

Factory Farm Impacts

Fact Sheet

Socioeconomic Impacts

Factory farms decrease the quality of life in rural communities.

- Communities with factory farms have wider social and economic gaps than communities with small, locally-owned and operated farms. (Pew p. 42)
 - Factory farms affect the “size of the middle class, family income levels and poverty rates, quality of public schools, and strength of civil society organizations (such as churches and civic organizations).” (Pew p. 42)
 - Factory farms are related to greater income inequality between the affluent and the poor, and greater poverty in communities generally. (Stofferahn p. 18)
 - Residents in factory farm communities, where agribusiness influence is heavy, tend to have less control over local decisions. (Pew p. 42; Stofferahn p. 18)
- Factory farm odors impair the social life of communities. (Pew p. 42)
 - Nearby factory farms disrupt routines that “normally provide a sense of belonging and identity – backyard barbecues, church attendance, and visits with friends and family.” (Pew p. 42)
 - The factory farms create feelings of “violation, isolation, and infringement” in place of freedom and independence. (Pew p. 42)
 - Factory farm communities suffer a decline in community organizations, civic participation, and social life. (Stofferahn p. 18)
 - Factory farm communities tend to have fewer (or poorer-quality) public services and fewer churches. (Stofferahn p. 18)
 - In a North Carolina study of residents within two miles of a 6,000-hog factory farm with an open lagoon, more than half of the respondents were not able to open their windows or go outside in nice weather because of the stench. (Wing & Wolf p. 236)
- Factory farms impair rural “social capital.” (Pew p. 43)
 - Factory farms create rifts and conflict in communities, including threats from factory farms to neighbors. (Pew p. 43; Stofferahn p. 18)
 - Factory farm communities have higher levels of stress, socio-psychological problems, and teen pregnancies. (Pew p. 43; Stofferahn p. 18)
 - Neighbors of corporate-owned factory farms have more negative feelings about “trust, neighborliness, community division, networks of acquaintanceship, democratic values, and community involvement” than those living near independent farms. (Pew p. 43)
 - “Recurrent strong odors, the degradation of water bodies, and increased populations of flies are among the problems caused by CAFOS that make it intolerable for neighbors and their guests to participate in normal outdoor

recreational activities or normal social activities in and around their homes.” (Pew Technical p. 31)

- A Duke University study in North Carolina found “significantly more tension, more depression, more anger, less vigor, more fatigue, and more confusion,” as well as more “total mood disturbance” among residents who lived near large swine factory farm odors as compared to control subjects. (Schiffman et al.)

Factory farms decrease the value of surrounding properties.

- Various factory farm studies have found that: “Industrialization of animal agriculture leads to the reduced enjoyment of property and the deterioration of the surrounding landscape, which are reflected in declining home values and lowering of property tax assessments.” (Pew p. 31)
- Factory farms devalue nearby properties to the extent the factory farms are seen as negative externalities by the marketplace. Factors like stigma, the type of affected property, the distance to the factory farm, physical impacts, engineering/scientific testing, impacts on property use, and marketability can reduce a property’s market value by 50-90%. (Kilpatrick pp. 301-02)
- See “Examples of Properties Devalued by Property Farms” (under “Resources” on this website) for a long list of examples of properties devalued by factory farms.

Factory farms displace small farms.

- From 1982 to 1997, the number of small farms (less than 50 animal units) decreased between 23% and 28%. The number of factory farms with more than 1,000 animal units increased by 47%. (UCS p. 16)
- The number of CAFOs increased 234% from 1982 to 2002 (3,600 → almost 12,000). But the number of all farms raising animals decreased by 61% during the same time period. (GAO pp. 4, 63)

Factory farms hurt local economies.

- Factory farms have a lower “multiplier effect” than smaller farms. Rather than buying supplies and services from local businesses, they tend to buy from outside suppliers. (UCS p. 61)
- Factory farm communities tend to have less retail trade and fewer retail options. (Stofferahn p. 18)
- Factory farms are related to higher unemployment rates in the community. (Stofferahn p. 18)

- Because factory farms rely more on technology than labor, there are fewer decent jobs for local people. Instead, factory farm jobs tend to be low-paying and go to migrant workers who cannot find better jobs. (Pew p. 43)
- Factory farms reduce the local tax base but increase community expenses. For example, they take advantage of tax breaks but create higher road maintenance costs from their truck traffic. (UCS p. 61)
- Factory farms can reduce the residential tax base because they decrease the values of homes in the area. (UCS p. 61)

Factory farms create nation-wide economic burdens.

- Factory farms threaten free-market mechanisms because they control huge portions of the livestock industry. This happens where the four largest firms in an industry control more than 40 percent of the market. For broiler chickens, the four largest firms control 56% of the market; for beef, 83.5%; for hogs, 64%. (UCS pp. 19-20)
- Factory farms prosper through taxpayer subsidies. (UCS p. 29)
 - Farm bill subsidies for commodity grain crops have kept the price of animal feed low for factory farms. (UCS pp. 29-33)
 - CAFOs are major recipients of federal Environmental Quality Incentives Program (EQIP) funds, giving them a competitive advantage over smaller farms. (UCS pp. 37-40)
- Environmental contamination caused by CAFOs costs taxpayers billions of dollars to remediate. A “rough estimate” of the U.S. taxpayer cost to clean up soils under hog and dairy CAFOs is \$4.1 billion. (UCS p. 4)

Factory farms disproportionately affect poor and African American communities.

- In North Carolina and Mississippi, CAFOs are often sited in poor or African American communities. In North Carolina, there were 7.2 times more hog CAFOs in the highest poverty areas as compared to the lowest, and 5 times more in non-white population areas as compared to white. (Hodne p. 28)
- Negative impacts are intensified by reliance on well water and barriers to medical care. (Hodne p. 28)

Factory farms treat animals inhumanely, compromising our ethical values.

- Factory farm animals are raised indoors in small spaces (e.g., veal crates, pig gestation crates, chicken battery cages) that allow only minimal movement and do not allow them to express natural behaviors. (Pew p. 33)

- Factory farm animals are fed unnatural or manipulated diets leading to pain and discomfort. For example, beef cattle in feedlots are usually fed grain instead of the grass for which their digestive systems were designed, often leading to internal abscesses. Laying hens may have their feed restricted to encourage molting and egg laying. (Pew p. 33)
- Factory farm animals are physically altered without pain relief (e.g., tail docking in hogs, beak clipping in chickens, and horn removal in dairy cows). (Pew p. 33)

Environmental & Public Health Impacts

Factory farms contaminate ground and surface waters, creating environmental and public health problems.

- Factory farms generate about 500 million tons of manure per year. (EPA p. 7180)
- Manure and wastewater from factory farms contain pollutants like nutrients (e.g., nitrogen and phosphorus), organic matter, solids, odorous compounds, salts, trace elements (e.g., arsenic, lead, and aluminum), antibiotics, pesticides, hormones, and more than 150 pathogens harmful to human health. (EPA pp. 7235-36)
- Factory farm pollutants reach ground and surface waterways through runoff and erosion; spills and lagoon overflows; direct discharges to surface waters; leaching into soil and groundwater; volatilization and redeposition to the land; and airborne travel through spray irrigation systems and attachment to wind-borne dust. (EPA pp. 7236-37)
 - In Iowa, there were 329 documented manure spills from factory farms from 1992-2002. A 1999 Iowa study also found that 85% of lagoons and ponds sampled on factory farms had seepage rates at or above Iowa's limit. (Hodne pp. 10-12)
 - A Centers for Disease Control study of nine Iowa factory farms found that pollutants likely moved from lagoons through surrounding soil, and over and away from lands where manure was applied. Samples found chemical pollutants and pathogens, metals, bacteria, nitrates, and parasites around the factory farms, with earthen lagoons having the highest levels of chemical pollutants and pathogens. (Campagnolo pp. 3-5)
 - When contaminated water is disturbed, bacteria and other microbes are re-suspended back into the water column for weeks. A North Carolina study on lagoon spills and surface waters found high levels of fecal coliform even 61 days after a spill. (Mallin)
 - A Centers for Disease Control study found that applying manure within 100 feet of a well doubles the likelihood of elevated nitrate levels. The study compared samples from wells that had had manure applied within 100 feet of the wellheads within the past 5 years to samples where no manure was applied. (Domestic Wells Survey)
- Water quality problems are exacerbated when factory farms are clustered together geographically. (GAO pp. 20-21)

- In the San Joaquin Valley in California, where limited water flows, pollution from clustered factory farms results in “long-term accumulation” of pollutants in water bodies. (GAO p. 22)
- Clusters of poultry operations on the Arkansas-Oklahoma border have impaired numerous surface waters in the region and also caused ground water concerns, according to EPA officials. (GAO p. 22)
- Excess nutrients, such as phosphorus and ammonia, lead to eutrophication in surface waters – causing fish kills, toxic algae blooms, red tides, hypoxia, shellfish poisoning, reduced biodiversity, and increased drinking water treatment costs. (EPA pp. 7235, 7238)
 - Nutrients from livestock and poultry operations in the Mississippi River Basin contribute to the largest hypoxic zone in US coastal waters (in the Gulf of Mexico). (EPA p. 7237)
 - CAFO manure also contributes to similar dead zones in the Chesapeake Bay and other important estuary regions along the East Coast. (UCS p.4)
- Organic matter decreases oxygen levels in water bodies as it decomposes, contributing to fish kills and the loss of other aquatic species. (EPA p. 7235)
- Solids like manure, bedding, spilled feed, hair, and feathers increase turbidity in surface waters, which decreases light penetration and hinders beneficial plant growth. They also transport other pollutants and settle on the bottom of water bodies, destroying important aquatic habitat. (EPA p. 7235)
- Manure contains the six pathogens responsible for more than 90% of food and waterborne diseases in humans, including Salmonella, Listeria, E. coli, and Giardia. They can be transmitted directly from manure to surface water and infect humans through things like swimming and shellfish consumption. (EPA pp. 7235-36, 7238)
 - In Walkerton, Ontario, 1,300 cases of gastrointestinal problems occurred and 6 people died from an outbreak of E.coli in May, 2000. The Ontario Ministry of Health and Long-Term Care determined that the likely cause was manure runoff near a drinking water well. (Canada Report)
 - In Milwaukee in 1993, the pathogen Cryptosporidium parvum passed through a water-treatment plant and sickened 403,000 people and killing 54. The pathogen was linked in part to cattle runoff (and also slaughterhouse and human sewage). (Hodne p. 24)
 - At a New York county fair, over 700 people got sick and 2 people died from an E. coli outbreak linked to manure runoff and a septic system. (Hodne p. 24)
- Since 2002, at least 4 peer-reviewed or government studies have directly linked hormones from factory farms with negative effects and malformations in the reproductive systems of aquatic life, laboratory rats, or human cells. (GAO p. 24)
- Nitrogen in manure transforms easily into nitrate form and can cause methemoglobinemia in babies, spontaneous abortions, and increased stomach and esophageal cancers when present in drinking water. It is not removed by conventional

water treatment systems and is especially risky for those using domestic wells. (EPA p. 7238)

- In Indiana in 1996, spontaneous abortions in humans were linked to high nitrate levels in wells near factory farms. (CDC pp. 569-71)
- In 1998, factory farm wastes caused nitrate contamination in 34% of almost 1,600 tested wells near factory farms in North Carolina. 10% of the wells had nitrate levels at or exceeding the drinking water standard. (NC)
- Increased nitrate in well-water is also linked to central nervous system defects in infants whose mothers drank the water. (Hodne p. 23)

Factory farms degrade air quality, creating environmental and public health problems.

- Livestock and manure at factory farms emit ammonia, hydrogen sulfide, particulates, odors, pathogens, methane, and nitrous oxides into the air, contributing to respiratory disease and global warming. (UCS pp. 55-56)
 - Decomposing animal urine and feces release at least 160 different gases, including hydrogen sulfide, ammonia, carbon dioxide, methane, and carbon monoxide. (Pew p. 16)
 - Since 2002, at least 7 peer-reviewed or government studies have directly linked air pollutants from factory farms (e.g., dust, hydrogen sulfide, odor, ammonia) with respiratory inflammation, asthma, allergies, headaches, eye irritation, and nausea. (GAO p. 25)
 - Livestock operations account for about 18% of human-induced greenhouse gas emissions (more than transportation). (LEAD p. 112)
 - Livestock-related emissions cause about 9% of human-induced global carbon dioxide emissions. Deforestation related to livestock-production causes about 2.4 billion tons of carbon dioxide emissions per year. The burning of fossil fuels to produce nitrogen fertilizer for livestock feed produces 41 million tons of carbon dioxide emissions per year. (LEAD pp. 88, 91, 112)
 - The livestock sector is responsible for 65% of human-induced nitrous oxide emissions and 64% of ammonia emissions (mostly from manure). (LEAD pp. xxi, 114).
 - Emissions from lagoons and anaerobic digesters create a global warming potential of 62 for methane and 275 for nitrous oxide over 20 years (compared with 1 for carbon dioxide). (Pew p. 27)
- Residents living near factory farms have higher levels of some diseases, such as respiratory and gastrointestinal illness, and impaired neurobehavioral health. (USC p. 60; Pew p. 17)
 - Children, the elderly, and those with chronic heart or lung disease are particularly vulnerable. (Pew p. 17)
 - Four large epidemiological studies demonstrated “strong and consistent associations” between factory farm air pollution and asthma. (Pew p. 17)
 - Volatile organic compounds emitted from factory farms cause increased neurobehavioral problems in people living near the factory farms. These include more negative mood states like tension, depression, fatigue, and confusion, and

neuropsychiatric abnormalities like impaired balance, hearing, and intellectual function. (Pew pp. 18-19)

- Hydrogen sulfide can cause “eye, nose, and throat irritation, diarrhea, hoarseness, sore throat, cough, chest tightness, nasal congestion, heart palpitations, shortness of breath, stress, mood alterations, sudden fatigue, headaches, nausea, sudden loss of consciousness, comas, seizures, and even death.” (Yale § 2.3.1)
- An eastern North Carolina study of several communities reported significantly more headaches, runny noses, sore throats, excessive coughing, diarrhea, and burning eyes for residents near a 6,000-hog factory farm than for other residents. (Wing & Wolf p. 237)
- There is “direct evidence of harm to humans from occupational exposures within CAFOs.” Harm includes asthma, sinusitis, chronic bronchitis, nose/throat irritation muscle aches, inflamed membranes, and progressive decline in lung function. (ISA/UI p. 6)
 - In studies, at least 25% of factory farm workers suffered from respiratory diseases like chronic bronchitis and occupational asthma. (UCS p. 60)
 - Factory farm workers also have increased levels of organic dust toxic syndrome. (Pew p. 16)
 - Factory farm workers and animals have died asphyxia and respiratory arrest from high hydrogen sulfide levels created by manure pit agitation. Those who survive hydrogen sulfide incidents often develop severe respiratory impairments or syndromes. (Pew p. 16; ISA/UI p. 6)
 - Hydrogen sulfide emissions are a leading cause of death in the workplace. (Yale § 2.3.1)

Factory farms contribute to antibiotic resistance.

- The overuse and misuse of antibiotics by factory farms creates antibiotic-resistant pathogens. Antibiotic-resistant pathogens cause diseases that are more difficult to treat and increase morbidity and mortality. (UCS p. 62-63)
 - More than 90% of *Staphylococcus aureus* bacteria isolates are resistant to penicillin, and the number of methicillin-resistant isolates rose from 2.4% to 29% between 1975 and 1991. Staph bacteria cause infections that can lead to septic shock and death. (Lieberman & Wootan)
- Antibiotic-resistant bacteria from factory farms reach humans through direct routes in food, water, air, and direct contact, or indirectly through increased resistance in the environmental pool of bacteria. (Pew p. 16)
 - In Illinois, tetracycline-resistant genes were found under swine CAFO lagoons and in groundwater up to 250 meters away. (Hodne p. 19)
 - A 2006 study found increased levels of airborne antibiotic-resistant bacteria inside and downwind of factory farms, with *Staphylococcus aureus* (MRSA) being the most common. (Gibbs et al. p. 1032)
- Up to 75% of antibiotics given to CAFO animals pass unchanged into animal waste to contaminate ground and surface waters. (Hodne p. 18)
 - In an Iowa study, all of the sampled swine waste lagoons had various antibiotics in them, and 31% of nearby water samples had antibiotics. (Hodne p. 19)

- In Ohio, 67% of water samples taken near poultry CAFOs had antibiotics in them. (Hodne p. 19)

Factory farms deplete energy and water resources.

- Producing crops for animal feed places “enormous demand on water resources,” with 87% of freshwater use in the United States going to agriculture (mainly irrigation). (Pew p. 27)
- Factory farms use water to wash animals and flush manure and wastes from confinement areas. Many factory farmed animals also consume large amounts of water. A Missouri group estimated that an 80,000/year hog operation uses over 200,000 gallons of water/day – 73 million gallons/year. (NRDC)
- It takes 100,000 liters of water to produce 1 kilogram of grain-fed beef and 3,500 liters for a kilogram of chicken meat. In contrast, a kilogram of potatoes requires 500 liters of water; wheat, 900; rice, 1,912; and soybeans, 2,000. (Cornell)
- The ratio of fossil fuel inputs per unit of food energy produced for factory farms can reach 35:1. For other agricultural products combined, it averages 3:1. (Pew p. 29)
 - Beef cattle production requires 54 units of energy inputs for 1 unit of protein output. (Cornell)

Factory farms are unsustainable and threaten food security.

- Factory farms rely on intensive, industrialized grain production that degrades soil, pollutes aquatic ecosystems, and contributes to global warming. (UCS p. 25)
- More than half of the two most widely grown crops in the United States (corn and soybeans) is fed to livestock, not people. (UCS p. 29)
- More than half of U.S. grain and almost 40% of world grain is fed to livestock rather than directly to humans. If all the grain in the U.S. were consumed by people instead, it could feed 800 million people. (Cornell)

Sources

~ Campagnolo et. al, *Report to the State of Iowa Dep't of Public Health on the Investigation of the Chemical and Microbial Constituents of Ground and Surface Water Proximal to Large-Scale Swine Operations* (Oct-Dec 1998) ("Campagnolo"), available at http://www.sec.nv.gov/cafo/tab_i.pdf.

~ *Waterborne Outbreak of Gastroenteritis Associated with a Contaminated Municipal Water Supply, Walkerton, Ontario, May-June 2000*, Vol. 26(20) *Canada Communicable Disease Report* (Oct. 15, 2000) ("Canada Report") (internet cite no longer available).

~ Centers for Disease Control & Prevention, *A Survey of the Quality of Water Drawn from Domestic Wells in Nine Midwest States* (September 1998) ("Domestic Wells Survey"), available at <http://www.cdc.gov/healthywater/statistics/environmental/>.

~ Centers for Disease Control & Prevention, "Spontaneous Abortions Possibly Related to Ingestion of Nitrate-Contaminated Well Water-LaGrange County, Indiana 1991-1994," 45(26) *Morbidity and Mortality Weekly Report* 569 (July 5, 1996) ("CDC"), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/00042839.htm>.

~ Chapin et al., Yale Environmental Protection Clinic, *Controlling Odor and Gaseous Emission Problems from Industrial Swine Facilities: A Handbook for All Interested Parties* (Spring 1998) ("Chapin"), available at <http://www.colorado.edu/economics/morey/8545/student/caforegs/ControllingOdor.pdf>.

~ Cornell University, "U.S. Could Feed 800 Million People with Grain that Livestock Eat, Cornell Ecologist Advises Animal Scientists; Future Water and Energy Shortages Predicted to Change Face of American Agriculture," *Science News* (Aug. 7, 1997 Press Release re: David Pimentel, Professor of Ecology at Cornell University College of Agriculture and Life Sciences) ("Cornell"), available at <http://www.news.cornell.edu/releases/aug97/livestock.hrs.html>.

~ Shawn G. Gibbs et al., "Isolation of Antibiotic-Resistant Bacteria from the Air Plume Downwind of a Swine Confined or Concentrated Animal Feeding Operation," Vol. 114(7) *Environmental Health Perspectives* (July 2006) ("Gibbs et al."), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1513331/>.

~ Doug Gurian-Sherman, Union of Concerned Scientists, *CAFOs Uncovered: The Untold Costs of Confined Animal Feeding Operations* (April 2008) ("UCS"), available at http://www.ucsusa.org/food_and_agriculture/science_and_impacts/impacts_industrial_agriculture/cafos-uncovered.html.

~ Carol J. Hodne, *Concentrating on Clean Water: The Challenge of Concentrated Animal Feeding Operations* (April 2005) ("Hodne"), available at <http://www.iowapolicyproject.org/2005docs/050406-cafo-fullx.pdf>.

~ Iowa State University/University of Iowa Study Group, *Iowa Concentrated Animal Feeding Operations Air Quality Study: Final Report* (Feb. 2002) ("ISA/UI"), available at http://www.ehsrca.uiowa.edu/CAFOstudy/CAFO_final2-14.pdf.

~ John A. Kilpatrick, "Concentrated Animal Feeding Operations and Proximate Property Values," Vol. 39(3) *Appraisal Journal* 301 (2001) ("Kilpatrick"), available at <http://www.thefreelibrary.com/Concentrated+Animal+Feeding+Operations+and+Proximate+Property+Values.-a078238407>.

~ Patricia B. Lieberman & Margo G. Wootan, *Protecting the Crown Jewels of Medicine: A Strategic Plan to Preserve the Effectiveness of Antibiotics* (1998) ("Lieberman & Wootan"), available at <http://www.cspinet.org/reports/abiotic.htm>.

- ~ Livestock, Environment, and Development Initiative/Food and Agriculture Organization of the United Nations, *Livestock's Long Shadow: Environmental Issues and Options* (2006) ("LEAD"), available at <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM>.
- ~ Michael A. Mallin, "Impacts of Industrial Animal Production on Rivers and Estuaries," Vol. 88(1) *American Scientist* 26 (Jan. 1, 2000) ("Mallin"), available at <http://www.americanscientist.org/issues/feature/impacts-of-industrial-animal-production-on-rivers-and-estuaries>.
- ~ Natural Resources Defense Council, *America's Animal Factories: How States Fail to Prevent Pollution from Livestock Waste*, Ch. 1 ("NRDC"), available at http://agrienvarchive.ca/bioenergy/download/nrdc_animalfactory.pdf.
- ~ North Carolina Department of Health & Human Services, *Medical Evaluation and Risk Assessment: Contamination of Private Drinking Well Water by Nitrates* ("NC") (1998) (webpage no longer live).
- ~ Pew Commission on Industrial Farm Animal Production, *Community and Social Impacts of Concentrated Animal Feeding Operations* ("Pew Technical"), available at <http://www.ncifap.org/reports/>.
- ~ Pew Commission on Industrial Farm Animal Production, *Putting Meat on the Table: Industrial Farm Animal Production in America* (April 2008) ("Pew"), available at <http://www.ncifap.org/>.
- ~ Susan Schiffman et al., "The Effect of Environmental Odors Emanating From Commercial Swine Operations on the Mood of Nearby Residents," Vol. 37(4) *Brain Research Bulletin* (1995) ("Schiffman et al."), available at <http://www.ncbi.nlm.nih.gov/pubmed/7620910>.
- ~ Curtis W. Stofferahn, *Industrialized Farming and Its Relationship to Community Well-Being: An Update of a 2000 Report by Linda Lobao* (Sept. 2006) ("Stofferahn"), available at <http://www.und.nodak.edu/org/ndrural/Lobao%20&%20Stofferahn.pdf>.
- ~ United States Environmental Protection Agency, *NPDES CAFO Regulations*, 68 Fed. Reg. 7176-01 (Feb. 12, 2003) ("EPA"), available at <http://www.fdsys.gov>.
- ~ United States Government Accountability Office, *Concentrated Animal Feeding Operations: EPA Needs More Information and a Clearly Defined Strategy to Protect Air and Water Quality from Pollutants of Concern* (Sept. 2008) ("GAO"), available at <http://www.gao.gov/new.items/d08944.pdf?source=ra>.
- ~ Steve Wing & Susanne Wolf, "Intensive Livestock Operations, Health, and Quality of Life among Eastern North Carolina Residents," Vol. 108(3) *Environmental Health Perspectives* 233(March 2000) ("Wing & Wolf"), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1637983/>.

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