

**REGULATING WHAT CAN'T BE MEASURED: REVIEWING
THE CURRENT STATE OF ANIMAL AGRICULTURE'S AIR
EMISSIONS REGULATION POST-*WATERKEEPER ALLIANCE*
V. *EPA***

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INTRODUCTION

If the wind blows from the right direction in Amarillo, Texas, there is a distinctive odor that the locals affectionately refer to as the “smell of money.” The “smell” they are referring to originates from the manure at the many cattle feedlots southwest of town, a major industry in the Texas Panhandle.¹ This aroma has reached all the way to Washington D.C. In April of 2017, the D.C. Circuit Court of Appeals issued a ruling that encumbered these feedlots with regulatory uncertainty—a place no regulated industry wants to be.² While confined animal feeding operations (CAFOs) are normally exempt from federal environmental regulations, in *Waterkeeper Alliance v. EPA* the CAFOs were unable to sidestep the D.C. Circuit’s application of two federal statutes.³

Under *Waterkeeper Alliance v. EPA*, CAFOs, such as the Panhandle feedlots, are required by federal law to report to national, state, and local emergency agencies if their operations release a certain amount of hazardous substances in a twenty-four hour period.⁴ While CAFOs do emit

1. Amarillo Magazine, *Reason No. 8: Because we Live in the Beef Capital of the World*, AMARILLO.COM (Feb. 22, 2013, 8:14 PM) <http://amarillo.com/national/2013-02-22/reason-no-8-because-we-live-beef-capital-world> [<https://perma.cc/79CF-2R5Y>].

2. See *Waterkeeper All. v. Env'tl. Prot. Agency*, 853 F.3d 527, 537–38 (D.C. Cir. 2017) (holding that the EPA acted erroneously when exempting CAFOs from environmental reporting requirements for notice of hazardous substance releases).

3. See e.g., Linda M. Thompson, *A Breath of Fresh Air: Methods and Obstacles for Achieving Air Pollution Reduction in Washington Factory Farm Communities*, 1 WASH. J. ENVTL. L. & POL'Y 130, 141–49 (2011) (discussing various federal environmental statutes and exemptions for CAFOs).

4. *Waterkeeper All.*, 853 F.3d at 535–36.

hazardous substances (ammonia and hydrogen sulfide), there is a catch-22—the EPA does not know how to accurately estimate or measure these emissions.⁵ The *Waterkeeper Alliance* decision was originally stayed until May 1, 2018, meaning that AFO operators who failed to report when the stay was lifted would risk potential lawsuits from environmental groups and civil penalties.⁶ However, on March 23, 2018, Congress enacted the Consolidated Appropriations Act, 2018, (“Omnibus Bill”) which exempts the reporting of “air emissions from animal waste at farms.”⁷ The inclusion of this exemption in this legislation has been seen as a massive victory for the agriculture industry.⁸

While the Omnibus Bill may now provide CAFOs with a shield from reporting requirements, this article reviews the history behind production agriculture’s air emissions regulation challenges and why this issue still matters moving forward. Part I provides an overview of today’s modern animal agricultural industry, looking at how CAFOs have grown in size in recent years and the potential air pollution issues that stem from that growth. Part II analyzes the current state of federal air emissions regulations impacting CAFOs, focusing on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Emergency Planning and Community Right-to-Know Act (EPCRA).⁹ Part III examines the EPA’s final rule from 2008 that exempted CAFOs from the reporting requirements under CERCLA, and the Agency’s reasons for this exemption.¹⁰ Part IV reviews *Waterkeeper Alliance v. EPA*, the D.C. Circuit’s recent decision that vacated the EPA’s 2008 final rule and requires CAFOs to comply with the reporting requirements under both CERCLA and EPCRA.¹¹ Part V discusses the aftermath of the *Waterkeeper Alliance* decision, the EPA’s attempt at providing guidance for the agriculture industry to comply with the rule, and Congress’s eleventh hour action that

5. *Id.* at 531.

6. *CERCLA and EPCRA Reporting Requirements for Air Releases of Hazardous Substances from Animal Waste at Farms*, ENVTL. PROTECTION AGENCY <https://www.epa.gov/epcra/cercla-and-epcra-reporting-requirements-air-releases-hazardous-substances-animal-waste-farms> [https://perma.cc/D8X5-SAD6] (last updated Aug. 30, 2018) [hereinafter EPA, CERCLA/EPCRA 2018 GUIDANCE DOCUMENT].

7. Consolidated Appropriations Act, 2018, H.R. 1625, 115th Cong. (2d Sess. 2018).

8. Burt Rutherford, *Trump Signs Omnibus Spending Bill, Ag Approves*, BEEF (Mar. 23, 2018) <http://www.beefmagazine.com/business/trump-signs-omnibus-spending-bill-ag-approves> [https://perma.cc/CA2F-KP3S].

9. Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9603 (2012); Emergency Planning and Community Right-to-Know Act, 42 U.S.C. § 11004 (2010).

10. CERCLA/EPCRA Administrative Reporting Exemption for Air Releases of Hazardous Substances from Animal Waste at Farms, 73 Fed. Reg. 76,948, 76,948 (Dec. 18, 2008).

11. *Waterkeeper All.*, 853 F.3d at 537–38.

provides CAFOs with an exemption from reporting.¹² Finally, Part VI considers the questions and options moving forward for the agriculture industry in the wake of these air emissions decisions.

I. OVERVIEW OF TODAY'S MODERN ANIMAL AGRICULTURAL INDUSTRY

A. The Development of the CAFO

Over the past half-century there has been a notable shift in Americans' connection with the production of the food they consume.¹³ Historically, agricultural production has been land and "labor intensive, [taking] place on many small, diversified farms in rural areas where more than half of the U.S. population lived."¹⁴ In contrast, today's agricultural production industry consists of a smaller number of larger, more "specialized farms in rural areas where less than a fourth of the U.S. population lives."¹⁵ In 2012, less than one percent of the U.S. population participated in agriculture.¹⁶ Yet, as the number of individuals who raise and grow our nation's food and fiber have decreased, modern agricultural production practices have allowed the livestock agriculture industry to remain a significant portion of the U.S. economy.¹⁷ The average size of livestock production operations increased in the aggregate because of the expanded use of technologies, growing international demand, and vertical integration within species production.¹⁸

These more modern and larger scale livestock feeding operations, such as feedlots, dairies, and commercial pork and poultry farms, are generally

12. EPA, CERCLA/EPCRA 2018 GUIDANCE DOCUMENT, *supra* note 6.

13. See generally INST. OF MED. AND NAT'L RES. COUNCIL, A FRAMEWORK FOR ASSESSING THE EFFECTS OF THE FOOD SYSTEM 32, 42 (Malden C. Nesheim et al. eds., 2015) (discussing shifts in agricultural practices in the last 50 years); Michelle B. Nowlin, *Sustainable Production of Swine: Putting Lipstick on a Pig*, 37 Vt. L. Rev. 1079, 1081–83 (2013) (providing an overview of the evolution of production agriculture); Linda M. Thompson, *supra* note 3, at 130, 132 (describing the change in agricultural production techniques since World War II).

14. *Farming and Farm Income*, ECON. RES. SERV., U.S. DEP'T. OF AGRIC., <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/farming-and-farm-income/> [<https://perma.cc/CB9M-KVET>] (last updated Aug. 30, 2018).

15. *Id.*

16. See U.S. DEP'T OF AGRIC., ACH12-3, FARM DEMOGRAPHICS (2014) https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Highlights/Farm_Demographics/ [<https://perma.cc/QE7U-KPLA>] (stating there were 3.2 million farmers in the United States in May 2014); U.S. and World Population Clock, U.S. CENSUS BUREAU, <https://www.census.gov/popclock/> [<https://perma.cc/4HZX-GDFM>] (last visited July 24, 2018) (stating that the estimated total U.S. population was 318 million in May 2014).

17. See NAT'L RESEARCH COUNCIL, AIR EMISSIONS FROM ANIMAL FEEDING OPERATIONS: CURRENT KNOWLEDGE, FUTURE NEEDS 26 (2003) (discussing the role of livestock agriculture as a driver of the agricultural economy).

18. *Id.* at 29–30.

referred to as AFOs. An AFO is defined as an operation that “(1) raise[s] animals in a confined situation for a total of 45 days or more during a 12-month period and (2) brings feed to the animals rather than having the animals graze or seek feed in pastures and fields or on rangeland.”¹⁹ Today, there are “approximately 450,000 AFOs in the United States.”²⁰ CAFOs are simply larger AFOs.²¹ The EPA defines a CAFO as an operation that houses over “1000 head of beef cattle, 700 dairy cows, 2500 swine weighing more than 55 [pounds], 125 thousand broiler chickens, or 82 thousand laying hens or pullets[] confined on site for more than 45 days during the year.”²²

B. Sources of Pollution from CAFOs

Unlike other industries, agricultural operations have traditionally been exempted under numerous federal environmental laws.²³ Both state and federal governments have tended to spend most of their efforts regulating polluters that are more visible—“factories, waste treatment plants, motor vehicles—than on smaller and more dispersed sources such as farms.”²⁴ In addition (and unlike the aforementioned sources of pollution), the majority of CAFOs are open-air systems, which makes monitoring and measuring actual releases of pollutants into the environment extremely difficult.²⁵ Also, air emissions that stem from livestock and poultry production “are generally more complex than those from industrial sources because of the numerous biological processes involved.”²⁶

19. U.S. GOV'T ACCOUNTABILITY OFF. GAO-08-944 CONCENTRATED ANIMAL FEEDING OPERATIONS: EPA NEEDS MORE INFORMATION AND A CLEARLY DEFINED STRATEGY TO PROTECT AIR AND WATER QUALITY FROM POLLUTANTS OF CONCERN 1 (2008) [hereinafter GOA-08-944] (citing to 40 C.F.R. § 122.23(b) (2017)).

20. NAT. RESOURCES CONSERVATION SERV., U.S. DEP'T AGRIC., ANIMAL FEEDING OPERATIONS, <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/livestock/afo/> [https://perma.cc/LXJ2-QE5V] [hereinafter AFOs] (last visited Feb. 9, 2018).

21. GOA-08-944, *supra* note 19.

22. AFOs, *supra* note 20.

23. *See generally* J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 *ECOLOGY L.Q.* 263, 267 (2000) (“Congress has actively ...[decided] to exclude farms and farming from the burdens of federal environmental law.”).

24. CLAUDIA COPELAND, CONG. RES. SERV., RL 32948, AIR QUALITY ISSUES AND ANIMAL AGRICULTURE: A PRIMER 7 (2014) [hereinafter COPELAND, PRIMER].

25. N.A. COLE ET AL., U.S. DEP'T. AGRIC., AUDITING AND ASSESSING AIR QUALITY IN CONCENTRATED FEEDING OPERATIONS 2 (2008), (“Measuring atmospheric emissions is difficult and entails 2 major challenges: 1) measuring the concentration; and 2) estimating the flux to the atmosphere based on direct measurement or on a flux model that describes or simulate the turbulent dispersion of gases and particulates.”).

26. *Id.* at 4.

However, as CAFOs grow in size, the concern of their potential adverse effects on the environment grows as well, leading many to argue that CAFOs should be subject to environmental regulation.²⁷ For many years, the primary focus on environmental impacts from CAFOs has been on protecting water resources under the Clean Water Act (CWA).²⁸ However, the potential effects of livestock operations on air quality are an area of growing concern. Air emissions from CAFOs include dust, odor, airborne pathogens, ammonia, hydrogen sulfide, particulate matter, volatile organic compounds, and greenhouse gases (GHGs) such as methane and carbon dioxide.²⁹ Quantifying livestock emissions is difficult as they vary tremendously from operation to operation.³⁰ These variations are a result of differences in animals' digestive systems [e.g., monogastric digestion in swine versus ruminant digestion in cattle], the diets fed [e.g., forages versus grains], and manure handling and storage.³¹

Considering that CAFOs raise a large number of animals in a confined area, they produce and must manage a large amount of manure.³² "Manure" is a broadly defined term that includes any combination of fecal matter, urine, and other materials that are mixed with manure, such as bedding material, excess feed, or wash water, and may be in a solid or liquid state.³³ Furthermore, the state of the manure often dictates the management practices and the degree that pollutants are emitted.³⁴ Solid manure is typically stored in uncovered storage stockpiles, which exhibit emissions from both aerobic and anaerobic processes over time.³⁵ Liquid manure is usually stored in earthen impoundments (e.g., anaerobic lagoons).³⁶ Emissions from these storage sites will depend primarily on the length of the storage period and temperature of the manure.³⁷ The most common use

27. See, e.g., MEGAN STUBBS, CONG. RES. SERV., R41622, ENVIRONMENTAL REGULATION AND AGRICULTURE 2 (2014) (identifying environmental groups as a party expressing support for regulation to protect public health and the environment).

28. CLAUDIA COPELAND, CONG. RES. SERV., RL 31851, ANIMAL WASTE AND WATER QUALITY: EPA REGULATION OF CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs) 5 (2010) (explaining that EPA regulations under the CWA have defined CAFOs as point sources subject to CWA permitting requirements).

29. COLE ET AL., *supra* note 25, at 1.

30. *Id.*

31. *Id.* at 4.

32. U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 19, at 18.

33. 40 C.F.R. § 122.23(b)(5) (2017).

34. COLE ET AL., *supra* note 25, at 4.

35. ENVTL. PROT. AGENCY, NON-WATER QUALITY IMPACT ESTIMATES FOR ANIMAL FEEDING OPERATIONS 1-2, 1-10 (2002), https://www3.epa.gov/npdes/pubs/cafo_nonwaterquality.pdf [<https://perma.cc/44J8-WVD6>].

36. *Id.*; see also Nowlin, *supra* note 13, at 1084 (describing the function and design of the lagoons).

37. ENVTL. PROT. AGENCY, *supra* note 35, at 1-2.

of collected manure after storage is as a fertilizer source on cropland and pastures.³⁸

C. Air Emissions of Ammonia and Hydrogen Sulfide from Animal Waste

Under current federal environmental regulations, the “hazardous” substances that may be emitted from CAFOs and trigger federal oversight are ammonia and hydrogen sulfide.³⁹ Before discussing the statutory schemes that require CAFOs to report releases of these sources, the next subsections examine the biological processes that form both substances. The biological processes are essential to understand the potential difficulty of measuring, managing, and minimizing these greenhouse gas emissions.

1. Ammonia

Ammonia is a colorless gas that has a very noticeable odor at concentrations above 50 ppm.⁴⁰ Various industries (fertilizer and coke manufacturing, fossil fuel combustion, and refrigeration methods) are known to emit ammonia; however, the EPA estimates that animal agriculture accounts for 50 to 85 percent of total man-made ammonia volatilization in the United States.⁴¹ Although livestock facilities can generate odors that may be offensive to neighboring residents, the EPA states that ammonia odors are not toxic to humans.⁴²

Nitrogen, a constituent of crude protein in feedstuffs, is excreted in the urine and feces of livestock and poultry in the form of urea, uric acid, ammonia, and organic nitrogen.⁴³ Urea and uric acid are converted to ammonia almost immediately after they are excreted; this volatilization continues throughout the manure handling, storage, and land application.⁴⁴ Ammonia can be emitted from animal housing, open dry lots, stockpiles, lagoons, and land applications of manure as a fertilizer source.⁴⁵ The

38. NAT. RESOURCES CONSERVATION SERV., U.S. DEP'T AGRIC., *Animal Manure Management*, (Dec. 1995) https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/?cid=nrcs143_014211 [https://perma.cc/2PNT-ELPS].

39. 40 C.F.R. § 116.4 (2017).

40. Env'tl. Prot. Agency, Pub. No. EPA-456/R-95-002, *Control and Pollution Prevention Options for Ammonia Emissions I* (1995).

41. SUSAN W. GAY & KATHARINE F. KNOWLTON, VA. COOPERATIVE EXTENSION, PUB. NO. 442-110, *AMMONIA EMISSIONS AND ANIMAL AGRICULTURE I* (2009).

42. Env'tl. Prot. Agency, *supra* note 40, at 43.

43. GAY & KNOWLTON, *supra* note 41, at 3.

44. COLE ET AL., *supra* note 25, at 4.

45. ENVTL. PROT. AGENCY, *supra* note 35, at 1-2.

concentrated ammonia emissions may be affected by many factors, “including diet (protein quantity and degradability, carbohydrate degradability, acid-base balance), pen surface, retention pond, or lagoon conditions (total ammonia concentration, pH, temperature, moisture, solids), weather, ventilation rate, manure storage method, and animal age.”⁴⁶

While odor complaints may be a common issue with ammonia emissions, more pressing are the potential negative impacts for the environment. Atmospheric ammonia that travels via wind patterns may become a nutrient source when it is deposited onto neighboring soils and water bodies.⁴⁷ In ecologically sensitive areas, such as a water body with a high concentration of phosphorus, ammonia deposits may provide an oversupply of nitrogen for the native flora, resulting in potentially deleterious modifications of the native ecosystem.⁴⁸

2. Hydrogen Sulfide

Hydrogen sulfide is a colorless gas that is known for a distinctive “rotten egg” smell.⁴⁹ Human industrial sources responsible for the release of hydrogen sulfide include: wastewater treatment plants, landfills, kraft paper mills, petroleum refineries, natural gas plants, coke ovens, and food processing plants.⁵⁰ Hydrogen sulfide emissions from CAFOs occur as a result of the fermentation “by sulfate-reducing bacteria” in manure managed as liquids or slurries.⁵¹ Sulfur is a common ingredient in animal diets (sulfur amino acids contained in the feed and inorganic sulfur compounds from trace mineral supplements), and manure that is stored in a liquid state magnifies the emissions because of the pH, temperature, and biological oxygen demand.⁵²

Hydrogen sulfide emissions from lagoons and retention ponds “occur episodically when sufficient hydrogen sulfide gas, produced from nutrients or sludge on the bottom of the pond, accumulates to overcome the surface tension of the water and rise to the pond surface.”⁵³ As noted above, the

46. COLE, *supra* note 25, at 5.

47. GAY & KNOWLTON, *supra* note 41, at 2.

48. COLE ET AL, *supra* note 25, at 4–5; *see also* Thompson, *supra* note 3, at 132 (discussing the harmful effects ammonia has on aquatic life).

49. Thompson, *supra* note 3, at 132–33; AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, DEP'T HEALTH AND HUMAN SERV., PUBLIC HEALTH STATEMENT: HYDROGEN SULFIDE (2016).

50. AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, *supra* note 49.

51. COLE ET AL, *supra* note 25, at 5.

52. *Id.*

53. *Id.*

emission rates appear to be greater from facilities that store manure in a liquid state than from open-air management, such as methods used in feedyard pens.⁵⁴ Unlike ammonia, the biggest concern with hydrogen sulfide is not the potential for deleterious impacts on the environment; rather, it is the more localized risk of human exposure to toxic concentrations.⁵⁵

3. Greenhouse Gases

Due to the current state of federal regulations, this article focuses on ammonia and hydrogen sulfide emissions from CAFOs; however, a brief discussion on greenhouse gas emissions, specifically methane, from CAFOs may be helpful. As climate change science and awareness “heats up,” understanding the sources of GHGs (e.g., carbon dioxide, methane, and nitrous oxide) are important. In 2015, animal agriculture accounted for over 30% of man-made sources of methane emissions in the United States—enteric fermentation (25% of total methane emissions) and manure management (9% of total methane emissions).⁵⁶ Given the large percentage of emissions that animal agriculture is responsible for, some argue that methane emissions from CAFOs should be regulated.⁵⁷ While some of this methane is a byproduct of ruminant digestion (enteric fermentation), like ammonia and hydrogen sulfide, GHGs are also emitted from the decomposition of manure.⁵⁸ Part VI of this paper details practices (such as improvements in manure storage facilities or diet modifications) that may be used to reduce ammonia and hydrogen sulfide emissions from CAFOs. Perhaps future regulation of GHGs coming from CAFOs, specifically including increased requirements for manure management, may create parallel opportunities for the reduction of ammonia and hydrogen sulfide emissions.⁵⁹

54. COLE ET AL, *supra* note 25, at 5.

55. ENVTL. PROT. AGENCY, *supra* note 35, at 1-4 (stating that manure as a liquid or slurry has the potential to emit hydrogen sulfide under anaerobic conditions); *see also* AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, *supra* note 49 (emphasizing the risk of human exposure versus environmental harms).

56. *See* ENVTL. PROT. AGENCY, EPA 430-P-17-001, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2015, ES-6, ES-14 to -15 (2017) (dividing the total methane emissions by emissions from manure management).

57. *See e.g.*, John Verheul, Note, *Methane As a Greenhouse Gas: Why the EPA Should Regulate Emissions from Animal Feeding Operations and Concentrated Animal Feeding Operations Under the Clean Air Act*, 51 NAT. RESOURCES J. 163, 165 (2011) (arguing that in light of climate change, the EPA should regulate methane emissions from AFOs and CAFOs).

58. COPELAND, PRIMER, *supra* note 24, at 2.

59. *See, e.g.*, Jordi Domingo et al., Comm. on Agric. and Rural Dev., *Measures at Farm Level to Reduce Greenhouse Gas Emissions from EU Agriculture*, EUR. PARL. DOC. PE 513.997, at 31

II. CURRENT REGULATION OF CAFOS UNDER FEDERAL AIR EMISSIONS STANDARDS

For the most part, current federal environmental law is not well suited to regulate air emissions from agricultural activities. The Clean Air Act (CAA) provides a comprehensive framework for regulating stationary and mobile sources of air pollution.⁶⁰ The CAA focuses on “controlling ‘major sources’ that emit more than threshold quantities of regulated pollutants.”⁶¹ However, because air emission quantities from CAFOs are either not the category of pollutant covered by the CAA or do not emit enough to trigger permitting requirements, they generally are not regulated under the CAA.⁶² However, agriculture does not completely fly under the radar. Two provisions of federal law, sections of CERCLA and EPCRA, both require reporting whenever a certain quantity of a hazardous substance is released into the environment.⁶³ At first glance, one might assume that these statutes only handle the cleanup of hazardous waste that is radioactive or from lead smelters and mining operations. However, importantly for CAFOs, the EPA has classified both ammonia and hydrogen sulfide as hazardous or reportable substances under both CERCLA and EPCRA with the reportable quantity (RQ) for each at 100 pounds per day.⁶⁴

A. Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA authorizes “federal cleanup of releases of hazardous substances, pollutants, or contaminants that may present an imminent and substantial danger to the public health or welfare . . . and impos[es] strict liability for cleanup and damages to natural resources from releases of hazardous substances.”⁶⁵ A facility that releases certain hazardous substances must provide notification of these releases to the National Response Center (NRC) if the release exceeds the substance’s RQ.⁶⁶ Specifically, CERCLA requires that:

(Jan. 2014) (offering regulatory recommendations for manure management focused on reducing methane and ammonia).

60. COPELAND, PRIMER, *supra* note 24, at 9.

61. *Id.*

62. *Id.*

63. *Id.* at 16.

64. 40 C.F.R. § 302.4 (2017); 40 C.F.R. § 355 app. A (2017).

65. COPELAND, PRIMER, *supra* note 24, at 17.

66. 42 U.S.C. § 9603(a) (2012).

Any person in charge of . . . an onshore facility shall, as soon as he has knowledge of any release (other than a federally permitted release) of a hazardous substance from such . . . facility in quantities equal to or greater than those determined pursuant to section 9602 of this title, immediately notify the National Response Center. . . .⁶⁷

Of note, CERCLA does provide exclusions for “the normal application of fertilizer” from the definition of release.⁶⁸

B. Emergency Planning and Community Right-to-Know Act

Congress enacted EPCRA in 1986 as part of the amendments to CERCLA, and this statute “establishes a framework of state, regional and local agencies designed to inform the public about the presence of hazardous and toxic chemicals, and to provide for emergency response in the event of health-threatening release.”⁶⁹ Like CERCLA, EPCRA requires the owner or operator of a facility to report to state and local authorities and emergency responders any releases greater than the RQ of substances deemed hazardous under CERCLA or extremely hazardous under EPCRA.⁷⁰ Hydrogen sulfide and ammonia are hazardous substances under EPCRA with RQs of 100 pounds per day.⁷¹ Additionally, EPCRA also excludes from the definition of hazardous chemicals any substance that is “used in routine agricultural operations.”⁷²

C. Continuous Releases Under CERCLA and EPCRA

Both CERCLA and EPCRA allow for reduced reporting requirements for “continuous releases” of hazardous substances that exceed the RQ.⁷³ This is important for CAFOs, as it alleviates the requirement for potential daily notification to the NRC and state and local authorities into an annual reporting system.⁷⁴ The EPA defines a continuous release of a hazardous

67. *Id.*

68. 42 U.S.C. § 9601(22)(D) (2012).

69. *Steel Co. v. Citizens for a Better Env't*, 523 U.S. 83, 86 (1998).

70. 42 U.S.C. § 11004(a)(1)–(2) (2012).

71. 40 C.F.R. § 302.4 (2017).

72. 42 U.S.C. § 11021(e)(5) (2012).

73. 42 U.S.C. § 9603(f)(2) (stating that no additional notification of release is required as long as the release is continuous, stable, and the facility has already given notification of the initial release of the substance).

74. *See* 40 C.F.R. § 302.8(a) (2017) (explaining that no notification is required for continuous releases).

substance as one “that is continuous and stable in quantity and rate.”⁷⁵ The EPA interprets “continuous” to mean a “release that occurs without interruption or abatement that is routine, anticipated, and intermittent during normal operation or treatment process.”⁷⁶ Furthermore, the term “stable in quantity and rate” means “predictable and regular in amount and rate of emission.”⁷⁷

D. Enforcement and Potential Liabilities Under CERCLA and EPCRA

Both CERCLA and EPCRA contain provisions that empower the EPA to assess civil penalties (up to \$27,500 per day) if releases that exceed the RQ go unreported.⁷⁸ The EPA has used these provisions against AFOs in at least two separate cases.⁷⁹ In 2001, the EPA and the Department of Justice (DOJ) entered into a civil settlement with two large Missouri pork producers, Premium Standard Farms, Inc., and Continental Grain Company, Inc., for alleged CWA, CAA, CERCLA, and EPCRA violations.⁸⁰ Five years later, in 2006, the EPA and DOJ entered into a similar consent decree with Seaboard Foods LP and PIC USA, Inc., pork producers with operations in Oklahoma, Kansas, Texas, and Colorado.⁸¹ In this settlement, Seaboard was required to pay a civil penalty of \$205,000 for failing to comply with the CWA, CAA, CERCLA, and EPCRA.⁸²

These statutes also allow for enforcement through citizen lawsuits, permitting “any person to commence a civil action against” either the entity who violates the reporting requirement or against the EPA for failure to enforce the requirement.⁸³ The Sierra Club successfully brought lawsuits

75. *Id.*

76. 40 C.F.R. § 302.8(b).

77. *Id.*

78. CLAUDIA COPELAND, CONG. RESEARCH SERV., RL 33691, ANIMAL WASTE AND HAZARDOUS SUBSTANCES: CURRENT LAWS AND LEGISLATIVE ISSUES 2 (2014) (hereinafter COPELAND, LAWS AND LEGISLATIVE ISSUES).

79. *Id.* at 3.

80. See Press Release, Env'tl. Prot. Agency, Nation's Second Largest Hog Producer Reaches Settlement with U.S. & Citizen's Group (Nov. 20, 2001), <https://www.epa.gov/enforcement/reference-news-release-nations-second-largest-hog-producer-reaches-settlement-us> [<https://perma.cc/37TE-T9EV>] (describing that the two companies violated the CAA and CWA as well as other laws that may include CERCLA and EPCRA).

81. Press Release, Env'tl. Prot. Agency, Government Reaches Settlements with Seaboard Foods and PIC USA (Sept. 15, 2006), https://archive.epa.gov/epapages/newsroom_archive/newsreleases/3933bb91f85c53fd852571ea0059b7f4.html [<https://perma.cc/MW5L-DMKV>].

82. *Id.*

83. COPELAND, LAWS AND LEGISLATIVE ISSUES, *supra* note 78, at 2–3.

under the citizen suit provisions against Tyson Foods in 2003 and against Seaboard Farms in 2004.⁸⁴

III. THE 2008 EXEMPTION FOR CAFOS

The poultry industry petitioned the EPA in 2005 to create an exemption for agricultural operations from the reporting requirements under EPCRA and CERCLA; they claimed these releases of ammonia and hydrogen sulfide posed “little or no risk to public health, while reporting imposes an undue burden on the regulated community and government responders.”⁸⁵ In response to this petition, the EPA released a proposal in December 2007 to exempt CAFOs from reporting under both statutes.⁸⁶ The EPA, supported by the agriculture industry and government responders, reasoned that CERCLA and EPCRA’s “reports are unnecessary because, in most cases, a federal response is impractical and unlikely.”⁸⁷ In making this determination, the EPA “considered whether the Agency would ever take a response action, as a result of such notification, for releases of hazardous substances to the air that meet or exceed their RQ from animal waste at farms.”⁸⁸ The EPA detailed that at the time of rulemaking, the EPA had “not initiated a response to any NRC notifications of ammonia, hydrogen sulfide, or any other hazardous substances released to the air where animal waste at farms is the source of that release.”⁸⁹ Moreover, the EPA could “not foresee a situation where the Agency would initiate a response action as a result of such notification.”⁹⁰

However, in response to the large number of comments “expressing the desire to receive information regarding releases from large . . . (CAFOS),” the EPA amended the proposed rule to only exempt reporting under CERCLA and certain livestock facilities under EPCRA.⁹¹ Under EPCRA, the EPA exempted farms that release hazardous substances from animal waste to the air that meet or exceed their RQ from reporting under section

84. *Sierra Club v. Tyson Foods*, F. Supp.2d 693, 693 (W.D. Ky. 2003) (holding that farms are not exempt from reporting requirements under CERCLA and EPCRA); *Sierra Club v. Seaboard Farms Inc.*, 387 F.3d 1167, 1176 (10th Cir. 2004) (holding that the term “facility” as used in CERCLA’s § 101(9)(A) and (B) encompasses the farm as a whole and does not refer to individual barns or lagoons on the property).

85. COPELAND, LAWS AND LEGISLATIVE ISSUES, *supra* note 78, at 4.

86. *Id.* at 5; Thompson, *supra* note 3, at 147.

87. CERCLA/EPCRA Administrative Reporting Exemption for Air Releases of Hazardous Substances from Animal Waste at Farms, 73 Fed. Reg. 76, 948, 76,956.

88. *Id.* at 76,953.

89. *Id.*

90. *Id.*

91. *Id.* at 76,950.

304 if the farms stable or confine less than a certain number of animal species.⁹² Any CAFO that housed more than these numbers had to report.⁹³ The EPA's Final Rule became effective in January 2009 and exempted agricultural operations that annually sell at least \$1,000 of agricultural products from CERCLA reporting requirements for releases of hazardous substances to the air from animal waste.⁹⁴ In addition, the Final Rule provided that any farms already participating and in compliance with the EPA's Animal Feeding Operation Air Compliance Agreement⁹⁵ were exempt from reporting requirements.⁹⁶

IV. WATERKEEPER ALLIANCE V. EPA

The ink barely had time to dry on the EPA's Final Rule before it was challenged.⁹⁷ Several environmental groups, including Waterkeeper Alliance, Sierra Club, the Humane Society of the United States, Environmental Integrity Project, and the Center for Food Safety (collectively "Waterkeeper Alliance"), challenged that neither CERCLA nor EPCRA permitted the EPA to grant reporting exemptions.⁹⁸ Rather, Waterkeeper Alliance argued that both statutes required a report anytime there was a release that exceeded the RQ and that the Final Rule was arbitrarily treating animal waste from CAFOs more favorably than those from other industries.⁹⁹

The D.C. Circuit Court, using a *Chevron* analysis to interpret the Final Rule, found that the EPA unreasonably interpreted CERCLA and EPCRA's

92. *Id.* at 76,952 (showing the thresholds for exemption from EPCRA section 304 reporting that "(1) 700 mature dairy cows, whether milked or dry; (2) 1,000 veal calves; (3) 1,000 cattle other than mature dairy cows or veal calves. Cattle includes but is not limited to heifers, steers, bulls and cow/calf pairs; (4) 2,500 swine each weighing 55 pounds or more; (5) 10,000 swine each weighing less than 55 pounds; (6) 500 horses; (7) 10,000 sheep or lambs; (8) 55,000 turkeys; (9) 30,000 laying hens or broilers, if the farm uses a liquid manure handling system; (10) 125,000 chickens (other than laying hens), if the farm uses other than liquid manure handling system; (11) 82,000 laying hens, if the farm uses other than a liquid manure handling system; (12) 30,000 ducks (if the farm uses other than a liquid manure handling system); (13) 5,000 ducks (if the farm uses a liquid manure handling system)").

93. *Id.* at 76,953–54.

94. *Id.* at 76,956.

95. Animal Feeding Operations Consent Agreement and Final Order, 70 Fed. Reg. 4,958 (Jan. 31, 2005).

96. EPA, CERCLA/EPCRA Reporting Requirements for Air Releases of Hazardous Substances from Animal Waste at Farms, *supra* note 6.

97. *See* Waterkeeper All. v. Env'tl. Prot. Agency, 853 F.3d 527, 530 (D.C. Cir. 2017) (discussing that the EPA was immediately sued by environmental groups after issuing a final rule that generally exempted farms from reporting requirements under CERCLA and EPCRA).

98. *Id.*

99. *Id.* at 532.

requirements in creating the Final Rule.¹⁰⁰ Reading the statutes together, the court found that the statutory provisions set forth a straightforward reporting requirement for any non-exempt release.¹⁰¹ The EPA and agricultural industry intervenors argued that the EPA was exercising its *de minimis* power, maintaining that the Final Rule “minimize[s] the burden on both regulated entities and government response agencies.”¹⁰²

In analyzing the use of the *de minimis* doctrine, the court reiterated that the doctrine cannot be used “to create an exception where application of the literal terms would provide benefits, in the sense of furthering the regulatory objectives, but the agency concludes that the acknowledged benefits are exceeded by the costs.”¹⁰³ While the court recognized the importance of efficiency—it was concerned with the cost and burden on both the regulated and governmental agencies—Congress did not provide any reasons under the statute that allowed an agency to create such an exemption as included in the Final Rule.¹⁰⁴ Furthermore, even though the EPA “could ‘not foresee a situation where the Agency would initiate a response action as a result of such notification,’” the court accepted the concerns that commenters made during the EPA’s rulemaking process:

They put before the EPA a good deal of information . . . suggesting scenarios where the reports could be quite helpful in fulfilling the statutes’ goals. Specifically, commenters explained that when [manure] pits are agitated for pumping, hydrogen sulfide, methane, and ammonia are rapidly released from the manure and may reach toxic levels or displace oxygen, increasing the risk to humans and livestock.¹⁰⁵

While the court acknowledged the possibility that these risks could be outweighed by the substantial costs estimated by the EPA, the court ultimately concluded that these comments undermined the primary purpose of the “*Final Rule*—namely, that notifications of animal waste-related releases serve no regulatory purpose because it would be ‘impractical or unlikely’ to respond to such a release.”¹⁰⁶

100. *Id.* at 534 (citing to *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837(1984)).

101. *Id.* at 535.

102. *Id.*

103. *Id.* (citing *Ala. Power v. Costle*, 636 F.2d 323, 360–61 (D.C. Cir. 1979)) (internal quotation marks omitted).

104. *Waterkeeper All.*, 853 F.3d. at 535 (citing 73 Fed. Reg. at 76,958).

105. *Id.* (citing 73 Fed. Reg. at 76,957/2) (internal quotation marks omitted).

106. *Id.* at 537 (citing 73 Fed. Reg. at 76,950/1).

In sum, the court ruled to vacate the Final Rule “[b]ecause the EPA’s action [was not] justified either as a reasonable interpretation of any statutory ambiguity or implementation of a *de minimus* exception.”¹⁰⁷

V. AFTERMATH OF THE *WATERKEEPER ALLIANCE V. EPA* DECISION

The *Waterkeeper Alliance* decision sent shock waves across the agricultural industry after it was released in April 2017.¹⁰⁸ The court granted the EPA’s motion to stay the ruling until May 1, 2018, in order to allow the EPA time to develop guidance documents to assist CAFOs across the country in understanding the new reporting requirements under CERCLA.¹⁰⁹

On May 25, 2017, 28 U.S. Senators sent a letter to EPA Administrator Scott Pruitt asking him to challenge the D.C. Circuit’s opinion and “to provide America’s farmers and ranchers with regulatory relief through agency directive and rulemaking.”¹¹⁰ In this letter, the Senators said that, “left unchecked,” the expanded reporting requirement resulting from *Waterkeeper Alliance* means that “up to 100,000 farms and ranches across the country will face enormous uncertainty and potential liability if they do not submit an emissions report.”¹¹¹

On October 26, 2017, the EPA released guidance documents to assist agricultural operations with understanding the reporting requirements under CERCLA.¹¹² The stay on the D.C. Circuit’s ruling was set to end on November 14, 2017, meaning that any agricultural operation that may fall under CERCLA would need to comply with the reporting requirements by that deadline or face the uncertain potential for civil lawsuits and fines under the statute.¹¹³ The reports require good-faith estimates of the

107. *Id.*

108. CAFOs Ordered to Report Hazardous Pollution, *WATERKEEPER ALL.* (Apr. 11, 2017), <https://waterkeeper.org/cafos-ordered-to-report-hazardous-pollution/> [<https://perma.cc/8J5B-9NWK>] (explaining how the decision closed a loophole in reporting requirements).

109. Press Release, Env’t. Prot. Agency, EPA Releases Guidance on Reporting Air Emissions of Hazardous Substances from Animal Waste at Farms (Oct. 26, 2017), <https://www.epa.gov/newsreleases/epa-releases-guidance-reporting-air-emissions-hazardous-substances-animal-waste-farms> [<https://perma.cc/K6BK-AUHP>]; *see also* EPA, CERCLA/EPCRA 2018 GUIDANCE DOCUMENT, *supra* note 6 (explaining that the court extended the extended the stay until May 1, 2018).

110. Press Release, Miss. Senator Urges Appeal of D.C. Circuit Decision That Would Create Undue Burdens for America’s Farmers & Ranchers, Roger Wicker U. S. for Miss. (May 26, 2017), <https://www.wicker.senate.gov/public/index.cfm/2017/5/wicker-opposes-senseless-epa-reporting-requirements-for-farmers> [<https://perma.cc/8ZGW-YWCL>].

111. *Id.*

112. Press Release, Env’t. Prot. Agency, *supra* note 109.

113. EPA, CERCLA/EPCRA 2018 GUIDANCE DOCUMENT, *supra* note 6.

reportable emissions and can be based on best professional judgment.¹¹⁴ While agricultural operators are required to report, the EPA has given them considerable discretion in determining how they estimate emission releases from their operation.¹¹⁵ Agricultural operators are encouraged to “coordinate with . . . trade associations or . . . land-grant universities, [and] may establish estimated quantities of releases by relying on: (1) past release data, (2) engineering estimates, (3) your knowledge of the facility’s operations and release history, or (4) your best professional judgment.”¹¹⁶ Actual data on emissions from the individual operation is not required.¹¹⁷ On February 1, 2018, the D.C. Circuit granted the EPA’s motion to further stay the mandate until May 1, 2018.¹¹⁸ As a result, CAFOs would not be required to submit their initial continuous release notifications until that date.¹¹⁹

For all the backlash, confusion, and anxiety, a little over a month before the D.C. Circuit was set to vacate the 2008 Final Rule, Congress finally stepped in. On March 23, 2018, President Trump signed the Omnibus Bill, and tucked within this massive appropriations bill is Title XI, called the “Fair Agricultural Reporting Method Act” or “FARM Act.”¹²⁰ The FARM Act amends Section 103(e) of CERCLA to no longer apply to “air emissions from animal waste (including decomposing animal waste) at a farm.”¹²¹ Animal waste includes “feces, urine, or other excrement, digestive emission, urea, or similar substances emitted by animals (including any form of livestock, poultry, or fish).”¹²²

VI. QUESTIONS AND OPTIONS MOVING FORWARD

While the eleventh-hour actions by Congress in passing the Omnibus Bill have prevented CAFO operators from having to comply with reporting requirements and potential penalties under CERCLA, the conflict between environmental groups and a modern agriculture industry remains.¹²³ Congress may have saved the day on this matter, but *Waterkeeper Alliance* is a good example of the predicament production agriculture is in for many environmental issues. What might happen if Congress does not act as

114. *Id.*

115. *Id.*

116. *Id.*

117. *Id.*

118. *Id.*

119. *Id.*

120. Consolidated Appropriations Act, 2018, H.R. 1625, 115th Cong. (2d Sess. 2018).

121. *Id.*

122. *Id.*

123. *Id.*

quickly next time, or a different administration refuses to sign the bill? The following will provide a look at some of the questions asked and options available to the involved parties prior to the passage of the Omnibus Bill.

Following the D.C. Circuit's opinion, the EPA was left with limited options beyond its issuance of guidance for the agriculture industry, and the aftermath of *Waterkeeper Alliance* left many questions unanswered. An industry that enjoyed exemption for years went from blissful ignorance to very quickly being told—via a red box on the EPA's webpage—to report emissions that the regulating agency is not sure how to measure.¹²⁴ Even the best land-grant universities in the country could only provide estimates for determining values.¹²⁵ Beyond the statutory requirements that our legal system has said is the law, what does it actually mean to implement these regulations? They add time and expense to agricultural operations and a fear of litigation at some point in the future by an NGO or environmental group that may disagree with modern production feeding operations. Operators of CAFOs likely have two key questions regarding these laws: first, what is the actual purpose behind these reporting requirements? And second, how can they accurately and confidently determine whether an operation emits an amount of ammonia or hydrogen sulfide that would subject them to the reporting requirements?

A. Does Reporting Really Matter?

Even though the expert agency that manages both programs stated that these “reports were unnecessary because, in most cases, a federal response is impractical and unlikely,” the D.C. Circuit in *Waterkeeper Alliance* seemed to defer to the Final Rule commenters, who expressed concern for the possibility of these releases.¹²⁶ These commenters and proponents of stricter air regulations on CAFOs put forward unfortunate cases where farmers “have become seriously ill or even died” as the result of manure (specifically when pumping liquid manure from pits) as evidence of the need for the reporting.¹²⁷ As terrible as these cases are, agricultural groups

124. *Id.*

125. *See id.* (providing estimates of emissions based on studies from universities like Iowa State University, Texas A&M University, and the University of Nebraska).

126. CERCLA/EPCRA Administrative Reporting Exemption for Air Releases of Hazardous Substances from Animal Waste at Farms, 73 Fed. Reg. at 76,956; *see also* *Waterkeeper All. v. Env'tl. Prot. Agency*, 853 F.3d 527, 535 (D.C. Cir. 2017) (according great weight to the comments in the Final Rule).

127. *Waterkeeper All. v. Env'tl. Prot. Agency*, 853 F.3d 527, 536 (D.C. Cir. 2017); *see also* J. Nicholas Hoover, *Can't You Smell That Smell? Clean Air Act Fixes for Factory Farm Air Pollution*, 6 STAN. J. ANIMAL L. & POL'Y 1, 2 (2013) (discussing a deadly event involving multiple people with regards to a manure pit).

may well be skeptical in looking for the actual reasons environmental groups are pushing for these reports. Neither CERCLA nor EPCRA impose actual reductions of emissions from hazardous substances; however, because these statutes currently contain mechanisms that allow for citizen suits against CAFOs, environmental groups may pursue lawsuits against animal agriculture under the low-hanging fruit of these provisions with the hopes of future implementation of broader CAA regulation of CAFOs.¹²⁸ The CAA has technology-forcing measures that would make CERCLA and EPCRA reporting standards look easy.¹²⁹ While Congress has acted to remove this burden for now, the potential for future regulation under other environmental laws is something that is not overlooked by those opposed to the exemption; rather, it may be argued that this legislation only delays “an inevitable reckoning with pollution caused by [an] enormously consolidated agricultural system.”¹³⁰

B. How to Accurately Measure Emissions

If CAFOs must report, how does a farmer or rancher accurately determine if he or she is required to report? The short answer is that no one is quite sure. Unfortunately for CAFOs, the lack of reliable science is not a reason to exempt animal production facilities from the reporting requirements of EPCRA and CERCLA.¹³¹ Animal agriculture has previously argued that “there is no generally accepted methodology or model for estimating” an emission from CAFOs, but that argument was unsuccessful.¹³² Furthermore, neither party in *Waterkeeper Alliance* argued that daily emissions of commercial farms fell below the reporting threshold under both CERCLA and EPCRA.¹³³

128. Danielle M. Purifoy, *EPCRA: A Retrospective on the Environmental Right-to-Know Act*, 13 YALE J. OF HEALTH POL'Y 375, 377–78 (2013) (stating that beyond planning and reporting requirements in EPCRA, “industries have no express obligations under the statute to mitigate releases or to reduce risks to their employees and their surrounding communities. Nevertheless . . . this ‘toothless’ statute has been instrumental not only in improvements in industry transparency to its neighbors and the larger public. Also, and perhaps unexpectedly, in increased self-policing by many industries of their emissions, both to appease investment stakeholders and to prevent costly waste from inefficiencies at their facilities.”); see also 42 U.S.C. § 9659(a) (2012) (explaining the citizens suit provision of CERCLA); 42 U.S.C. § 11046(a)(1) (2012) (explaining the citizens suit provision of EPCRA).

129. See ROBIN KUNDIS CRAIG, ENVIRONMENTAL LAW IN CONTEXT: CASES AND MATERIALS 667 (4th ed. 2016) (“The EPA regulates stationary sources through technology-based emissions limitations.”).

130. Laurie Ristino, *Congress Just Gave Big Agriculture the Pollution Green Light*, THE HILL (Mar. 23, 2018, 02:20 PM) <http://thehill.com/opinion/energy-environment/379971-congress-just-gave-big-agriculture-the-pollution-green-light> [<https://perma.cc/2G7U-ESQD>].

131. *Sierra Club, Inc. v. Tyson Foods, Inc.*, 299 F.Supp.2d 693, 705 (W.D. Ky. 2003).

132. *Id.* at 706.

133. *Waterkeeper All. v. Env'tl. Prot. Agency*, 853 F.3d 527, 531 (D.C. Cir. 2017).

Although the argument “we cannot measure it” may not fly in a D.C. Circuit Court, understanding the difficulties of actually measuring emissions in the feedlot or dairy over 1,600 miles away from benches in Washington, D.C., is important. Uncertainty in accurately determining if you may be subject to large fines and citizen suits is a serious matter facing CAFO operators and managers across the country. The issue is not that the CAFO managers cannot or refuse to do mathematical estimates. The concern becomes whether the estimates are accurate, and accurately estimating emissions is no easy task—the EPA has spent over eleven years researching this very issue and still cannot provide a clear answer.¹³⁴ Likewise, states have, for the most part, avoided regulating CAFO emissions for this very reason.¹³⁵

In order to better understand the difficulty of actually estimating these emissions, a brief overview of the EPA’s attempts to quantify these air components over the last ten years may be helpful.¹³⁶ In 2005, the EPA and the dairy, swine, and poultry industries found some middle ground in which they hoped to make progress with quantifying and reporting air emissions by entering into a voluntary consent agreement known as the Animal Feeding Operations Consent Agreement (the Air Compliance Agreement).¹³⁷ The AFOs were seeking to address the recent lawsuits brought under CERCLA and EPCRA, and the EPA needed funding and cooperation from the agricultural industry to better develop the emissions-measuring methodologies.¹³⁸ Under this Air Compliance Agreement, participating AFOs provided the funding for a two-year, nationwide emissions-monitoring study (National Air Emissions Monitoring Study or NAEMS) of animal confinement structures and manure storage and treatment units in the broiler, egg-layer, swine, and dairy industries.¹³⁹ The goal of this study was to gather accurate emissions data that the EPA could use to develop emissions-estimating methodologies (EEMs).¹⁴⁰ Using these estimates of daily and annual emissions would aid the EPA’s regulation of

134. ENVTL. PROT. AGENCY, EPA 17-P-0396, ELEVEN YEARS AFTER AGREEMENT, EPA HAS NOT DEVELOPED RELIABLE EMISSION ESTIMATION METHODS TO DETERMINE WHETHER ANIMALS FEEDING OPERATIONS COMPLY WITH CLEAN AIR ACT AND OTHER STATUTES 2 (2017).

135. COPELAND, PRIMER, *supra* note 24, at 15.

136. See Amanda Peterka, *EPA Study of CAFO Emissions Grinds on with No End in Sight*, E&E NEWS (June 25, 2014), <https://www.eenews.net/stories/1060001938> [<https://perma.cc/T65M-4EQE>] (“U.S. EPA’s nine-year effort to document air pollution at livestock operations is likely still many years from completion and unlikely to be as useful as industry and environmental groups had hoped.”).

137. Animal Feeding Operations Consent Agreement and Final Order, 70 Fed. Reg. 4,958, 4,959 (Jan. 31, 2005).

138. *Id.* at 4,958, 4,963.

139. *Id.* at 4,961.

140. *Id.*

AFOs under the CAA, CERCLA, and EPCRA.¹⁴¹ Over 2,500 AFOs, representing nearly 14,000 facilities, received the EPA's approval to participate in the Air Compliance Agreement.¹⁴² Notably, all AFOs that "chose to participate in the Air Compliance Agreement and [met] all its conditions [received] . . . a limited release and covenant not to sue from liability for certain past and ongoing CAA, CERCLA and EPCRA violations."¹⁴³ The Air Compliance Agreement raised over \$14 million to fund NAEMS.¹⁴⁴

With the EPA's oversight and monitoring, NAEMS began in the summer of 2006.¹⁴⁵ The study was implemented at 27 representative broiler, egg-layer, swine, and dairy operations in ten states (California, Indiana, Iowa, Kentucky, New York, North Carolina, Oklahoma, Texas, Washington, and Wisconsin).¹⁴⁶ Interestingly, beef production, which accounts for the largest recoverable nitrogen percentage of all livestock and poultry species, was markedly not represented in these studies.¹⁴⁷ In February of 2012, the EPA released a draft version of the results from NAEMS and asked the Science Advisory Board (SAB), a board made up of some of the top scientists, engineers, and professors from universities all across the country, to review and provide advice on scientific issues associated with development of the EEMs.¹⁴⁸

In April of 2013, the SAB produced a review of the EEMs and ultimately concluded that the EPA's statistical models would have "a limited ability to accurately predict emissions" beyond the small number of farms in the dataset and that the "models used in the current EEMs were not suitable for use outside the range of parameter values in the current data."¹⁴⁹ In July of 2013, the EPA responded to the SAB's review and stated that the EPA would continue to "work diligently in the coming

141. See U.S. ENVTL. PROT. AGENCY, EPA-SAB-13-003, SAB REVIEW OF EMISSIONS-ESTIMATING METHODOLOGIES FOR BROILER ANIMAL FEEDING OPERATIONS AND FOR LAGOONS AND BASINS AT SWINE AND DAIRY ANIMAL FEEDING OPERATIONS 11 (2013), (describing that a limited sample in developing EEMs may not be effective in controlling emissions more broadly).

142. *Id.* at A-3.

143. Animal Feeding Operations Consent Agreement and Final Order, 70 Fed. Reg. at 4,959.

144. U.S. ENVTL. PROT. AGENCY, *supra* note 134, at 6.

145. NAEMS: National Air Emissions Monitoring Study, PURDUE UNIVERSITY <https://engineering.purdue.edu/~odor/NAEMS/index.htm> [<https://perma.cc/SZ46-TA9P>] (2006).

146. U.S. ENVTL. PROT. AGENCY, *supra* note 134, at 7.

147. See U.S. ENVTL. PROT. AGENCY, ANIMAL FEEDING OPERATIONS – 2012 MONITORED AFOs, 1 <https://archive.epa.gov/airquality/afo2012/web/html/index.html> [<https://perma.cc/NTG9-MGRG>] (last updated on July 11, 2016) (identifying pork, broiler chickens, egg-laying operations, and dairies as categories of animal feeding operations included the study, with the noticeable absence of beef production).

148. *Id.*; U.S. ENVTL. PROT. AGENCY, SAB REVIEW OF EMISSION, *supra* note 141, at A-1.

149. U.S. ENVTL. PROT. AGENCY, SAB REVIEW OF EMISSION, *supra* note 141, at 2.

months to develop appropriate emissions-estimating methodologies for animal-feeding operations throughout the U.S.”¹⁵⁰ This appears to be the most recent update on this matter.

In sum, over ten years have passed since NAEMS began, and there still appears to be challenges to determining the best way to accurately measure emissions from CAFOs.¹⁵¹ In defense of the EPA, the Agency has diligently worked to find a solution to the emissions-measuring issues; however, a reliable and accurate formula that can be applied to fit a certain species, in a certain part of the country, fed a certain diet, and with a certain manure-management system has yet to be found.¹⁵² Because of this uncertainty, the CERCLA rule that went into effect on January 22, 2018, offers CAFOs a range of options in selecting a formula that fits them.¹⁵³

C. What Can Be Done in the Long Term with These Reporting Requirements?

In analyzing the situation post-*Waterkeeper Alliance v. EPA*, the agricultural industry is at an important crossroads. “Two roads diverged in a yellow wood” for production agriculture, and the path it decides to travel down may very well impact its future regulatory burden, the future viability of the industry, and its footprint on the environment.¹⁵⁴

1. Forced Regulation Through Litigation

This is the road that production agriculture is currently on. Environmental groups, through expensive and time-consuming court cases, have slowly chipped away at the exemptions that agriculture has enjoyed under environmental regulations.¹⁵⁵ These groups are often active, well-

150. Letter from Bob Perciasepe, Acting Admin., Env'tl. Prot. Agency, to David T. Allen, Chairman, Science Advisory Bd. (July 15, 2013), [https://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/08A7FD5F8BD5D2FE85257B52004234FE/\\$File/EPA-SAB-13-003_Response_07-15-2013.pdf](https://yosemite.epa.gov/sab/SABPRODUCT.NSF/81e39f4c09954fcb85256ead006be86e/08A7FD5F8BD5D2FE85257B52004234FE/$File/EPA-SAB-13-003_Response_07-15-2013.pdf) [<https://perma.cc/9D95-SFC8>].

151. EPA, CERCLA/EPCRA 2018 GUIDANCE DOCUMENT, *supra* note 6 (“EPA recognizes that it will be challenging for farmers to estimate releases from animal wastes because there is no generally accepted methodology for estimating these emissions at this time.”).

152. EPA, CERCLA/EPCRA 2018 GUIDANCE DOCUMENT, *supra* note 6.

153. ENVTL. PROT. AGENCY, FACT SHEET NO: 520-F-17-001, CERCLA AND EPCRA REPORTING REQUIREMENTS FOR AIR RELEASES OF HAZARDOUS SUBSTANCES FROM ANIMAL WASTE AT FARMS I (2018).

154. Robert Frost, *The Road Not Taken*, POETRY FOUNDATION, <https://www.poetryfoundation.org/poems/44272/the-road-not-taken> [<https://perma.cc/U4SP-NR9G>] (last visited Feb. 3, 2018).

155. Shannon L. Ferrell & Tiffany D. Lashmet, *One If By Land, Two If By Sea, Three If By Air: The Changing Face of Environmental Regulation of Production Agriculture*, in STATE BAR OF

funded, and not afraid of an agriculture industry that refuses to acknowledge them as an opponent worth meddling with. However, but for commenters who participated in the EPA's rulemaking process for the 2008 Final Rule and cases like *Waterkeeper Alliance v. EPA*, production agriculture would likely still be exempt from reporting its emissions.¹⁵⁶

Furthermore, because the federal statutory scheme currently does not fit these environmental groups' goals in regard to regulating CAFOs, it is likely they will continue to attempt to try to "fit a square emission into a round regulation."¹⁵⁷ Ammonia and hydrogen sulfide may just be the beginning. While this paper has focused solely on these two pollutants, enteric fermentation and manure management are two of the top four sources of methane, a GHG, in the United States.¹⁵⁸ The next four years may provide a short respite from new climate and environmental regulations in the United States; however, the rest of the world is moving forward with attempts (such as the Paris Agreement) to find solutions to mitigate future climate impacts.¹⁵⁹ The question is no longer whether such external pressures from climate and environmental regulations should be applied to agriculture; rather, it is when these pressures will be applied to agriculture and how. If agriculture is unwilling to take a proactive seat at the table when the United States begins to implement similar climate regulations, it is unlikely that the application of such regulations will be favorably applied to the industry.

2. Congressional Amendments to CERCLA and EPCRA

This route attempts to revert the regulatory situation back to the status quo and is the easiest in terms of actual management practices at CAFOs.

TEXAS, 10TH ANNUAL JOHN HUFFAKER AGRICULTURAL LAW COURSE 7 (2016) (stating that agriculture exemptions are continuing to be eroded "by pressure from a number of sectors" and discussing the *Waterkeeper* case).

156. See *Waterkeeper All. v. Env'tl. Prot. Agency*, 853 F.3d 527, 536 (D.C. Cir. 2017) (discussing that public comments on the Final Rule issued by the EPA undercut the EPA's justification for exempting farms from reporting emissions).

157. Ferrell & Lashmet, *supra* note 155, at 7. (discussing how EPCRA was not designed to regulate byproduct emission from livestock operations and that agriculture should take a proactive approach to assist in finding a "right tool for the job").

158. See EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2015, *supra* note 56, at ES-6 (identifying enteric fermentation, natural gas systems, landfills, and manure management as the top four sources of methane).

159. See Philip Rucker & Jenna Johnson, *Trump Announces U.S. Will Exit Paris Climate Deal, Sparking Criticism at Home and Abroad*, WASH. POST (June 1, 2017), https://www.washingtonpost.com/politics/trump-to-announce-us-will-exit-paris-climate-deal/2017/06/01/fbc0196-46da-11e7-bcde-624ad94170ab_story.html [https://perma.cc/8L64-3KAN] (discussing how pulling out from the Paris Climate Agreement will take four years—slightly longer than President Trump's first term).

This option is the one that eventually took the prize (for now), as the Omnibus Bill exempts CAFOs from reporting “air emissions from animal waste at a farm.”¹⁶⁰ However, this was never a guaranteed option. On at least two occasions (2004 and 2017), dozens of Senators wrote to the EPA Administrator either to ask the Agency to clarify the reporting requirements of CERCLA and EPCRA or to limit the reporting requirements under these two laws for livestock and poultry operations.¹⁶¹ These letters demonstrate that Congress is aware that livestock producers face uncertainty and may be targeted for enforcement actions under these laws.¹⁶² However, asking the executive branch to find a way to lessen the regulatory burden of Congress’s legislation on the agriculture industry, especially in the aftermath of the D.C. Circuit’s decision in *Waterkeeper Alliance*, is an unlikely strategy to create real change. The EPA is only given so much deference by the courts, and the second highest court in the land struck down the EPA’s actions to create an exception in its 2008 rule.¹⁶³

Nevertheless, the Senators are not limited to writing letters if they truly want to provide relief to the agriculture industry under these regulations. In 2011, both the House and the Senate introduced bills that would amend CERCLA in order “to clarify that manure is not considered a hazardous substance, pollutant, or contaminant under the Act.”¹⁶⁴ The amendments failed to gain the needed traction.¹⁶⁵ However, if Congress would like to see CAFOs exempt from CERCLA and EPCRA reporting requirements, it will have to, again, attempt to amend and exclude animal production facilities from these reporting requirements.¹⁶⁶ Congress clearly knew how to exempt certain items under CERCLA and EPCRA as demonstrated by the fertilizer exclusion, which exempts “the normal application of fertilizer” from the definition of release.¹⁶⁷ With the FARM Act’s inclusion within the Omnibus Bill, this exemption has been expanded to also apply to animal waste as well.

160. Consolidated Appropriations Act, 2018, H.R. 1625, 115th Cong. (2d Sess. 2018).

161. Press Release, Miss. Senator Urges Appeal of D.C. Circuit Decision That Would Create Undue Burdens for America’s Farmers & Ranchers, *supra* note 110.

162. COPELAND, LAWS AND LEGISLATIVE ISSUES, *supra* note 78, at 7.

163. *Waterkeeper All. v. Env’tl. Prot. Agency*, 853 F.3d 527, 537–38 (D.C. Cir. 2017).

164. H.R. 2997, 112th Cong. (2011) (amending CERCLA to provide an exception for manure); S. 1729, 112th Cong. (2011) (amending CERCLA to clarify manure’s status under the regulation).

165. *H.R. 2997 (112th): Superfund Common Sense Act*, GOVTRACK, <https://www.govtrack.us/congress/bills/112/hr2997/details> [<https://perma.cc/VWL8-QXAK>] (last visited Mar. 19, 2018) (explaining that no vote on the bill ever took place).

166. *See Sierra Club v. Tyson Foods*, F. Supp. 2d 693, 705–06 (W.D. Ky. 2003) (explaining that courts interpret the fact that animal production facilities are not excluded from regulations as evidence that Congress did not intend to exclude such facilities).

167. COPELAND, LAWS AND LEGISLATIVE ISSUES, *supra* note 78, at 2.

Congress is making a similar push to exempt animal waste from the Resource Conservation and Recovery Act (RCRA), an act that governs the treatment, storage, and disposal of solid and hazardous waste.¹⁶⁸ While unsuccessful, the Farm Regulatory Certainty Act was introduced in the U.S. House in 2016 to amend RCRA to clarify that RCRA does not “govern animal waste, manure, or fertilizer, or constituents derived from such sources, or the ways in which they are managed, stored, handled, or applied by agricultural operations.”¹⁶⁹ As the Omnibus Bill demonstrates, congressional amendments to these statutes will tremendously reduce the regulatory burden on agriculture.

3. A Proactive Approach by the Agriculture Industry

Today’s modern agriculture is more innovative and efficient than ever, even as the demand for its products and outside pressures continue to increase.¹⁷⁰ The American farmer and rancher does more with less today than ever before, and it is this type of spirit and drive that may be the answer to helping find solutions to emissions problems from animal agriculture.¹⁷¹ Rather than continuing to play defense against environmental groups or waiting for the legislature to amend laws in order to provide preferential exemptions, production agriculture can take “the bull by the horns” and proactively work with the EPA to find solutions for its emissions. Such voluntary efforts by animal agriculture to define for itself the best ways to manage and regulate emissions will likely be more industry friendly and feasible than any rule created through litigation with the Sierra Club or the Animal Legal Defense Fund. While a lofty goal, the Air Compliance Agreement is an example of previous cooperation in this area.¹⁷²

168. See 42 U.S.C. § 6901(a) (2012) (explaining RCRA’s coverage of solid waste and exemption of animal waste).

169. Farm Regulatory Certainty Act, H.R. 5685, 114th Cong. (2016).

170. See Maarten Elferink & Florian Schierhorn, *Global Demand for Food Is Rising. Can We Meet It?*, HARV. BUS. REV. (Apr. 7, 2016), <https://hbr.org/2016/04/global-demand-for-food-is-rising-can-we-meet-it> [<https://perma.cc/9Q76-3G4R>] (identifying rising population, climate change, and deforestation as pressures of modern agriculture).

171. See U.S. FARMERS & RANCHERS ALL., AGRICULTURE IN AMERICA SUSTAINABILITY REPORT 11 (2017) (“As consumers’ demand for sustainably-grown food intensifies, farmers and ranchers in the U.S. are using data and technology to become more efficient, nimble, and more equipped to protect the planet’s resources while producing food.”).

172. Animal Feeding Operations Consent Agreement and Final Order, 70 Fed. Reg. 4,958 (Jan. 31, 2005) (offering animal feed operations the chance to comment and sign a consent agreement to avoid time consuming litigation. The Air Compliance Agreement offers agency help to lower the cost of measuring emissions).

Cooperative efforts will require the development of best management practices to help manage and mitigate emissions, and they may take on several different forms and vary industry by industry within production agriculture. Some of these best management practices can be split into either “pre-excretion strategies” or “post-excretion strategies.”¹⁷³ Pre-excretion strategies can include diet manipulation where the use of feed additives and accurate feeding of dietary protein and amino acids (as well as sulfur) can be used to minimize the amount of nitrogen and sulfur (and thus ammonia and hydrogen sulfide) that may end up in urine and manure.¹⁷⁴ For instance, modification of the diet of feedlot cattle, through altering diet digestibility or the inclusion of additives, can change ammonia and methane emissions by 20-50%.¹⁷⁵

Post-excretion strategies focus on ways to manage and treat the manure in order to minimize emissions.¹⁷⁶ For example, application of chemicals to manure may help reduce the amount of ammonia that is released.¹⁷⁷ Furthermore, covering the facilities that store manure may help minimize the amount of ammonia released, and the use of more dry storage techniques, compared with wet storage, may reduce the amount of hydrogen sulfide released.¹⁷⁸ For facilities that house livestock and poultry inside, ventilation systems can be equipped with filters or treatment systems that may capture emissions from being released into the air outside the building.¹⁷⁹ Compared with surface manure application, sub-surface manure application with injectors has been shown to limit ammonia losses.¹⁸⁰ Finally, as the technology improves and becomes more economical, anaerobic digesters may prove to be the most promising solution for reducing emissions. Anaerobic digesters are closed systems that utilize an anaerobic process to break down animal waste to produce biogas, which can then be used to fuel the system.¹⁸¹ This system can help reduce odors and emissions of GHGs, ammonia, and hydrogen sulfide while providing a CAFO a source of renewable energy.¹⁸²

173. GAY & KNOWLTON, *supra* note 41, at 4.

174. NAT'L RESEARCH COUNCIL, *supra* note 17, at 36–38.

175. Cole, *supra* note 25, at 4.

176. GAY & KNOWLTON, *supra* note 41, at 4.

177. *Id.*

178. *Id.*

179. *Id.*

180. *Id.*

181. ENVTL. PROT. AGENCY, AGSTAR, RECOVERING VALUE FROM WASTE: ANAEROBIC DIGESTER SYSTEM BASICS 1 (2011).

182. *Id.*

CONCLUSION

America's modern animal agriculture is no longer the industry it was 50 years ago. It is more advanced, more confined, and more efficient than ever while continuing to provide the safest and most affordable source of quality protein for the world to enjoy. However, these advancements have not remained unnoticed by environmental groups, which have established a desire to end the preferential treatment under federal environmental regulations from which production agriculture benefits. While most of this regulation has dealt with water quality, *Waterkeeper Alliance v. EPA* demonstrates that courts will not provide an exemption for air emissions for animal agriculture unless Congress creates one. Livestock and poultry operations may argue that CERCLA and EPCRA were never intended to apply to the air coming off rural farms and that the reporting requirements from these operations are not useful in protecting the environment. However, this position is a precarious one, as the same argument was made unsuccessfully in applying the CAA to GHGs in *Massachusetts v. EPA*.¹⁸³ These arguments aside, production agriculture is at a crossroads. Regulations are only going to increase in the coming years. Agriculture can either choose to take a proactive approach to help find workable solutions to these difficult issues, or it can continue to believe it is above the law and watch idly from the sidelines as the courts and interest groups set these regulations for it.

183. *Massachusetts v. Env'tl. Prot. Agency*, 549 U.S. 497, 528–30 (2007).