to Iowa's concentrated animal feeding law in 2002.

In Iowa, it takes a good neighbor to be a good neighbor. I'll begin my written testimony with the story of one good neighbor family in Floyd County.

Jeff and Gail Schwartzkopf bought a house in the country near the small town of Rudd four years ago. Thirty days after they moved into their new home they learned a large Concentrated Animal Feeding Operation (CAFO) was going up 1,987 feet from them. Once it was built and populated with thousands of squealing hogs, their lives changed forever.

According to Gail, "We tried to make the best of it, but nothing worked. We stopped enjoying the outdoors. We hate the stench, the biting flies, our burning eyes, scratchy throat, fatigue, digestive issues, and insomnia because we are worried about our health. We can't open our windows or hang our clothes on the line to dry. There are only five or six days a month when it doesn't smell like 'rotten eggs.'

The Schwartzkopf family is surrounded by three large CAFO's. They should be protected from toxic air emissions that impact their health and diminish their quality of life, but Iowa lawmakers refuse to act. So now it's up to you to protect their access to toxic air emission information from CAFO's under the Emergency Planning and Community Right-to-Know Act (EPCRA).

I know how important it is to monitor dangerous air emissions from CAFO's and why results from that monitoring should be required under EPCRA.

Iowa is the nation's leading pork and egg producer, and ranks second nationally in red meat production. There are 22.4 million hogs (almost 32% of the nation's total), 3.9 million cattle, 60 million chickens, and 11.7 million turkeys raised in Iowa. The livestock industry is vital to Iowa's economy.

According to Iowa State University, Iowa hogs, cattle and poultry produce a combined total of 50 million tons of manure every year.

Amid growing concerns in 2001, Iowa Governor Tom Vilsack asked the College of Agriculture at Iowa State University and the College of Public Health at the University of Iowa to provide guidance regarding the impact of air quality surrounding CAFO's on Iowans and recommended methods for reducing and/or minimizing emissions. (See Appendix 1 – Iowa Concentrated Animal Feeding Operations Air Quality Study, Executive Summary) – https://www.public-health.uiowa.edu/ehsrc/CAFOstudy/CAFO_1.pdf

Based on an analysis of peer-reviewed, duplicated, legitimate, and published scientific research, the consensus of the entire study group was that hydrogen sulfide and ammonia should be considered for regulatory action. Both of these gases have been measured in the general vicinity of livestock operations at concentrations of potential health concern for rural residents, under prolonged exposure.

Hydrogen Sulfide -- It was recommended that hydrogen sulfide, measured at the CAFO property line, not exceed 70 parts per billion (ppb) for a 1-hour time weighted average (TWA) period. In addition, the concentration at a residence or public use area shall not exceed 15 ppb.

Ammonia – It was recommended that ammonia, measured at the CAFO property line, not exceed 500 ppb for a 1-hour TWA period. The concentration at a residence or public use area shall not exceed 150 ppb.

It was recommended that each CAFO have up to seven days (with 48 hours notice) each calendar year to exceed those concentrations to allow for manure application to the land.

In April 2002, the Iowa Legislature approved and Governor Tom Vilsack signed into law new livestock regulations which gave the Iowa Department of Natural Resources (DNR) authority to develop air quality rules. I voted for this legislation because I was convinced that for the first time, the Legislature was committed to doing something about dangerous air emissions from CAFO's.

In July 2002, Iowa's Environmental Protection Committee (EPC) approved the ambient air quality standards recommended in the Iowa Concentrated Animal Feeding Operations Air Quality Study. The Iowa DNR held public hearings throughout the state to collect public comment on the proposed rules.

On April 21, 2003, the EPC approved a second version of the ambient air quality standards despite objections from the CAFO industry. The approved level for hydrogen sulfide was 15 ppb measured at the property line.

On April 30, 2003 the Iowa Legislature nullified the EPC rules which prevented the DNR from implementing air quality rules.

In January 2004, the EPC approved a third proposed rule that would have established a standard of 15 ppb for hydrogen sulfide with the ability to monitor within 900 feet of the separated distance.

In response to opposition to this proposed rule, Iowa's livestock industry introduced through friendly legislators, a bill setting hydrogen sulfide emissions at 70 ppb enforced at the separated distance.

I voted against the bill that was passed by the Legislature, and vetoed by Governor Vilsack. In his veto message Vilsack stated the bill represented a significant step backwards because it would not have adequately protected the health of Iowans, and it would have set a standard so lenient that it would undermine the credibility of the CAFO industry.

Despite failed attempts to pass meaningful air emission standards to protect the health of Iowans, nothing has changed in Iowa since Iowa Concentrated Animal Feeding Operations Air Quality Study was released 16 years ago, with two key exceptions.

Iowa has four times as many CAFO's as it did then, and the pork industry is about to go 'hog wild' again. An unprecedented increase in packing plant capacity in Iowa fueled by the demand for exported pork to China, will likely result in an onslaught of new CAFO's.

Last September, Seaboard Triumph Foods opened a packing plant in Sioux City, Iowa where it slaughters 10,500 hogs per day with plans to add a second shift to increase the kill to twice that number. Prestage Foods of Iowa plans to open its packing plant near Eagle Grove, Iowa in November 2018 and start processing 10,000 hogs a day.

It is clear to me that the CAFO industry is opposed to any new air emission regulations. It intends to continue 'business as usual' as long as state elected officials in Iowa allow it.

This isn't a rural vs. urban issue. It affects all Iowans. It pits neighbor vs. neighbor. All too often, it pits farmer vs. farmer. Please be assured small family farms will not be affected by any air emission reporting requirements. The CAFO industry in Iowa is industrialized, factory farm agriculture. It is vertically integrated from top to bottom. Giant corporations get the profits from the hogs they own and process at their packing plants; local farmers build the barns and get the manure; while neighbors get the pollution.

A preponderance of evidence shows that toxic air emissions from CAFO's can adversely affect immediate neighbors and nearby communities. Those with allergies, asthmatics -- especially children in which asthma is more common -- and adults with COPD are at particular risk.

I find it very alarming that the United States Environmental Protection Agency (EPA) recently issued a guidance document entitled 'Does EPA interpret EPCRA Section 304 to require farms to report releases from animal waste?' (See Appendix 2 -- EPA Guidance on EPCRA) --

https://www.epa.gov/sites/production/files/2017-10/documents/web document placeholder.pdf

If the EPA conducts a rulemaking as outlined in their guidance document, it will have dire consequences for 'good neighbors' like the Schwartzkopf's.

To understand the effect of such a rule on Iowans, you need to know about a bill passed by the Iowa Legislature and signed into law by Iowa Governor Terry Branstad in 2017.

According to a January 2018 report published by The Iowa Policy Project and authored by James Merchant and David Osterberg, "The new law limits damages that can be awarded to a person who wins a lawsuit against an animal feeding operation, under a claim that the CAFO is a public or private nuisance or an interference with another person's "comfortable use and enjoyment of the person's life or property." The new law limits damages that can be awarded to a person impacted by a CAFO to (a) any actual reduction in property value caused by the facility, (b) past, present, and future adverse health impacts as determined by objectively documented medical evidence and proven to be caused by the facility, and (c) any award for damages due to annoyance and the loss of comfortable use and enjoyment of the property to 1.5 times the sum of the property value and objective medical evidence of deterioration of health. By requiring "objectively documented medical evidence and proven to be caused by the facility" in question, this new law seeks to eliminate consideration of the substantial literature on CAFO exposures and causation of adverse health effect, disease and impairment."

EPCRA provides an essential safety net for protecting the air Iowans breathe. If the EPA eliminates EPCRA air emission requirements by rule, 'good neighbors' like the Schwartzkopf's will not be able to obtain toxic air emission reports, not be able to access information to provide their medical provider about their health issues, and be denied any chance for justice in Iowa against the powerful CAFO industry.

This is a picture of Gail and her family and the view from the Schwartzkopf's front yard.

The last thing Gail told me before I left for Washington, D.C. was, "I wish this picture was 'scratch and sniff' so all of those Senators could partake of the toxic emissions and polluted air, if only for a little while."

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Appendix 1 -- Iowa's Concentrated Animal Feeding Operations Air Quality Study, Executive Summary

Iowa State University and the University of Iowa Study Group

IOWA CONCENTRATED ANIMAL FEEDING OPERATIONS AIR QUALITY STUDY

Final Report

Iowa State University and The University of Iowa Study Group

February 2002

CHAPTER 1 Executive Summary

Introduction

In mid-June of 2001, Governor Tom Vilsack requested that the faculty of the two universities address the public health and environmental impacts of concentrated animal feeding operations (CAFOs, also referred to as Concentrated Feeding Operations or CFOs). In response to this request, Richard Ross, PhD, DVM, Dean of the College of Agriculture at Iowa State University and James Merchant, MD, DrPH, Dean of the College of Public Health at The University of Iowa, were asked by the Department of Natural Resources Director Jeffrey Vonk to provide guidance **"regarding the impacts of air quality surrounding CFOs on Iowans and recommended methods for reducing and/or minimizing emissions. Specifically, I am asking your advice and recommendations on how the Department of Natural Resources should address this critically important public policy issue."**

Director Vonk asked five questions. Through a series of discussions and meetings, a combined study group of faculty and consultants (See Attachment 1) was identified, conflict of interest and confidentiality statements were signed by all faculty and consultants, definitions were discussed and agreed upon, a comprehensive report outline was developed and agreed upon and individual teams of faculty agreed to write each of the 10 chapters that constitute the full report. A technical and policy workshop was held in Des Moines on December 18 and 19, 2001, at which time chapter presentations were made and discussions were held regarding the series of five questions asked by Director Vonk. Groups were assigned to summarize the responses to these five questions in this Executive Summary. Peer review of this Executive Summary and the full report was considered to be vital to the validity and integrity of the report. This peer review, completed by national and international scientists who are experts in the areas addressed by the report (See Attachment 2), was completed in January, 2002. Their review comments, as well as comments from members of the combined study group, were discussed at meetings on January 8, 24 and 29 and were useful in completing the final report for submission to the Iowa Department of Natural Resources (IDNR). An agreed-upon glossary, which defines the many technical terms used in this report, is found in Attachment 3.

Response to Question 1

There are two questions contained in Question 1. The first is:

Based on analysis of peer-reviewed, duplicated, legitimate, published scientific research, is there direct evidence of harm to humans by emissions, byproducts, toxic waste, or infectious agents produced by CFOs?

There is now an extensive literature documenting acute and chronic respiratory diseases and dysfunction among workers, especially swine and poultry workers, from exposures to complex mixtures of particulates, gases and vapors within CAFO units. Common complaints among workers include sinusitis, chronic bronchitis, inflamed mucous membranes of the nose, irritation of the nose and throat, headaches, muscle aches and pains. Asthma and acute (cross-shift) declines in lung function are

documented among CAFO workers, even though workers with pre-existing asthma usually select themselves out of such employment because of increased asthma severity. Progressive declines in lung function over years are documented among CAFO workers. Those workers with increased acute declines in lung function, which are often accompanied by chest tightness and wheezing (asthma-like syndrome), have been found to have more rapid declines in lung function over time. Very high exposures to hydrogen sulfide, which occurs during pit agitation, may result in death from asphyxia and respiratory arrest; those who survive such high dose exposures often develop reactive airways distress syndrome (RADS), bronchiolitis obliterans and severe respiratory impairment. It is therefore concluded that there is direct evidence of harm to humans from occupational exposures within CAFOs (See Chapter 6.3.2).

However, one cannot directly extrapolate occupational health risks observed among workers inside CAFOs to community health risks that may arise from CAFO emissions. While the discharge of airborne particulates and gases/vapors from CAFOs and manure handling clearly occur, the aerosols at the point source differ from ambient exposures as they move downwind, both in composition and in concentration. The populations at risk (workers) within CAFO units and within the community (community residents) also differ significantly. CAFO workers are generally a healthy population (those fit enough to work), while community residents include children, the elderly, and those with preexisting impairments. Regulatory agencies recognize the need for lower exposure limits to compensate for increased susceptibility among community residents, to allow for uncertainty factors from epidemiological study findings (and for species to species differences when animal data is used) to establish community ambient exposure limits.

The second part of the first question is:

What human research is there to confirm the existence of disease and exactly what are the specific chemical, bacterial, or aromatic causes of such diseases?

Published, controlled studies of odor experienced by community residents living in proximity to CAFOs are limited to two studies in North Carolina and one in Iowa. The first North Carolina study reported more negative mood states (tension, depression, anger, reduced vigor, fatigue and confusion) among those exposed to CAFO odor compared with control subjects. The second North Carolina study reported increased symptoms of headache, runny nose, sore throat, excessive coughing, diarrhea, burning eyes and reduced quality of life measures among community residents living in proximity to a swine CAFO compared with rural residents not living in proximity to livestock operations. The Iowa study found increases in several symptom clusters, mainly eye and upper respiratory symptoms, among those living within two miles of a swine CAFO compared with rural residents living near minimal livestock production. These studies are limited in size and scope, did not make specific environmental exposure or odor measurements, and are subject to recall bias. They are notable in that they are controlled studies that report eye and respiratory symptoms associated with concentrated livestock exposures that are similar to more prevalent and severe symptoms experienced by CAFO workers who are exposed at much higher concentrations of mixed emissions (See Chapter 6.3.3).

Also relevant in responding to this question are many experimental and epidemiological studies of non-CAFO populations exposed to low concentrations of individual chemical components of CAFO emissions, particularly hydrogen sulfide, ammonia and endotoxin. These studies document respiratory symptoms associated with low levels of these individual exposures. Because at least two of these

chemicals (hydrogen sulfide and ammonia) are found in CAFO emissions that contribute to ambient community exposures, these experimental and community exposure studies are relevant to this question (See Chapter 6.3.1). Both the Environmental Protection Agency (EPA) and the Agency for Toxic Substance and Disease Registry (ATSDR)[1] have recommended ambient exposure limits for ammonia and hydrogen sulfide based on these studies.

It is concluded that no specific disease(s) *per se* among community residents can be confirmed to arise from a specific chemical, bacteria or aromatic cause. However, the findings of the limited community studies of concentrated livestock exposures are consistent with adverse health effects observed in other experimental and epidemiological studies of some specific chemicals (ammonia and hydrogen sulfide) known to be components of CAFO air emissions. It is, therefore, also concluded that CAFO air emissions may constitute a public health hazard[2] and that precautions should be taken to minimize both specific chemical exposures (hydrogen sulfide and ammonia) and mixed exposures (including odor) arising from CAFOs.

Response to Question 2

Question 2: Based on an analysis of peer-reviewed, duplicated, legitimate, and published scientific research, what specific substances, including aromatic compounds, do you believe require regulatory action to protect the public?

By consensus of the entire study group, the following substances should be considered for regulatory action: (1) hydrogen sulfide; (2) ammonia; and (3) odors. The justification for regulatory action of these substances is based on our assessment of the scientific literature, (See Chapters 2.0-8.0), recommendations by pertinent federal agencies, and review of regulations established in other states (See Chapter 9.0).

Hydrogen sulfide and ammonia are recognized degradation products of animal manure and urine (See Chapter 3.4 in the full report). Both of these gases have been measured in the general vicinity of livestock operations at concentrations of potential health concern for rural residents, under prolonged exposure (See Chapter 8.0).

The World Health Organization lists hydrogen sulfide as a toxic hazard in many environments, and recommends specific exposure limits. The ATSDR lists hydrogen sulfide and ammonia on its registry of toxic substances[1] under its federal mandate to protect the public health according to the Comprehensive Environmental Response, Compensation, and Liability Act, [42 U.S.C. 9604 et seq] as amended by the Superfund Amendments and Reauthorization Act [pub. 99-499]. Furthermore, the ATSDR has published Minimum Risk Levels (MRL's) for these substances to protect the public's health.[1] The EPA historically evaluates scientific information regarding environmental contaminants and the potential threats for human health hazards. Based on a standardized risk assessment process, the EPA identifies hydrogen sulfide and ammonia as potentially hazardous substances.[3] A detailed description of the process and justification used by the EPA and ATSDR to include ammonia and hydrogen sulfide as hazardous substances is provided in detail in Chapter 8.7.

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[1] Agency for Toxic Substances and Disease Registry, Minimal Risk Levels for Hazardous Substances (MRL's), http://www.atsdr.cdc.gov/mrls.html

[2] hazard: the potential for radiation, a chemical or other pollutant to cause human illness or injury

[3] Environmental Protection Agency, Integrated Risk Information System, www.epa.gov/iris/subst.html

Minnesota and Nebraska have established air quality standards for hydrogen sulfide based on public health concerns. California and Minnesota regulate ambient concentrations of hydrogen sulfide based upon nuisance and human health effects. Minnesota is in the process of setting standards for ammonia ambient exposures. Monitoring of ammonia ambient exposures is taking place in Missouri. The regulatory actions taken by other states in setting standards are described in Chapter 9.0.

Odors have been a major concern of residents in the vicinity of CAFOs (see Chapter 3.4, 4.0, 6.8 and 8.0). Colorado, Missouri, and North Carolina have recognized the need to promulgate odor regulations. Details of the processes of odor regulations for these states are presented in Chapter 9.0.

Response to Question 3

Question 3: Based on an analysis of peer-reviewed, duplicated, legitimate, and published scientific research, what would you recommend as Iowa or National consensus standards for any proposed substances to be regulated as emissions from CFOs?

The study group recommends that ambient air quality standards be developed to regulate the concentration of hydrogen sulfide, ammonia and odor. There has been considerable discussion on what standard levels should be established for each pollutant as well as where the measurement should take place. Some states measure concentration at the property line of the source while others measure at the residence or public use area. The U.S. EPA has determined that simultaneous exposure of two substances such as hydrogen sulfide and ammonia (both pulmonary irritants) results in an additive effect. Thus, in order to protect against the adverse effects of such binary mixtures the exposure limit for each should be reduced accordingly. While emissions from CAFOs fluctuate over time, they produce chronic rather than acute exposures. Rather than representing single doses, these exposures are recurring and may persist for days with each episode.

The study group reached consensus that measurements for hydrogen sulfide and ammonia should be taken at the CAFO property line and residence or public use area. Measurements for odor should be taken at a residence or public use area and one proposal includes measurements at the CAFO property line. The study group recommends that measurements for hydrogen sulfide and ammonia should be time weighted rather that instantaneous to allow for atmospheric variability.

With current animal production practices, stored manure must be removed and land-applied. During these times hydrogen sulfide, ammonia and odor levels at or near production facilities may be significantly higher than during normal conditions. Therefore, it is also recommended that provisions be made for allowable times to exceed the established standards to allow for proper manure application to land. Notification must be given to the Iowa DNR and nearby residents, at least 48 hours in advance when the operation expects to exceed the standards

The study group provides the following recommendations on the regulation of hydrogen sulfide, ammonia, and odor from CAFOs:

<u>Hydrogen Sulfide</u>
It is recommended that hydrogen sulfide, measured at the CAFO property line, not exceed 70 parts per billion (ppb) for a 1-hour time-weighted average (TWA) period. In addition, the concentration at a residence or public use area shall not exceed 15 ppb, measured in the same manner as the property line

measurement. It is recommended that each CAFO have up to seven days (with 48 hour notice) each calendar year when they are allowed to exceed the concentration for hydrogen sulfide.

Ammonia

It is recommended that ammonia, measured at the CAFO property line, not exceed 500 ppb for a 1-hour TWA period. In addition, the concentration at a residence or public use area shall not exceed 150 ppb, measured in the same manner as the property line measurement. It is recommended that each CAFO have up to seven days (with 48 hour notice) each calendar year when they are allowed to exceed the concentration for ammonia.

Odor

The study group was unable to reach consensus on the regulation of odors. Thus, the following two opinions for odor are presented:

Opinion 1:

It is recommended that odor, measured at the residence or public use area, shall not exceed 7:1 dilutions with an exceedence defined as two excessive measurements separated by 4 hours, in any day. It is recommended that each CAFO have up to seven days (with 48 hour notice) each calendar year when they are allowed to exceed the concentration for odor. At the CAFO property line, odor shall not exceed a 15:1 dilution, with an exceedence defined as one excessive two-hour time averaged sample, in any day. It is recommended that each CAFO have up to 14 days (with 48 hour notice) each calendar year when they are allowed to exceed the property line concentration for odor. Exceedence of a CAFO ambient air quality standard should result in regulatory action similar to that which would be required in regulatory action exceedence of a National Ambient Air Quality Standard. The IDNR should be granted the power to develop an implementation plan to reduce the emissions that led to the violation.

Opinion 2:

Odor recommendations are more difficult to establish because studies relating health impacts to odor exposure have not measured odor concentrations. However, odor concentrations related to annoyance impacts have been established. Measurements for odor should be taken at a residence or public use area. Using sampling events at the source, the frequency, duration, and concentration of exposure to odor at the residence can be modeled using tools currently available, thereby avoiding extensive monitoring.

Polls indicate that residents are willing to tolerate nuisance odors for only up to a reasonable amount of time (see Iowa Rural Life Poll, Chapter 7 in the full report). Thus, the reported odor concentration represents tolerable continuous exposure, above which, concentrations are tolerated only in relation to their frequency and duration. An odor concentration of 7:1 dilutions at a residence is a tolerable odor providing it is not exceeded for periods that extend beyond that considered reasonable.

Response to Question 4

Question 4: What do you think should be done to address any other emerging issues with respect to industrial CFOs in Iowa?

There are other important emerging issues surrounding the intensification of livestock production that extend beyond concerns over air emissions. These include concerns about water quality, the health of CAFO workers, socioeconomic impacts in rural communities, and the emergence of microorganisms resistant to antibiotics used in human and veterinary medicine. There are also concerns about the emission of greenhouse gases from CAFO sites. The effects of siting large CAFOs in or near communities should be recognized and used in making informed decisions on permitting facilities. There is a need to evaluate plans for controlling livestock epidemics and for proper disposal of carcasses in the event of an outbreak. Recent events in Europe associated with foot and mouth disease, plus renewed concerns over agricultural bioterrorism highlight this need. Lastly, the study group makes recommendations regarding the formation of a science advisory panel to advise the IDNR on agricultural and environmental health issues. Each of these issues is further described below.

Some issues discussed in this section may be outside the purview of the IDNR, but all are congruent with science-based conclusions in the body of the report. Some are appropriately addressed by other state or federal agencies, and some can only be addressed through a combination of related public policies.

Water Quality

Water quality is a major issue concerning CAFOs. Concerns include: 1) leakage or rupture of lagoons (both lined and unlined); and 2) runoff from agricultural fields where animal waste has been improperly applied. Nonpoint discharges may result in surface runoff with high concentrations of ammonia, biochemical oxygen demand (BOD), total and fecal coliform bacteria, total suspended solids, and phosphorus which can cause low dissolved oxygen in streams. Ecosystem impacts may include fish kills, changes in the natural food webs, algae growth, and losses of biological diversity in stream habitat. Both the structure and function of aquatic ecosystems can be impaired. Impacts may include increased cost for drinking water treatment of surface water supplies, reduced harvest of fish and shellfish, closed bathing beaches due to fecal coliforms, and loss of aesthetic beauty of Iowa's waterways.

Recently, Iowa has experienced an increase in the number of CAFOs as well as a greater density of animals per operation. Many larger operations are not self-sufficient in grain production and purchase feed from other sources. Therefore, applicators must follow additional application guidelines established by legislation and rules. While some study group members believe manure should never be applied to frozen ground or steep slopes, others recommend that manure application on steep slopes and frozen ground follow guidelines established by USDA Natural Resources Conservation Service "Iowa Nutrient Management Standard 590". In addition, large producers are required to file manure management plans with the IDNR.

Study group members reached consensus that as operations become more numerous and concentrated on limited land bases, there is an increased risk for deterioration of water quality. All members believe that if producers do not follow their manure management plans, the chance for runoff of nutrients and bacteria is increased. In addition, some members felt more strongly on this issue, stating that it is not possible to apply manure at high areal loading rates without runoff of nutrients and bacteria because

one cannot foresee intense rainfall events. One cannot assume that manure can always be safely applied to land without a potential for runoff. These members feel the present system of CAFO production disposes of too much manure in too small an area exposed to uncontrolled meteorological conditions to realistically expect acceptable water quality.

Wastes that are stored in lagoons or earthen waste storage structures have a potential for spills and/or groundwater contamination if existing standards are not met. National Pollutant Discharge Elimination System (NPDES) permits are required for large (>1000 animal units) open feedlots which allow discharge only in the event of a 25-year, 24-hour storm. Totally roofed CAFOs are not allowed to discharge into surface waters, and therefore do not require NPDES permits. This is in contrast to small Iowa towns, all of which are required to have NPDES permits and meet effluent discharge requirements.

Occupational Health

The occupational health problems for those who work inside CAFOs have been well recognized since 1977. At least 25 percent of workers in swine CAFOs have been reported to have current respiratory health problems. Recommended maximum exposure levels designed to protect worker health have been defined (See Chapter 6.3). It is apparent that current Occupational Safety and Health Administration (OSHA) limits are not protective of CAFO worker health because a number of hazardous contaminants are not regulated. Importantly, OSHA has not promulgated any Permissible Exposure Limits specifically to protect the health of livestock production workers.

There are several important regulatory problems that have interfered with the protection of workers in CAFOs. Most of the large livestock and poultry producers have not been regulated by OSHA, even though they may have more than 10 employees and are subject to OSHA regulations. The specialization of livestock production has led to increased cumulative exposure, as workers may spend as much as 70 hours per week in these buildings. There is a need to establish exposure standards that protect workers for these extended work schedules. There is enough information to protect workers' health if recognized workplace management procedures are adopted. It is recommended that the livestock-producing industries institute comprehensive worker health protection programs.

Antibiotic Resistance

Antibiotic resistance is a health threat of great concern. Recent documents from the World Health Organization (2000), the Centers for Disease Control, and other health agencies have placed a high priority on the understanding and control of antibiotic resistance (Interagency Task Force On Antimicrobial Resistance, 2000; Tenover and Hughes, 1995). It is clear that certain antibiotic use practices in human medicine have contributed to resistance. Agricultural antibiotic use practices have also been targeted as contributing to this serious problem (Witte, 1998). In particular, the subtherapeutic use of antibiotics in food producing animals has been identified by public health officials as the key factor in the development of resistance among foodborne pathogens (Gorbach, 2001).

Antibiotic resistant organisms or the resistance genes responsible can be spread from agricultural settings into human populations through a variety of mechanisms. Ingestion of contaminated food products, especially animal-derived foods including meat and dairy products, has been linked to spread of antibiotic resistant organisms (Mead et al., 1999). Direct contact between colonized or infected animals and farm workers has also been associated with the acquisition of resistant organisms in humans (Levy et al, 1976).

Various studies have demonstrated that continued use of antibiotics in feedstuffs provides conditions favorable to the selection of resistant strains of bacteria in food animals and their environment (Chee-Sanford et al., 2001; Zahn, Anhalt, & Boyd, 2001). Yet the threats for emergence of resistant strains of bacteria through subtherapeutic use of antibiotics in livestock applies wherever these practices occur; the threat is not restricted to CAFOs. Selection pressure may be enhanced by: (1) the long-term use of antibiotics in animals having endemic subclinical infections; (2) poor environmental hygiene; and (3) management practices that allow for the introduction of naïve, susceptible animals or the movement of carrier animals into a naïve herd. This latter practice allows for the continuous passage of resistant bacteria among susceptible animals. Over the past decade, increasing numbers of organisms isolated from food animals or meat products demonstrate resistance to antibiotics including penicillins, tetracycline, sulfamethoxazole, streptomycin and other compounds (Aarestrup et al, 1998; Centers for Disease Control and Prevention, 1999; Molbak et al, 1999; Smith et al., 1999; Threlfall et al., 1996; White et al., 2001).

Antibiotics are critically important in human and veterinary medicine, and in the current context, food animal production. Organisms resistant to all classes of available antimicrobial agents have been identified in human medicine and the incidence of community acquired highly drug resistant organisms is increasing (Neu, 1992). No new classes of antimicrobial agents will be available in the foreseeable future. It is critical that the appropriate state and federal agencies and the research community in the United States take a leading role in defining the risks associated with different antibiotic use practices and develop strategies to improve our antibiotic stewardship both in human and agricultural settings (American Medical Association, 2001).

Greenhouse Gas Emissions

Regarding air pollution, air permits are not required for emissions from CAFOs, so there is not a good method to quantify their inputs. However, emissions of particulate matter, sulfur compounds, and nitrogen oxides are believed to be a very minor portion of Iowa's total emissions. CAFO emissions of these pollutants are small compared to emissions from stationary sources (power plants and industry) and mobile sources (automobiles and truck diesel). Greenhouse gas emissions from CAFOs are significant for methane. On a radiative basis (greenhouse gas impacts), methane is about 10-15% of the total greenhouse gas produced in Iowa, and methane from manure management is about 25% of the total (approximately 3% of total greenhouse gas estimated in Ney et al., 1996). The Iowa Greenhouse Gas Action Plan calls for capture of methane at large feed lots (Ney et al., 1996). Nitrous oxide emissions from manure management at CAFOs is a small contribution, and the emissions of carbon dioxide from CAFOs are a negligible portion of the state's CO_2 emissions.

Community and Socioeconomic Impacts

A number of important community and socioeconomic issues have developed with the emergence of CAFOs, as described in Chapter 7. Research has explored some of these issues, and posed and evaluated alternatives, including some alternatives for livestock production. To a significant extent, these issues are tied to overall changes in agriculture and rural life in America. Importantly, these issues are complex and generally outside the purview of the IDNR.

These issues include the concern about increased concentration of control of livestock supply chains, lack of public price discovery, and loss of family farmers' control of production. Another concern is decline in local economic activity and increases in purchases of some animal production inputs from

outside the local area, as CAFOs increase in size and number. This is a complex issue since we must estimate what purchases would have been made had the structure remained the same. Of equal importance is the fact that decision-making on questions that matter at the local level are increasingly more centralized with the growth of corporate CAFOs.

Devaluation of property near hog CAFOs and related legal challenges are documented. Studies in Michigan, North Carolina, and Missouri found that the value of real estate close to CAFOs tended to fall. These and other data show that CAFOs are defined by present and potential neighbors as at least a nuisance.

Studies showing a decline in neighborliness, or community social capital, have been conducted in Iowa, North Carolina, Minnesota, and Missouri. This decline was measured by diminished opportunities to socialize, lack of trust, increased community conflict, and related variables in communities where CAFOs are concentrated.

A more diverse livestock sector that was able to remain competitive and responded to increasingly differentiated consumer preferences would likely result in greater environmental (Donham, 2000), social (Wright, et al., 2001), and economic sustainability of rural areas than one dominated by large-scale CAFOs. Policies that encourage more diverse livestock/crop farms, particularly those using sustainable production systems, could also reduce the regulatory burden of the IDNR and other agencies.

The most clearly recognizable socioeconomic issue for CAFOs that impinges on the IDNR's responsibilities is what CAFOs may do to aquatic, wildlife, and aesthetic qualities of living in Iowa, as well as tourism in Iowa. If air and water quality is compromised, the interest of persons and businesses considering relocation to Iowa will be lessened. A compromised environment could have an economic impact on tourism by keeping Iowa a low priority destination for visitors as well as driving fishing and hunting activity away from Iowa and toward less challenged environments.

Livestock Epidemic and Disposal Issues

The current state plan for Foot and Mouth Disease (FMD) in Iowa is multi-agency and is called the Foot and Mouth Disease Response and Recovery Plan. As part of its responsibilities in the state plan, the IDNR has developed the FMD Carcass Disposal Plan. Burial and composting are given high priority compared to burning, in order to reduce air pollution consequences. However, the potential impacts of a FMD epidemic like that of last year in the United Kingdom and Europe should be evaluated to assess if the current plans are sufficient for isolation of pathogens and destruction of carcasses. In addition, these plans should be evaluated for other pathogens, including bioterrorist introduction of anthrax and other potential agents of agricultural bioterrorism.

Formation of a Science Advisory Panel

To enhance the effectiveness of responses to emerging issues, the study group recommends formation of a science advisory panel to contract with the IDNR on agricultural and environmental issues. The University of Iowa and Iowa State University participants have found the current review of scientific literature on CAFOs and the ensuing discussions to be very useful. University faculty could continue in a more general role as a scientific advisory panel. This would provide the opportunity to develop closer collaboration and planning in a prospective manner. The partnership of the IDNR and other appropriate state agencies with a continuing advisory group of specialists in the sciences germane to

agricultural, environmental, and public health issues would strengthen Iowa's ability to plan for prevention or remediation of emerging problems in a thoughtful and positive manner with sufficient lead-time to engage the needed resources and evaluation. A science advisory panel could suggest areas for needed research to better resolve or control the factors related to emerging issues. The panel could recommend consultants, establish standard operating procedures for resolving questions, and be prepared with the necessary background, literature resources and ongoing discussion to support science-based advice as needed by the IDNR or other agencies in Iowa.

Response to Question 5

Question 5: Finally, I am seeking your recommendations regarding available methods of reducing or minimizing the emissions from CFOs and the impact of those emissions on the ambient air surrounding sites.

Emissions from CAFOs originate from three primary sources: (1) air emissions from housing units; (2) air emissions from manure storage facilities, and (3) air emissions during and following land application events. Documented emission reduction strategies exist for all three of these sources. Some of the documented strategies are more effective than others and some are more economical than others, however, economical strategies exist for dealing with emissions from all three sources.

Housing Unit Air Emissions

Housing unit air emissions ultimately are carried out with the ventilation air exhausted from buildings. Emissions originate from the feeding floor itself, where deposited manure and urine decompose anaerobically resulting in airborne gases and particulates from dried fecal material. In addition, emissions originate from under-floor manure storage in slatted systems and from bedding pack in deep-bedded systems. Studies have shown that, in slatted-floor housing systems, the emission contribution from the feeding floor itself can exceed 60 percent of the total with the remaining contribution from the under-floor storage compartment. Use of smooth cleanable surfaces along with frequent and complete scraping, and/or frequent flushing of the feeding floor with minimal air exchange between the housing air and the under-floor slurry, is a good strategy for reducing housing unit emissions.

If housing unit emissions are post-processed, (i.e., exhaust ventilation air is treated), additional strategies exist. Scrubbing the ventilation air with biofilters, where the exhausted air is passed through a bed of gas-scrubbing microorganisms, has been shown to reduce ammonia and odor emissions by more than 90 percent. However, effective use of biofilter technology requires simultaneous use of power ventilation. Biofilters are difficult to implement under high ventilation rate situations typical of Iowa summers and, of course, are not useful in naturally ventilated housing systems.

Gases and odors adhere to dust particles. Natural biomass filters such as corn stalks and chopped-straw have been used to capture a portion of the larger dust particles emitted with ventilation air. The evidence on this strategy is still being documented but research to date indicates that about 60 percent of the odor can be reduced using this technique.

Tree barriers are being evaluated for effectiveness in reducing odor and particulates and enhancing mixing and dilution. However, the impact on a large scale relative to livestock or poultry production sites is unknown. Tree barriers surrounding production sites have high aesthetic value.

Storage Unit Air Emissions

Outside manure storage systems can be a source of additional gas emissions. Regardless of whether the storage system is formed concrete, steel-lined, or earthen basin, these open exposures to the atmosphere can result in high emission rates. Emission rates are highly influenced by weather conditions. The most effective and economically feasible strategy for reducing emissions from outside storage units (not including anaerobic lagoons) is accomplished by covering the entire surface area of the storage unit. Research has been conducted on many covering materials, ranging from expensive impermeable covers, to relatively inexpensive chopped-straw covers with a maintained minimum depth of coverage. Inexpensive, chopped-straw cover, with a maintained minimum depth is as effective in reducing emissions as the more expensive covers. However, the key to success with this strategy is maintenance of a minimum depth of straw.

The best method for minimizing odors from anaerobic lagoons is to simply practice good management. It is most important to use adequate dilution water and load at or below design capacity. There has been much discussion recently about the use of anaerobic digesters which can significantly reduce storage odors and generate energy in the form of methane gas.

Air Emissions from Land Applied Manure

Emissions during land application of livestock and poultry manure can be intense if the manure is surface-applied. The majority of total emissions, roughly 80 percent, occur during the first six hours after land application. To significantly reduce emissions of gases and odors during land application, injection or immediate coverage (within 1 hour) is required. Odor reduction is, in turn, dependent upon the degree of soil coverage. Poorly injected manure slurry with little soil coverage is only marginal in effectiveness in reducing gas and odor emissions. To take full benefit of the natural odor absorption capacity of soils, the slurry must be completely covered. The evidence is clear that 85-90 percent emission reduction is possible with complete soil coverage compared to surface application when coverage is delayed for more than 3-6 hours.

Policy Strategies for Long-Term Viability of the Livestock Industry in Iowa

Emission of gases and particulates from livestock and poultry systems is an inevitable outcome requiring special attention. Strategies for emission reduction for all stages of production have been outlined, with most being economically feasible. The strategies outlined previously are documented techniques that have gained fairly widespread acceptance with scientists and engineers working in this area.

A few strategies have been discussed for years. They lack the scientific evidence to document their specific benefits, but nevertheless deserve discussion. The study group is unanimous in the belief that a long-term strategy of better facility siting, setbacks, and landscape considerations, in addition to the implementation of available odor and gas reducing technologies, will benefit both the producer and residents in the community. The study group strongly urges that the following topics receive careful consideration.

Statewide Spatial Planning

Facilities built today, under current siting and setback practices, have a lifetime of roughly 15 years. In the long-term, guidelines should be established based on siting and spatial planning considerations that require siting of new and replaced facilities in accordance with a statewide spatial plan. Some areas of the state are currently over-populated with facilities. A statewide spatial plan, based for example on

animal units per acre, would help guide and distribute animals in a manner that takes full advantage of Iowa's soil/nutrient capabilities and minimizes the impacts of air emissions on the community.

Local Siting Guidelines

The study group feels strongly that current siting guidelines are outdated and not reflective of the changing demographics in rural Iowa. Current siting guidelines use a simple distance and size regulation for new facilities. The study group feels that this method of siting is not conducive to the long-term viability of the livestock and poultry industries in Iowa. A strategy that takes into account proposed facility size and type, distance and orientation to surrounding neighbors, local weather patterns, odor control measures, existing recreational and public-use facilities, and other existing production facilities in a community would provide better placement guidance of facilities and contribute positively to spatial planning considerations. Siting models that utilize the above mentioned inputs have been developed, are currently being calibrated, and should be used in community-wide applications.

Aesthetic Considerations for Livestock and Poultry Production Sites

Evidence exists in the literature that foliage (primarily trees) will enhance mixing and capture some of the odor-producing gases and particulates emitted from livestock and poultry production facilities. Currently, research projects are being planned, and some have already been conducted, to test the use of strategically placed tree barriers around production sites. Although evidence documenting odor, gas, and particulate-capture-percentages on a production-size scale is limited, the study group feels strongly that landscape changes such as strategically placed tree lines will positively impact producer/community relationships. This is a researchable area and one that holds promise as a natural, aesthetically pleasing strategy for producers to implement.

Conclusion to Executive Summary

The consensus responses summarized in this Executive Summary provide a science-based summary of this inquiry from the Iowa Department of Natural Resources. The study group recognizes the importance of livestock production and the vital role it plays in the livelihoods of Iowa producers and suppliers and the state's economy. It is, therefore, critically important that science-based policies be developed to sustain livestock production. It is equally vital that such policies protect the public's health, sustain and enhance the communities in which livestock production takes place, and protect and enhance the environment and Iowa's natural resources through sound production practices, environmental controls and the development of a long-range, sustainable, community health and environmentally conscious spatial plan for CAFOS.

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Appendix 2 -- EPA Guidance on Emergency Planning and Community Right-to-Know-Act

Does EPA interpret EPCRA Section 304 to require farms to report releases from animal waste?

EPA interprets the statute to exclude farms that use substances in "routine agricultural operations" from reporting under EPCRA section 304.

As written, EPCRA section 304 requires all facilities "at which a hazardous chemical is produced, used or stored" to report releases of reportable quantities of any EPCRA Extremely Hazardous Substance and of any CERCLA hazardous substance. Congress, however, created an exception relevant to farms. As indicated above, EPCRA reporting turns on whether a facility produces, uses, or stores a hazardous chemical. The term "hazardous chemical," as defined in EPCRA sections 329(5) and 311(e), does not include "any substance to the extent it is used in routine agricultural operations."

Therefore, if a farm only uses substances in "routine agricultural operations", the farm would not be a facility that produces, uses or stores "hazardous chemicals," and would therefore not be within the universe of facilities which are subject to EPCRA section 304 release reporting. Because such farms fall outside of EPCRA section 304, they are not required to report any releases of EPCRA extremely hazardous substances or CERCLA hazardous substances, including any releases from animals or animal waste.

Based on the language of the statute described above, EPA believes Congress did not intend to impose EPCRA reporting requirements on farms engaged in routine agricultural operations. The statute does not define "routine agricultural operations," and EPA has previously identified examples of routine agricultural operations. Those examples were not intended to be exhaustive. EPA clarifies here that it interprets the term "routine agricultural operations" to encompass regular and routine operations at farms, animal feeding operations, nurseries, other horticultural operations and aquaculture.

Additionally, as stated in previous policy interpretations, the following are examples of substances used in routine agricultural operations:

- Paint used for maintaining farm equipment;
- Fuel used at the farm to operate machinery or to heat buildings in a farm for housing animals; and
- Chemicals used for growing and breeding fish and aquatic plants in an aquacultural operation.

These examples were not intended to be exhaustive. EPA interprets the statute to include other substances used in routine agricultural operations, including animal waste stored on a farm and animal waste that is used as fertilizer. EPA also notes that use of a substance in routine agricultural operations includes the storage of that substance necessitated by such use. To illustrate based on one of the examples cited above, an inherent part of using fuel to operate machinery is storage of that fuel.

EPA clarifies here that, just as an aquacultural operation involving the feeding and breeding of fish would be considered a routine agricultural operation, the feeding and breeding of animals, as well as the expected handling and storage of the animals' waste, would also be considered a routine agricultural operation. EPA thus interprets the phrase "used in routine agricultural operations" to include, for example, the handling and storage of waste for potential use as fertilizer. In creating the routine agricultural operation exception, Congress demonstrated its intent to treat farms differently than other types of facilities. EPA does not believe Congress intended the generation, handling or storage of animal waste to subject farms to reporting if they do not otherwise produce, use or store hazardous chemicals.

Under EPA's interpretation, a farm where substances are used only in routine agricultural operations is not within the scope of EPCRA section 304; however, farms are still required to report releases of CERCLA hazardous substances under CERCLA 103 (see EPA's implementing regulations at 40 CFR part 302 and the continuous release reporting form).

Note: EPA intends to conduct a rulemaking on the interpretation of "used in routine agricultural operations" as it pertains to EPCRA reporting requirements.