

Air Pollution From Oregon's Large Dairies

Air pollution from the state's growing number of exceedingly large mega-dairies threatens Oregon's public health and iconic views. Yet the Oregon Department of Agriculture neither monitors nor regulates such air pollution through current CAFO permit laws. SB 197 would require the establishment of a Dairy Air Emissions Program based on the consensus proposal of the Oregon Dairy Air Quality Task Force. It is past time for Oregon to address air pollution from large dairy operations.



(top) Untreated feces and urine from cattle at the Threemile Canyon Farms complex are stored in massive open cesspools; (bottom) Confining cattle means the waste from the animals must be managed. Unlike human waste, animal waste is untreated before being spread onto neighboring crop land.

Introduction

Over the last 20 years, Oregon has seen an increase in large dairy farms in the state. These large dairy concentrated animal feeding operations (CAFOs), the largest of which are sometimes referred to as factory farms, present serious challenges to air and water quality, as well as to local quality of life.¹ Large dairy CAFOs — those with over 700 cows — must obtain a permit to address how the vast quantities of manure produced will be handled to protect water quality.² Yet there are no similar requirements to address the many air pollutants released by these operations.³

In 2008, the Oregon State Legislature passed a bill to address air emissions from dairies.⁴ A task force comprising government officials, Oregon State University faculty, members of the dairy industry, family farm organizations, and environmental and public health professionals “strongly” recommended a course of action — yet nearly a decade has passed with no further action.⁵

SB 197 would require that by January 2019, state agencies responsible for environmental quality and agriculture establish a Dairy Air Emissions Program based on the consensus proposal of the Oregon Dairy Air Quality Task Force.⁶ It is past time for Oregon to have a plan in place to address air pollution from the largest dairy operations.



The Threemile Canyon Farm complex where massive barns contain tens of thousands of cattle.

More Cows, Fewer Farms: Oregon's Changing Dairy Industry

The average size of a large dairy herd in Oregon nearly doubled between 1997 and 2012, and the number of dairy cows in the state more than tripled in that same time frame.⁷ In 1997, Oregon had 8 mega-dairies with over 1,000 cows, and as of 2012 it had 25 such facilities.⁸ Meanwhile, the number of mid-sized dairies in Oregon dropped by a third just between 2007 and 2012.⁹

The largest dairy in Oregon, also billed as one of the largest in the nation, is Threemile Canyon Farms, which houses an astonishing 70,000 cows.¹⁰ Mega-dairies such as these produce as much sewage waste as the human population of a major city.¹¹

The proposal of another mega-dairy has revived controversy about Oregon's inadequate air regulations. The Lost Valley Ranch would add another 30,000 dairy cows near Threemile Canyon, making it the second largest dairy in the state.¹² This area already faces high nitrate levels in the groundwater, declining groundwater levels, and concerns about air quality and haze, to which emissions from dairies contribute.¹³

Thousands of comments have been submitted to the Oregon Department of Agriculture (ODA) in response to Lost Valley Ranch's draft water pollution permit, many of which have expressed concerns beyond the water quality issues that the permit addresses.¹⁴ Public concerns include increased air pollution and odors and decreased quality of life for nearby residents.¹⁵

The Confederated Tribes of the Umatilla Reservation filed public comments on the Lost Valley Ranch raising a number of concerns and questions about the project's impacts on groundwater and surface water quality.¹⁶ The U.S. Forest Service cited the proposed CAFO as a threat to the Columbia River Gorge National Scenic Area, requesting that the CAFO operators "disclose the emissions rates of all air pollutants from this proposed facility" and mitigate emissions to prevent haze in the Gorge.¹⁷

Despite the threat of increased air pollution, ODA does not address these concerns through the current CAFO permitting process.¹⁸ SB 197 would empower the Environmental Quality Commission and ODA to regulate air emissions from large dairy CAFOs.¹⁹

Emissions From Mega-Dairies Impact Oregon

The Oregon Dairy Air Quality Task Force examined a wide body of scientific literature regarding major air pollutants from large dairy farms — none of which Oregon currently regulates from livestock operations.²⁰ These pollutants include:

- ammonia,
- hydrogen sulfide,
- methane,
- volatile organic compounds,
- nitrogen oxides,
- particulate matter,
- odors.²¹

Decomposing manure stored in large holding pits releases ammonia and hydrogen sulfide gases in

concentrations that are potentially harmful to nearby residents.²² The U.S. Government Accountability Office reported that storing large quantities of livestock manure on factory farms could cause emissions of “unsafe quantities” of ammonia, hydrogen sulfide and particulate matter.²³

Ammonia and hydrogen sulfide exposure irritates the respiratory system, among other symptoms — and at high doses, it can cause death.²⁴ Both pollutants also contribute to the odors associated with factory farms.²⁵ Hydrogen sulfide releases from factory farms have contributed to excess diagnoses of respiratory and digestive disturbances, and workers in these facilities experience high levels of asthma-like symptoms, bronchitis and other respiratory diseases.²⁶ In liquid manure holding pits, releases of hydrogen sulfide can exceed lethal levels when waste from the lagoons is agitated prior to being pumped out of the pit.²⁷

Large dairy CAFOs have the potential to threaten entire communities. One 1,500-cow dairy in Minnesota re-



Dairy cattle are fed nutrient dense diets to increase milk production. The rich diets lead to an increase in the amount of gases emitted by each cow, which can contribute to global warming.

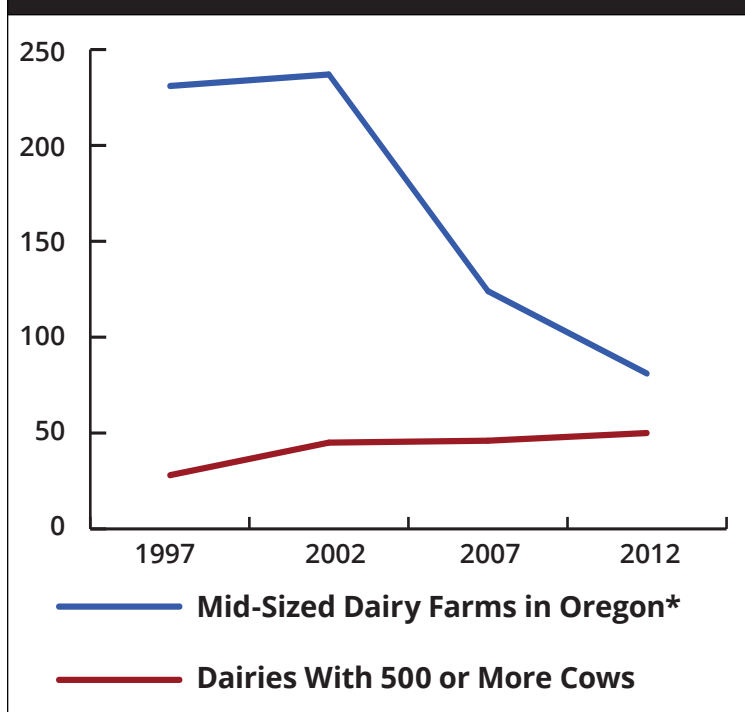
leased so much hydrogen sulfide gas in 2008 that the state evacuated nearby residents and declared the dairy a public health hazard.²⁸ Residents had complained about odors from the dairy for years before the state began monitoring hydrogen sulfide emissions in the area, which soon revealed high emissions.²⁹

Ammonia and nitrous oxides are two of the three major components of haze pollution that affect the Columbia River Gorge Scenic Area, Crater Lake National Park and Oregon's other natural treasures. They also contribute to acid rain, which threatens ecosystems and Native American rock paintings.³⁰ The Oregon Department of Environmental Quality reports that livestock manure management, which includes field applications of manure, is “by far the most significant source of ammonia” contributing to regional haze.³¹ When operating with just over 50,000 cows in 2005, Threemile Canyon Farms reported ammonia emissions that ranked among the highest reported in the nation.³²

Mega-Dairy Emissions Contribute to Climate Change

Mega-dairies in Oregon contribute significantly to climate change. Methane and nitrous oxides are potent greenhouse gases.³³ According to the U.S. Environmental Protection Agency, livestock production is the dominant source of the greenhouse gas methane in

FIGURE 1



SOURCE: U.S. Department of Agriculture Census of Agriculture 1997, 2002, 2007, 2012.

*“Mid-Sized Dairy Farm” refers to a dairy with between 50 and 199 cows.



Gestating milk cows loaf on dirt lots before being moved into the dairy operation for milking once they have had their calves. Cows in these operations do not have the opportunity to graze on pasture.

the United States, and manure management is the fastest growing major source of methane, increasing by more than 50 percent between 1990 and 2008.³⁴

Climate change threatens the viability of agriculture as a whole, including the dairy industry. Animals stressed by the warmer weather that climate change brings grow more slowly and produce less milk, increasing farmers' costs.³⁵ Raising cows on well-managed pastures offers the opportunity to significantly reduce greenhouse gas emissions from the farm system and to improve the farm's resilience to climate change.³⁶ Yet cows at factory farms do not spend most of their time on pasture. Instead, their manure is stored in large pits where it decomposes and releases methane.³⁷

SB 197: The Right Solution

Oregon's lack of oversight of air pollution from large dairies leaves the state vulnerable to an influx of these facilities, even as other states take action. California's state law passed in 2016, for example, requires state agencies to adopt regulations that

will significantly reduce methane emissions from the dairy factory farm industry.³⁸ It is important for Oregon to maintain high regulatory standards, or Oregon could attract the worst actors and bear more of the factory farm pollution burden than neighboring states.³⁹ The bill would also create a fairer playing field and help keep Oregon's remaining small and mid-sized dairies on the land.

SB 197 would create long-overdue oversight of the rapidly expanding dairy industry. The Task Force's recommendations included a mandatory program to monitor and reduce air emissions from all dairy CAFOs large enough to have or need a CAFO permit. New dairies would be required to participate from start-up, and existing dairies could receive tax incentives and technical assistance to ease compliance. The program would focus on promoting best management practices to reduce emissions of ammonia, methane and odors.⁴⁰ The bill would require state agencies to consult with diverse stakeholders through a rules advisory committee.⁴¹

The undersigned organizations urge passage of this bill.

- Food & Water Watch
- Center for Biological Diversity
- Center for Food Safety
- Columbia Riverkeeper
- Friends of Family Farmers
- Friends of the Columbia Gorge
- Humane Oregon
- Humane Society of the U.S.
- Oregon Chapter Sierra Club
- The Socially Responsible Agricultural Project

Endnotes

1 This document's use of the term "CAFO" refers to federally defined Large CAFOs, meaning dairies with at least 700 mature dairy cattle as defined by the U.S. Environmental Protection Agency (EPA), as opposed to the broader term "confined animal feeding operation" as defined under Oregon state regulations (Oregon Administrative Rule 340-051-0010). U.S. EPA, "Regulatory Definitions of Large CAFOs, Medium CAFOs, and Small CAFOs. Available at https://www3.epa.gov/npdes/pubs/sector_table.pdf and on file at Food & Water Watch. Accessed February 9, 2017.

2 Oregon Administrative Rule 603-074-0005.

3 Plaven, George. "Boardman megadairy up for further review." *East Oregonian*. October 5, 2016; Oregon Administrative Rule 603-074-0005. Oregon Department of Agriculture Confined Animal Feeding Operation Program.

4 Oregon Dairy Air Quality Task Force (ODAQTFF). "Final Report to the Department of Environmental Quality and Department of Agriculture." 2008 at 3.

- 5 *Ibid.* at 4 and 8; Loew, Tracy. "Second mega-dairy proposed for Oregon." *Statesman Journal*. July 25, 2016.
- 6 Oregon SB 197, Section 2(2), Section 5(1). 2017.
- 7 See: Food & Water Watch. Factory Farm Map. www.factoryfarm-map.org; Food & Water Watch calculations based on U.S. Department of Agriculture (USDA) Census of Agriculture 1997 and 2012.
- 8 Food & Water Watch calculation of USDA National Agriculture Statistics Service. 2002 Census of Agriculture State Data – Oregon. Table 12. Cattle and Calves – Inventory: 2002 and 1997; USDA National Agriculture Statistics Service. 2012 Census of Agriculture State Data – Oregon. Table 12. Cattle and Calves – Inventory: 2012 and 2007.
- 9 Food & Water Watch calculation of USDA National Agriculture Statistics Service. 2012 Census of Agriculture State Data – Oregon. Table 12. Cattle and Calves – Inventory: 2012 and 2007. A mid-sized dairy is one with between 50 and 199 cows.
- 10 Loew (July 25, 2016); Plaven, George. "Cold Springs Dairy fills increasing demand for organic milk." *East Oregonian*. April 28, 2016; Threemile Canyon Farms. "Our Story." Available at <http://www.threemilecanyonfarms.com> and on file at Food & Water Watch. Accessed February 15, 2017.
- 11 Food & Water Watch calculation based on U.S. EPA. "Risk Assessment Evaluation for Concentrated Animal Feeding Operations." (EPA/600/R-04/042.) May 2004 at 9; USDA Natural Resources Conservation Service. "Agricultural Waste Management Field Handbook." Chapter 4, Agricultural Waste Characteristics. March 2008 at 4-12 to 4-20; U.S. Census Bureau. "Quick Facts Oregon." <http://www.census.gov/quickfacts/table/PST045216/41>. Accessed February 2, 2017 and on file at Food & Water Watch.
- 12 Loew (July 25, 2016); Loew, Tracy. "Proposed mega-dairy draws protests." *Statesman Journal*. August 5, 2016.
- 13 Loew (July 25, 2016); Oregon Department of Environmental Quality. "Oregon Regional Haze Plan: 5-Year Progress Report and Update." February 2016 at i and 21.
- 14 Loew (August 5, 2016).
- 15 *Ibid.*; Loew, Tracy. "Oregon approves five controversial dairy expansions." *Statesman Journal*. January 7, 2016.
- 16 Haire, David, Program Manager, Department of Natural Resources Water Resources Program, Confederated Tribes of the Umatilla Indian Reservation Tribal Water Commission. Letter of Public Comment re: Draft NPDES Permit for Lost Valley Ranch CAFO to Wym Matthews, Oregon Department of Agriculture CAFO Program. November 4, 2016.
- 17 Burditt, Lynn, Area Manager, USDA Forest Service Columbia River Gorge National Scenic Area. Letter of Public Comment re: Draft NPDES Permit for Lost Valley Ranch CAFO to Wym Matthews, Oregon Department of Agriculture CAFO Program. August 4, 2016.
- 18 Loew (August 5, 2016); Loew (January 7, 2016).
- 19 Oregon SB 197, Section 2(2), 3(1). 2017.
- 20 See: ODAQTF. "Final Report to the Department of Environmental Quality and Department of Agriculture." 2008; ODAQTF. "Technical Support Document for Dairy Air Quality Task Force Report." 2008; Loew (August 5, 2016).
- 21 ODAQTF "Technical Support Document for Dairy Air Quality Task Force Report." 2008 at 32 to 38.
- 22 Iowa State University and the University of Iowa Study Group. "Iowa Concentrated Feeding Operations Air Quality Study." February 2002 at 6.
- 23 U.S. Government Accountability Office (GAO). "Concentrated animal feeding operations." (GAO-08-044.) September 2008 at 7.
- 24 ODAQTF. "Technical Support Document for Dairy Air Quality Task Force Report." 2008 at 36; U.S. EPA. "Toxicological review of hydrogen sulfide." CAS No. 778-06-4. June 2003 at 10.
- 25 Hoover, J. Nicholas. "Can't you smell that smell? Clean Air Act fixes for factory farm air pollution." *Stanford Journal of Animal Law and Policy*. Vol. 6. 2013 at 19 to 21.
- 26 Donham, Kelly J. et al. "Community health and socioeconomic issues surrounding concentrated animal feeding operations." *Environmental Health Perspectives*. Vol. 115, Iss. 2. February 2007 at 317 to 318.
- 27 Iowa State University and the University of Iowa Study Group (2002) at 118 and 124.
- 28 "Residents living near northwestern Minn. feedlot evacuate." *Associated Press/Bemidji Pioneer* (Minnesota). June 10, 2008.
- 29 Meersman, Tom. "Dairy odors drive out families, but attract lawsuit." *Minneapolis Star Tribune*. June 20, 2008; Meersman, Tom. "Thief River Falls feedlot declared public health hazard." *Minneapolis Star Tribune*. October 7, 2008.
- 30 ODAQTF. "Final Report to the Department of Environmental Quality and Department of Agriculture." 2008 at 6 to 7; ODAQTF. "Technical Support Document for Dairy Air Quality Task Force Report." 2008 at 41 to 42.
- 31 Oregon Department of Environmental Quality. "Oregon Regional Haze Plan: 5-Year Progress Report and Update." February 2016 at i and 21.
- 32 Lindy, Tom. Perkins Cole. Letter to EPA Regional Office. Re: CR-ENS Number 754198. April 5, 2005; Food & Water Watch analysis of U.S. EPA. Toxic Release Inventory, 2005, Ammonia. Available at https://iaspub.epa.gov/triexplorer/tri_release.chemical and on file at Food & Water Watch. Accessed February 10, 2017; Food & Water Watch analysis of U.S. Coast Guard. National Response Center. 2005 Data. Available at <http://nrc.uscg.mil> and on file at Food & Water Watch. Accessed February 10, 2017.
- 33 U.S. EPA. "Greenhouse Gas Emissions: Overview of Greenhouse Gases." Available at <https://www.epa.gov/ghgemissions/overview-greenhouse-gases> and on file at Food & Water Watch. Accessed February 15, 2017; EPA. "
- 34 U.S. EPA. "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008." Table 2-1. April 15, 2010 at 2 to 4.
- 35 Walthall, C.L. "Climate Change and Agriculture in the United States: Effects and Adaptation." USDA Technical Bulletin 1935. 2012 at 36 and 94.
- 36 Delgado, Jose et al. "Conservation practices to mitigate and adapt to climate change." *Journal of Soil and Water Conservation*. Vol. 66, No. 4. July/August 2011 at 121A; U.S. EPA (April 15, 2015) at 5 to 8.
- 37 U.S. EPA (April 15, 2015) at 5 to 8.
- 38 California S.B. 1383. 2016; Njuki, Eric and Boris E. Bravo-Ureta. "Alternative policies to address emissions in U.S. dairy farming." *Choices: A publication of the Agricultural and Applied Economics Association*. Vol. 31, Iss. 4. Fourth quarter 2016 at 2.
- 39 ODAQTF. "Final Report to the Department of Environmental Quality and Department of Agriculture." 2008 at 9.
- 40 *Ibid.* at 9 to 10.
- 41 Oregon SB 197, Section 2(3). 2017.