

Water Pollution from Slaughterhouses

Three Quarters of U.S. Meat Processing Plants that Discharge into Waterways Violated their Permits, 2016-2018



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Executive Summary

When many people think about the meat processing industry, their minds run to the slaughterhouses on the South Side of Chicago portrayed in Upton Sinclair's 1906 novel, *The Jungle*. Over the more than a century since then, however, slaughterhouses have changed, moving out of big urban areas like Chicago into rural, poor, often isolated communities, such as Hazlehurst, Mississippi, and Pocahontas, Arkansas. That shift has meant a migration of the industry's impact on both human health and the environment.



Slaughterhouses generate millions of gallons of wastewater that often pollute the streams and rivers of lower-income, rural communities.

While meatpacking is obviously cleaner today than it was more than a hundred years ago, slaughterhouse waste contaminates too many rivers and streams in rural America with pathogens, oxygen-depleting pollutants like nitrogen and phosphorus, and other contaminants like sulfates and chlorides. When released into waterways in high concentrations, these pollutants drive excess algae growth, feed “dead zones” that suffocate aquatic life and turn waterways into bacteria-laden public health hazards.

The Environmental Integrity Project examined Environmental Protection Agency enforcement and compliance data from January 2016 through June 2018 for 98 large meat processing plants – most owned by large companies like Tyson's, Pilgrim's Pride or Perdue – that discharge pollution directly into waterways.¹ Slaughterhouses dispose of wastewater in three ways, typically after some treatment: piping it directly into waterways, spraying it on land, or sending it to a nearby town or county sewage treatment plant. Sixty-five of the 98 plants we studied slaughter poultry, 15 process beef; 9, hogs; and the rest other meat. (See Appendix A for methodology).

Key Findings:

Most of the meatpacking plants in our study release large amounts of pollution. For example, the median slaughterhouse among the 98 reviewed discharged an average of 331 pounds of total nitrogen per day in 2017, about as much as the amount contained in in raw, untreated sewage from a town of 14,000 people.² Many release far more, with the JBS USA pork processing plant in Beardstown, Illinois, for example, releasing 1,849 pounds of nitrogen a day in 2017 to an Illinois River tributary—equivalent to the load in raw sewage from a city of 79,000. Table A lists the plants that discharged the most nitrogen.

Three quarters (74 of 98) of the plants violated at least one of the pollution limits in their federal Clean Water Act permits at least once between January 1, 2016, and June 30, 2018.³ These 74 plants racked up a total of 1,142 discharge violations for exceeding pollution limits. (For a full list, see Appendix C).

One third (32 of 98) of the plants had 10 or more violations between January 1, 2016, and June 30, 2018. For example, the FB Purnell Sausage Co. in Simpsonville, Kentucky, had 109 permit violations over this time period; and the Keystone Protein poultry slaughterhouse in Fredericksburg, Pennsylvania, had 62. These numbers reflect the number of times a plant has failed to meet monthly, weekly, or daily pollution limits in the plant's permit. Plants that violate a monthly or weekly limit are subject to penalties between \$44,539 and \$46,129 for each day of that month or week, since those illegal discharges are usually larger and longer lasting. The record shows that regulators rarely recover more than the maximum penalty for a single day of noncompliance. (For an explanation, and a list of the plants with the most violations, see page 15.) Plants with no violations were more likely to have weak permits that allow them to discharge far more pollution.

Some plants are chronic violators. Six slaughterhouses were in violation of one or more monthly pollution limits at least 50 percent of their operating time since January 1, 2016.

Tyson Foods owns the most plants with violations (26); followed by Pilgrim's Pride (7); Sanderson Farms (6); JBS (4); Wayne Farms (4) and Smithfield (3).

Large pollution loads and frequent permit violations are impairing streams and rivers. Sixty-one of the 98 plants discharge to waterways that are impaired by one or more pollutants found in slaughterhouse wastewater.

Penalties and enforcement are rare. At least 18 slaughterhouses among those studied racked up more 100 days in violation from 2016 to 2018. But so far, eight of those 18 have not paid any fines at all during this time period.

Table A. Plants that Discharged the Most Nitrogen Pollution (2017 average)

Rank	Plant (Location)	Type	Average Nitrogen Loading Rate (lbs/day)	Waterway
1	Tyson Fresh Meats (Dakota City, NE)	Beef	3,084	Missouri River
2	JBS Beardstown plant (Beardstown, IL)	Pork	1,848	Illinois River tributary
3	Smithfield Tarheel Plant (Tarheel, NC)	Pork	1,759	Cape Fear River
4	Pilgrim's Pride (Mount Pleasant, TX)	Poultry	1,755	Lake O' the Pines
5	Tyson Fresh Meats (Lexington, NE)	Beef	1,437	Tri County Canal
6	Valley Proteins Processing Plant (Lewiston Woodville, NC)	Rendering Plant	1,429	Roanoke River
7	Tyson Fresh Meats (Joslin, IL)	Beef	1,346	Rock River
8	Tyson Carthage Processing Plant (Carthage, MS)	Poultry	1,182	Pickens Branch
9	Tyson Poultry Inc. (Clarksville, AR)	Poultry	1,163	Blue Creek
10	JBS Pork (Ottumwa, IA)	Pork	953	Des Moines River

Source: Environmental Protection Agency, Enforcement and Compliance History Online and wastewater discharge permits.

It should be noted that not all of the slaughterhouses are poorly run or in violation of their permits. While some facilities seldom have to report violations because their permits allow much higher pollution rates, the monitoring data shows that other plants operate while discharging far less pollution. When it comes to nitrogen, the most polluting plants release about thirty times more nitrogen per gallon than the cleanest plants. (For a list of the cleanest plants, see page 18; for the dirtiest plants, see pages 12 & 14.)

The pollution from many slaughterhouses fouls waterways in communities with a high percentage of Latino and African American residents who can least afford to lose their drinking water supplies and natural resources. Federal data show that almost half of the slaughterhouses are in communities with more than 30 percent of their residents living beneath the poverty line (more than twice the national level), and a third of the facilities are in places where at least 30 percent of the residents are people of color.

This report examines the history of the meat processing industry in the U.S., the sources and impacts of its water pollution, and recommended solutions. We use three local examples in different parts of the U.S. to illustrate different aspects of the industry that make water pollution from slaughterhouses a complex environmental challenge to tackle.



A truck loaded with live chickens drives through the entrance of the Allen Harim slaughterhouse in Harbeson, Del. The plant had more than 90 water pollution violations over four years, including dumping illegal amounts of ammonia and fecal bacteria into a local creek.

Delaware: Although this report focuses on plants that pipe their pollution directly into waterways, many slaughterhouses avoid scrutiny by spraying their wastewater on farm fields. But this can contaminate drinking water wells. In Sussex County, Delaware – home to five meat processing plants – 695 neighbors of a Mountaire slaughterhouse filed a class action lawsuit against the company in June 2018 for using a waste spraying system that tainted dozens of local wells with nitrates and bacteria and made several people sick, with one death allegedly linked to the pollution.

Florida and Illinois: Although the meatpacking industry is dominated by global corporations, its decisions have an outsized impact on local water quality. In Live Oak, Florida, the Pilgrim's Pride poultry processing plant – part of the largest meat company in the world, Brazilian-owned JBS S.A., -- had 37 water pollution violations that fouled the Suwanee River before agreeing in 2017 to a \$1.43 million penalty and cleanup agreement. The same international meat company also owns a pork slaughterhouse in Beardstown, Illinois, where a spill of 29 million gallons of hog waste killed more than 64,000 fish in March 2015.

There is no question that a large and growing global population needs a robust and diverse food production system, including slaughterhouses. Backyard gardens and mom-and-pop butchers will not feed Tokyo, Mexico City, and New York. But the meat industry must be regulated, inspected, and policed like the major, global industry that it is – not like the small-town family farmers it likes to feature in its advertisements.

We can do more to reduce water pollution from meat packing plants by:

- Strengthening out-of-date EPA standards with tighter limits for nitrogen and other pollutants and better monitoring of discharges;
- Tightening up state permits to further reduce discharges of wastewater to rivers, lakes, and streams that are already so polluted that they are too impaired for public use;
- Prohibiting irresponsible disposal methods, such as spraying waste onto farm fields that are close to homes.

EPA and citizen groups should also step in and enforce permit limits for slaughterhouses and impose penalties when states fail to do so, as a way of sending a message to industry to reduce its pollution and modernize its control systems.

Slaughterhouses are unavoidable, given the U.S. and global demand for meat. But when Americans eat hot dogs and hamburgers, we should not also be served a side order of pollution.

Today's Meat Processing Industry

Industrial animal slaughter and the social, economic, and environmental burdens that come with it are not new to the US.⁴ Chicago's Union Stockyard marked the beginning of industrial animal slaughter in

the US in the 19th Century. Placing slaughterhouses near markets made economic sense at the time, when live animals could be transported from rural areas to urban slaughterhouses by train, and meat could be quickly delivered to urban demand hubs before spoiling.

Things started to change after World War II. With modern refrigeration and changes to how meat was packaged and sold, slaughterhouses no longer had to be close to



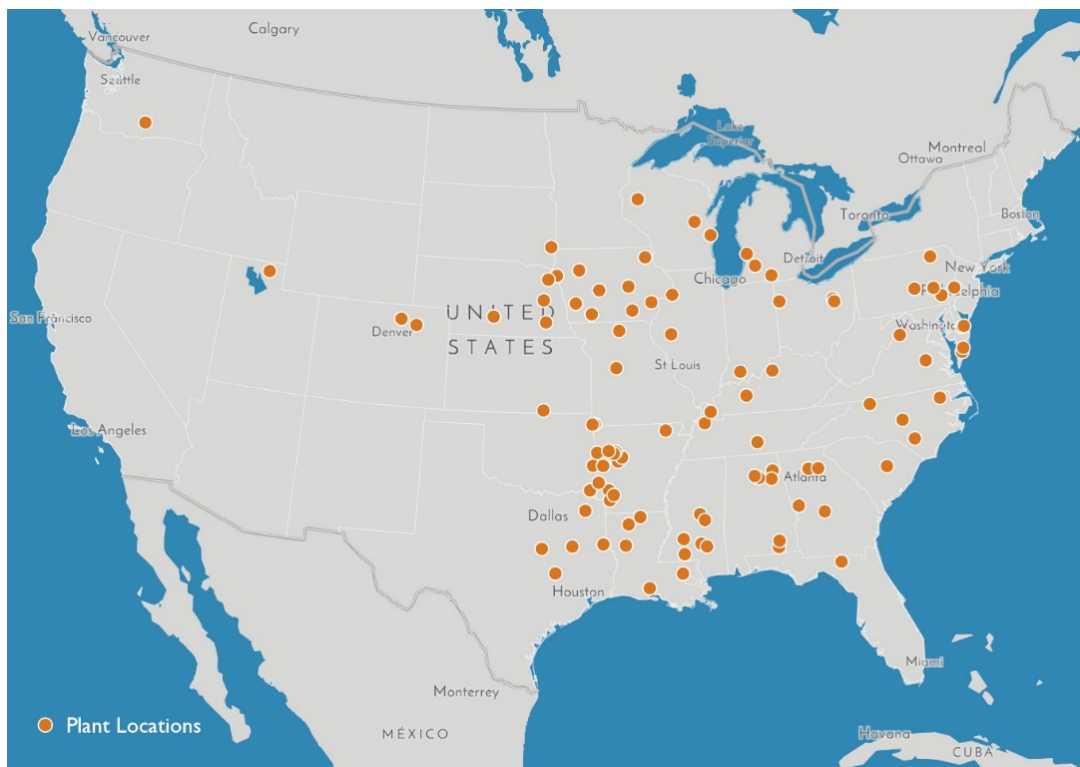
High-speed poultry slaughterhouse conveyor belts have vastly increased production—but can also injure workers.

markets. Slaughterhouses started moving out into small towns where they set up networks of contract feeder farms. The industry has grown based on that model into what we have today: massive slaughterhouses in small towns that are owned by a handful of huge, multi-national companies.

At least 66 of the 98 plants surveyed are owned by companies that each reported more than \$2 billion in annual revenues in 2017. Twenty-seven belong to the Tyson's Corporation, the nation's biggest meat producer with more than \$41 billion in annual sales in 2017. The second largest, JBS Holdings, realized nearly \$34 billion in revenue last year and owns 12 of the plants studied, taking into account its majority share of Pilgrim's Pride and ownership of several Swift and Cargill operations.⁵ These large corporations run huge plants that can kill as many as 200 chickens per minute, fed by a web of nearby factory farms that raise millions of animals and produce massive amounts of manure each year.

A recent application for a slaughterhouse expansion by the Mountaire poultry company in Delaware included a vivid description of the process and the waste it generates. "Slaughtering of broilers is done by an automatic mechanical device which severs the jugular vein," said a state report dated May 18, 2017.⁶ "The kill area has high walls on both sides of the conveyor line to collect drained blood. It takes approximately a minute and a half for the bird to pass through this area... Feathers, dirt, manure and blood are pollutants that may find their way into the killing area sewer."

Figure A. Large Slaughterhouses that Discharge Into Waterways



Location of slaughterhouses in US that discharge more than 250,000 gallons of wastewater per day directly into U.S. rivers, streams and other waterways.

More than 8 billion chickens are slaughtered every year in the U.S., along with 100 million hogs and 30 million beef cattle, according to the USDA’s National Agricultural Statistics Service data.⁷ These animals are processed in more than 5,000 plants – large and small – that employ more than 500,000 workers. Concentrations of the largest slaughterhouses are clustered in rural areas including northwest Arkansas, central Mississippi, Iowa, northern Georgia, east central Pennsylvania, southern Indiana, and Sussex County, Delaware.⁸

Although the industry is more mechanized than it was a century ago during the days of Upton Sinclair’s *The Jungle*, the killing, evisceration and cutting still relies heavily on repetitive human labor with bolt guns (to kill cattle), saws, knives, rods, hooks, conveyor belts, and forklifts.⁹ The work can still be dangerous. For example, an inmate on a work-release job at a poultry plant owned by Koch Foods was killed in an industrial accident in Ashland, Alabama, in 2017.¹⁰ A contract sanitation laborer died at a Tyson’s plant in Shelbyville, Tennessee, after he tumbled into equipment he was cleaning in 2015.¹¹ Another slaughterhouse worker was found dead in an “ice room” at Pilgrim’s Pride plant in Mount Pleasant, Texas, in

2014. And a paddle in a liver giblet chilling vat ripped the leg of a 17-year-old immigrant worker from Guatemala at a Case Farms poultry plant in Canton, Ohio, in 2015.¹² Thirty-four percent of U.S. slaughterhouse employees were Hispanic or Latino in 2017, and the average hourly wage was \$13.46.¹³



Many large meat processing plants in the U.S. today are owned by international companies based in Brazil, China, Arkansas, and elsewhere, making control and management decisions more remote from the pollution impact in rural American communities

This system has public health implications, and places a large burden on underserved communities and the environment. The corporate-owned process leaves little room for smaller farmers, butchers, and sustainable, local food systems to compete. This report focuses on the environmental burden—particularly on water resources—and why stricter standards and environmental law enforcement efforts are needed to hold this industry accountable and protect communities and the environment.

Analysis & Findings

The following analysis is based upon public data from the Environmental Protection Agency, wastewater discharge permits, and state water quality reports. It assesses the impact that large slaughterhouses and meat processing plants have on waterways and the degree to which they break the laws that protect water quality and human health. It focuses on 98 of the largest slaughterhouses and meat processing plants that pipe their wastewater directly into streams and rivers (Figure 1). Sixty-five of these plants process poultry, 13 process beef, 9 process pork, and another 9 process a mix of meat types or make products like sausages and other prepared meats and meat byproducts. They all discharge from at least 250,000 to as much as 5,300,000 gallons of wastewater per day.

Slaughterhouses also dispose of wastes by spraying it on fields or sending it to municipal sewage treatment plants. The report does not examine data or evaluate these practices on an industry-wide basis, but it includes several case studies that show how mismanagement of such methods can cause serious environmental damage.

Water Pollution from Slaughterhouses

Untreated wastewater from meat processing typically contains high levels of oxygen-demanding substances (like blood, fat, urine, and feces), total suspended solids, ammonia, nitrogen, phosphorus, oil and grease, fecal bacteria, and pathogens. When released into waterways in large quantities and high concentrations, these pollutants can cause extensive damage to waterways. They drive excess algae growth, create low oxygen dead zones that suffocate fish and other aquatic life, and turn waterways into bacteria-laden public health hazards.

These plants use a large amount of water to wash carcasses and rinse meat, remove hair or feathers, chill meat, and clean, sanitize, and cool processing equipment and facilities. The amount of wastewater generated can vary widely from plant to plant. For instance, EPA estimated in 2004 that poultry processing plants use between 580 and 2,440 gallons per 1,000 pounds of birds processed, with a median of 1,323 gallons per 1,000 pounds of birds at slaughterhouses and 301 gallons per 1,000 pounds of birds at plants that turn raw chicken into prepared foods like chicken nuggets.¹⁴ Plants that process hogs and cattle also produce a variable amount of wastewater, though generally less than poultry processing plants. They produce between 291 and 532 gallons of wastewater per 1,000 pounds of animals, with a median of 352 gallons for slaughterhouses and 135 gallons at plants that process raw meat into prepared foods like hotdogs and cooked hams.¹⁵ The largest plant included in our analysis can release 5.3 million gallons of polluted wastewater each day.

Meat processing plants typically dispose of wastewater by releasing it to streams, rivers, and lakes (usually after some treatment), diverting it to municipal wastewater treatment plants, and spraying it on pasture or cropland where it can infiltrate groundwater and runoff into surface waters. Some use a mix of these disposal practices, while others use only one. EPA and state environmental agencies regulate direct discharges to waterways by issuing wastewater discharge permits and by setting water quality standards for “effluent” that are based on available treatment technology. They also regulate discharges to wastewater treatment plants through a federal Clean Water Act pre-treatment program that is not discussed in this report. Land application of wastewater or sludge is typically regulated by states.

Clean Water Act Protections

The Clean Water Act prohibits the discharge of any pollutant without a permit that incorporates limits required by federal regulation and additional restrictions that may be needed to protect water quality. These requirements include nationwide limits that all industries within a given sector must meet, as well as more restrictive permit conditions designed to protect or restore local water quality. While individual permits are issued by state agencies, they must incorporate all of these federal standards, which can then be enforced by the EPA, states, or citizens when they are violated.

National Effluent Standards

The Clean Water Act requires EPA to establish national “Effluent Limitation Guidelines” to minimize the discharges of pollutants from slaughterhouses and other large industrial or municipal sources of wastewater. These limits, which apply to “conventional” pollutants like bacteria or ammonia as well as to toxins like nitrate compounds, are generally designed to reflect the best available treatment processes that are economically affordable and apply to all plants within a given industrial category. The standard for slaughterhouses was last updated by EPA in 2004, and sets maximum limits on the monthly discharges and daily discharges of ammonia, total nitrogen, biological oxygen demand, total suspended solids, and oil and grease, and on the concentration of fecal coliform that may be discharged at any time. For example, the wastewater from poultry processors must not contain more than:

- 103 milligrams of total nitrogen per liter of wastewater, based on average monthly discharges, or 147 milligrams/liter per day;

- A monthly average Biological Oxygen Demand of 16 milligrams per liter, or 26 milligrams per liter in any single day's discharges;
- 400 "colony forming" units of fecal coliform at any time.

These federal rules establish a baseline that all plants must meet, no matter where they are located. The Clean Water Act allows states to adopt more stringent standards, and in fact requires that they do so when needed to protect or restore water quality. Yet states do not always exercise this responsibility. For example, total nitrogen limits for at least 41 of the 68 poultry processors require no more than the minimum national standard.

Furthermore, the data suggest that the 2004 standards are too lax and out of date. For example, it allows slaughterhouses to dump wastes into streams and lakes with more than two and a half times the concentration of total nitrogen found in raw household sewage. At the same time, the discharge monitoring reports show that slaughterhouse wastewater can be made much cleaner.

Impact on Drinking Water

EPA's 2004 regulation of the slaughterhouse industry was also under-protective of nearby drinking water sources. Meat and poultry plants discharge many contaminants that can harm drinking water systems such as nitrate, nitrite, and fecal coliform, as well as byproducts of the disinfection process, such as chlorine. This contamination of source waters can threaten the health of those relying on that drinking water unless there is additional adequate treatment. However, that additional treatment can be quite costly, imposing an economic burden on the ratepayers of the system.

Data on the location of drinking water intakes is sparse. Our initial review of a few states that make the requisite data publicly available suggests that numerous slaughterhouses discharge contaminants into the source water for several drinking water systems. In addition to imposing additional costs on those systems to treat these pollutant loads, these discharges can contribute to those systems being out of compliance of federal drinking water standards. Furthermore, contamination in those source waters has the potential to spread beyond the municipality that administers the water system, since those primary drinking water systems often serve as source water for numerous smaller systems.

One example of a community whose drinking water appears to have been harmed by slaughterhouse water pollution is Sussex County, Delaware. A pair of lawsuits by local residents against the Mountaire poultry company claim that at least 20 homes on private

wells have been contaminated with nitrates and bacteria from waste sprayed on farm fields, which has infiltrated the wells of nearby homes (see page 20).

A public drinking water system that has been potentially impacted by a meat processing plant is the Ottumwa Water Works in southeastern Iowa. It is located near a slaughterhouse, JBS Pork in Ottumwa, which has a history of spills into neighboring waterways.¹⁶ The plant also discharged an average of 952 pounds of nitrogen per day into the Des Moines River in 2017, according to federal and state records. Based on the data we collected, which was compiled from federal and state drinking water data sources, the Ottumwa water system reports levels of disinfection byproducts (trihalomethanes and haloacetic acids) at levels that are among the highest in the state. Some of the data in Ottumwa show levels of disinfection byproducts above health standards for drinking water, and the average concentration reported would place Ottumwa among the top 10 percent nationally for these chemicals. The closeness of the JBS slaughterhouse to these elevated levels suggest a need for further investigation into whether the plant's spills are linked to the water supply's contamination. In addition, elsewhere in the U.S., our data analysis found multiple other water systems near meat or poultry plants with elevated levels of contaminants including nitrogen, ammonia, phosphorus, chlorine, and organic matter, warranting future analysis of the links between slaughterhouse discharges and drinking water system pollution.

Water Quality-Based Limits

The Clean Water Act also requires states to identify and submit lists of “impaired” waterways, which are so polluted that they no longer support uses like recreation or aquatic life. Once states list a waterway as impaired, they are required to develop a total maximum daily load (TMDL) to determine the maximum pollution loads that the waterway can handle before failing to meet water quality standards. These waterway-based limits focus on entire watersheds (i.e. the Chesapeake Bay) or specific segments of streams or rivers. They serve as a starting point for restoration planning.

Under a TMDL, point source dischargers that contribute to the impairment are assigned portion of the total load, called a waste load allocation. These help regulators establish stronger permit limits for specific facilities while considering other factors like land use, water monitoring data, modeling, and other pertinent information.¹⁷

Outsized Pollution Loads

For this study, we reviewed plant sampling data and estimated each plant’s average daily loading rates (how many pounds of pollution each plant discharges each day) for two of the most commonly monitored pollutants, total nitrogen, and oxygen-demanding substances, measured as “biochemical oxygen demand” or “BOD.” The latter quantifies the amount of oxygen that organic pollutants in wastewater can consume when released into waterways--oxygen that may be needed to support aquatic life.

Plants discharged between 10 to 3,084 pounds of nitrogen and between 0.85 to 1,134 pounds per day of BOD in 2017, based on average loading rates. Although performance varies widely, the median plant examined for this report discharged an average of 331 pounds of nitrogen – about as much as the amount in raw sewage from a town of 14,000 people – along with about 33 pounds of BOD per day in 2017.

On the high end, the Tyson Fresh Meats Dakota City, Nebraska beef plant discharged an average of 3,084 pounds of nitrogen per day, as much as the amount in raw sewage from a city of 132,000. The pork processor that discharged the most nitrogen, the JBS Beardstown plant, discharged as much nitrogen (1,848 pounds daily, on average)—about as much as the amount contained in raw sewage from a city of 79,000. The poultry processor that discharged the most, Pilgrim’s Pride in Mount Pleasant, TX, discharged as much as a city of 75,000.

Table 2 and Appendix B list the plants that discharged the most total nitrogen and BOD per day, on average, in 2017. All but three plants on these lists discharge to impaired waterways.

These numbers are a lot higher than those from some of the cleanest plants, which ranged between 10 to 30 pounds of nitrogen and under five pounds of BOD per day, even after controlling for flow rates.

Table 2. Plants that Discharged the Most Nitrogen Pollution Per Day in 2017

Plant (Location)	Type	Avg. Daily Loading Rate (lbs/day)	Avg. Concentration (mg/L)
1. Tyson Fresh Meats (Dakota City, NE)	Beef	3,084	83.8
2. JBS Beardstown plant (Beardstown, IL)	Pork	1,848	125.36
3. Smithfield Tarheel Plant (Tar Heel, NC)	Pork	1,759	79.98
4. Pilgrim’s Pride Corp. (Mount Pleasant, TX)	Poultry	1,755	82.88
5. Tyson Fresh Meats (Lexington, NE)	Beef	1,437	76.75
6. Valley Proteins Processing Plant (Lewiston Woodville, NC)	Poultry	1,429	75.49
7. Tyson Fresh Meats	Beef	1,346	75.32

(Joslin, IL)			
8. Tyson Farms Inc, Carthage Processing Plant (Carthage, MS)	Poultry	1,182	66.34
9. Tyson Poultry, Inc (Clarksville, AR)	Poultry	1,163	88.06
10. JBS Pork (Ottumwa, IA)	Pork	952	77.89

Most Plants Discharge to Impaired Waterways that Need More Protection

Sixty-two of the 98 plants release their wastewater to rivers, streams, and other waterways that are impaired because of the main pollutants found in slaughterhouse wastewater: bacteria, pathogens, nutrients, and other oxygen-demanding substances. These rivers and streams are so polluted that they are unfit for certain uses and require a cleanup plan (a Total Maximum Daily Load, or “TMDL,” under the Clean Water Act). Yet in 39 of these cases, the states have not yet established a TMDL to reduce pollution from slaughterhouses and other sources by the amounts needed to heal the contaminated river, stream or lake. In another nine cases, the health of downstream waters has not been assessed. (See Appendix C for a list of plants and impaired waters).

Thirty-eight of the 62 slaughterhouses release wastewater to streams or rivers that are impaired for bacteria or pathogens. Twenty-two of those 38 plants discharge to waterways that still need cleanup plans (TMDLs) to address bacteria or pathogens, and 11 of the 38 plants violated their permit limits for related pollutants including fecal coliforms *E. coli* and *enterococcus* at least once between January 2016 and June 2018.

Thirty-four of the 62 plants release wastewater to streams or rivers that have nutrient or low-oxygen-related impairments.¹⁸ Twenty-three of the 32 discharge to waterways that still need TMDLs, and 14 of the 32 plants violated nutrient limits between January 2016 and June 2018. Table 3 shows the plants that discharged the most nitrogen to waterways impaired by nutrients (nitrogen or phosphorus) or other pollutants that deplete oxygen levels in streams and rivers that lack state cleanup plans (TMDL’s)

Table 3. Plants that Discharge the Most Nitrogen Pollution to Impaired Waterways in Need of Cleanup Plans

Plant	Average Nitrogen Load, 2017 (lb/day)	Impaired Waterway (pollutant in need of TMDL)
Smithfield (Tarheel, NC)	1,759	Cape Fear River (Chlorophyll)

Plant	Average Nitrogen Load, 2017 (lb/day)	Impaired Waterway (pollutant in need of TMDL)
Tyson Farms (Carthage, MS)	1,182	Pickens Branch (Biological impairment)
Tyson (Blountsville, AL)	875	Graves Creek (Oxygen-demanding substances)
Tyson Foods (Broken Bow, OK)	694	Lukfata Creek (Dissolved oxygen)
Sanderson Farms, Inc. (Collins, MS)	653	Okatoma Creek (Nutrients)
Creekstone Farms Premium Beef John King (Arkansas City, KS)	522	Arkansas River (Phosphorus)
JBS Souderton (Souderton, PA)	495	Skippack Creek (Nutrients)
Golden Rod Broilers (Cullman, AL)	458	Brindley and Eightmile Creeks (Oxygen-demanding substances)
Pilgrim's Pride (Sanford, NC)	331	Deep River (Benthos, copper)

Frequent Permit Violations

Despite high federal limits for some pollutants, many plants still violate their permit limits. Under the federal Clean Water Act, state environmental agencies issue water pollution control permits to industrial and municipal plants called “National Pollutant Discharge Elimination System” (or NPDES) permits. As noted previously, these permits incorporate the national standards discussed earlier, but are supposed to include further restrictions when needed to protect the health of the stream or river – with more stringent limits often used for water bodies that are already so polluted they are classified as “impaired.”

Since 2016, three quarters of the plants (74 of the 98) examined in our analysis exceeded at least one of the pollution limits in their permits. These 74 plants racked up a total of 1,142 separate violations for exceeding pollution limits. Of the 1,142 effluent violations, only 101 have been resolved as of July 2018, according to EPA’s enforcement database.¹⁹ Thirty-two plants had 10 or more violations of daily, weekly, or monthly discharge limits, 979 in total. The actual number of violations is much greater, as plants that fail to meet their weekly or monthly permit limits are considered to be in violation every day of that week or month. Many plants fail to submit their monitoring results, or they submit them late. Since 2016, 45 plants failed to submit monitoring results at least once, and 49 plants submitted them late.

These are also permit violations. (See Appendix C for more detailed information about plants with permit violations). Table 4 lists the plants with the most effluent violations.

Table 4. Meat Processing Plants with the Most Effluent Violations, January 1 2016- June 30, 2018

Plant (Location)	Type	Number of Permit Limit Violations, 2016-2018
1. Simmons Foods, Inc. (Southwest City, MO)*	Poultry	143
2. FB Purnell Sausage Co. (Simpsonville, KY)	Prepared meats	109
3. Keystone Protein Co. (Fredericksburg, PA)**	Animal and fish oils	62
4. Smithfield Farmland Corp. (Milan, MO)*	Pork	58
5. Tyson Poultry, Inc. (Sedalia, MO)*	Poultry	56
6. Perdue Cromwell Processing Plant (Beaver Dam, KY)	Poultry	53
7. Foster Farms Farmerville Complex (Farmerville, LA)	Poultry	39
8. Pilgrim's Pride Live Oak Processing Plant (Live Oak, FL)	Poultry	37
9. Pilgrim's Pride Natchitoches Processing Plant (Natchitoches, LA)	Poultry	33
10. Cargill Meats Solutions Corp. (Schuyler, NE)	Beef	33

Source: EPA Enforcement and Compliance Online (ECHO) database. These numbers are a combined total of violations of daily, weekly, and monthly effluent limits. *Note: The ECHO database identifies persistent violations of monthly permit limits for total residual chlorine at two Missouri slaughterhouses. The state permits suggests these discharges will not be considered violations unless they exceed permit limits that are much higher than the limit of detection. But the same section indicates that any discharges above the much lower permits are not authorized. We have included the noncompliance data in our report because the Clean Water Act prohibits any discharge not authorized by a permit. **Keystone Protein has a design capacity of more than 250,000 gallons per day, although its reported discharge last year was less than that.

Slaughterhouses and meat processing plants discharge pollutants including nitrogen, phosphorus, bacteria and other pathogens that harm water quality by stimulating unhealthy algae blooms and consuming too much oxygen, leaving “dead zones” in waterways that cannot support aquatic life. A measure of this excessive oxygen demand is known as “Biochemical Oxygen Demand” or BOD. The BOD from a plant’s effluent is of particular concern because high levels can trigger fish kills and be an indicator of a possible threat to both wildlife and human health. However, not all plants have permit limits for BOD, nitrates or other key pollutants. Of the plants that do have limits in their permits, 55 of the 98 facilities we examined exceeded their limits for nitrogen, ammonia, nitrates, or other nitrogen compounds, with a total of 378 violations since January 1, 2016. Twenty-nine plants exceeded their limits for BOD, with 200 violations. The same number of plants (29)

exceeded limits for bacteria, including fecal coliforms, *E. coli*, and *enterococcus*, with 119 violations.

Some plants are chronic violators. Six of the 10 plants listed in Table 4 were in violation of one or more monthly pollution limits at least 50 percent of their operating time since January 1, 2016. These include Simmons Foods in Southwest City, MO, FB Purnell Sausage Co. in

Simpsonville, KY, Keystone Protein Co. in Fredericksburg, PA, Tyson Poultry in Sedalia, MO, and Cargill Meats Solutions, Inc. in Schuyler, NE. Keystone Protein, specifically, has failed to meet its monthly nitrogen limits every month since the beginning of 2016, discharging as much as three times what their permit allows.



The Keystone Protein Company meat processing plant in Fredericksburg, Pennsylvania, violated its water discharge permit 62 times between January 1, 2016, and June 30, 2018, discharging excessive amounts of nitrogen pollution into a tributary to the Susquehanna River and Chesapeake Bay.

Lack of Enforcement and Penalties

Slaughterhouses frequently rarely pay meaningful penalties for illegal discharges that persist for months at a time. The federal Clean Water Act allows courts to fine polluters up to \$44,539 per day for each separate violation that occurs after November 2, 2015, based on inflation adjustments required by Congress, with the penalty cap rising to \$46,129 in 2018.²⁰ These penalties apply when a facility fails to meet permit conditions, including any limits on the amount or average concentration of specific pollutants that can be discharged on a daily, weekly, or monthly basis.

A facility that exceeds a weekly or monthly permit limit is liable for penalties for every day of that week or month, since such violations usually release greater amounts of pollution over longer periods. Based on the penalty caps above, for example, a polluter exceeding monthly nitrogen limits in April of 2018 would face a maximum liability of \$1.4 million (30 days x \$46,129 per day). Although this report is focused on illegal discharges, the same penalties also apply to the failure to monitor or report such pollution (as all permits require).

As noted earlier, 32 of the slaughterhouses surveyed had ten or more violations of daily, weekly or monthly permit limits over the last two and a half years (2016-2018). When counting each day that weekly or monthly permit limits were exceeded, at least 18 within that group racked up more than 100 days of violations. So far, only 10 of these 18 plants have paid any fines at all since January 1, 2016. Keystone Protein paid the lowest amount at \$1,030, despite more than a thousand days of during which it exceeded of discharge limits for nitrogen, phosphorus, and dissolved oxygen at its plant in Fredericksburg, Pennsylvania, since the beginning of 2016.

Pilgrim's Pride paid the most -- \$51,840 -- to Louisiana to settle charges that its poultry plant in Natchitoches had violated multiple pollution limits in its permit repeatedly from 2003 to 2014. In that case, the company's payment to resolve eleven years of illegal discharges is just slightly higher than the maximum penalty the Clean Water Act allows for a single day of violations.²¹ Meanwhile, although the Natchitoches settlement extended the deadline for "full compliance" with the permit to April 1 of 2015, the record shows the facility's has accumulated more than 300 days of violations since that year ended, most resulting from its failure to meet daily and monthly limits for ammonia and other pollutants in August and September of 2017.

Pilgrim's Pride also paid Florida \$49,082 on June 12, 2017, for Clean Water Act violations at its Live Oak poultry plant. But that action came several months after the Sierra Club and Environment Florida filed a citizen suit against the same plant for similar violations. The citizen suit led to a November 15 settlement requiring the company to upgrade its wastewater treatment plant and shell out \$1.43 million in penalties and for a project to help farmers reduce nutrient runoff from agricultural land.²²

It is possible that EPA or state authorities are considering additional enforcement actions for some of these slaughterhouses that may yet result additional penalties. For example, Delaware's Attorney General is seeking \$241,000 from the Allen Harim poultry plant for violations that include illegal discharges of ammonia, phosphorus and other pollutants in 2016.²³ EPA and state agencies have obtained larger fines from packing plants for spills or other mishaps that result in large fish kills. Tyson paid a \$2 million criminal fine in February of 2018 for illegally dumping chemical waste into a municipal sewage plant, triggering the release of pollutants that killed more than 100,000 fish.²⁴

The government will always respond to highly visible catastrophic events that get lots of publicity. It is much less likely to impose serious fines for slow motion disasters that, year after year, clog waterways with pollutants that eventually make them unfit for public use.

Table 5. Clean Water Act Violations, January 1, 2016- June 30, 2018

Plant (Location) (NPDES Permit No.)	Illegal Discharges	# Violations of Daily, Weekly, or Monthly Discharge Limits	# Days in Violation	Penalties Paid
Agri Star Meat and Poultry LLC (Postville, IA) (IA0077135)	Ammonia, Chlorine, Dissolved Oxygen, Total Suspended Solids	25	229	\$47,800
Allen Harim Foods LLC (Harbeson, DE) (DE0000299)	Ammonia, Bacteria, Chlorine, Phosphorus, Suspended Solids	19	199	None*
Cargill Meats Solutions Corp. (Schuyler, NE) (NE0000795)	Ammonia, Chloride, Total Nitrogen, Toxicity	33	267	\$2,400
Farmers Pride (Fredericksburg, PA) (PA0035157)	Ammonia, Phosphorus, Total Nitrogen	16	222	\$73,500
FB Purnell Sausage Co (Simpsonville, KY) (KY0001309)	Ammonia, Bacteria, BOD, Dissolved Oxygen, Oil and Grease, Total Suspended Solids	109	990	\$19,500
Foster Farms Farmerville Complex (Farmerville, LA) (LA0100811)	Ammonia, BOD, Suspended Solids, Toxicity	39	364	none
Golden Rod Broilers (Cullman, AL) (AL0026832)	Ammonia, Bacteria, BOD, Oil and Grease, Suspended Solids, Total Nitrogen, Toxicity	14	162	none
House of Raeford Farms (Arcadia, LA) (LA0002844)	Ammonia, Bacteria, Dissolved Solids, Suspended Solids, Total Nitrogen, Toxicity	32	309	none
JBS Souderton Facility (Souderton, PA) (PA0035769)	Bacteria, Dissolved Solids, Suspended Solids, Phosphorus, Total Nitrogen	18	218	\$2,903
Keystone Protein Co. (Fredericksburg, PA) (PA0080829)	Dissolved Oxygen, Phosphorus, Total Nitrogen	62	1004	\$1,030
Koch Foods Of Pine Mountain Valley / JCG Foods of Georgia (Pine Mountain Valley, GA) (GA0001317)	Ammonia, Bacteria, BOD, Oxygen Demand, Suspended Solids, Total Nitrogen	26	298	none
OK Foods - Ft. Smith WWTP (Fort Smith, AR) (AR0044938)	Ammonia, BOD, Oil & Grease	11	222	none
Ozark Turkey Processing Plant /Butterball (Ozark, AR) (AR0048267)	BOD, Oil & Grease, Suspended Solids,	12	211	none
Peco Foods Inc. (Sebastopol, MS) (MS0002615)	BOD, Oil & Grease, Phosphorus, Suspended Solids	22	398	\$10,000
Perdue Cromwell Processing Plant (Beaver Dam, KY) (KY0100102)	Ammonia, Bacteria, BOD, Suspended Solids, Total Nitrogen,	53	644	\$13,750

Plant (Location) (NPDES Permit No.)	Illegal Discharges	# Violations of Daily, Weekly, or Monthly Discharge Limits	# Days in Violation	Penalties Paid
Pilgrim's Pride - Enterprise Processing Plant (Enterprise, AL) (AL0003697)	Ammonia, BOD, Oil & Grease, Suspended Solids	19	138	none
Pilgrim's Pride Corporation-Natchitoches Processing Plant (Natchitoches, LA) (LA0054178)	Ammonia, BOD, pH, Suspended Solids, Total Nitrogen, Toxicity	33	326	\$51,840
Pilgrim's Pride Processing Plant (Live Oak, FL) (FL0001465)	Ammonia, BOD, Dissolved Oxygen, Oil & Grease, Specific Conductance, pH, TKN, Total Nitrogen, Toxicity	37	150	\$49,082

Note: Delaware has proposed a \$241,000 fine for Allen Harim Foods, but the company is appealing the penalty.

Failures of Monitoring and Reporting

Overall, permit violations are likely much more widespread than this report suggests. In too many cases, companies do not monitor their effluent into streams and rivers, as required; or they fail to report the results of their effluent monitoring to state regulators; or they turn the numbers in late.

Poor reporting is a chronic problem that undermines enforcement. Almost half (45 of 98) of the meat processing plants examined in this report failed to submit monitoring results at least once in the last two years. Some of these meat packing plants have violated the terms of enforcement settlement agreements that are supposed to return them to compliance, and such violations are not included in the data above.

The timing and frequency of monitoring, as required by state permits, are also common problems. Permits establish *daily* limits for pollutants like fecal coliform and nitrogen. But meatpackers are required to monitor their discharges no more than *twice a week*, at most. Even then, companies are required to disclose only the highest concentration in any given *month*.

Pollution Loads vs. Permit Violations

Effluent violations don't tell the whole story. Plants that have state permits that are most protective of the environment (i.e., those with lower limits for pollutants and requirements for more frequent monitoring) might have more violations, while facilities with lax permits might have fewer (Figure B). Counting effluent violations is a useful way to identify bad actors and illegal water pollution, but if you compare it to pollution loads, you can quickly identify the plants that might have lax permits.

Figure B. Permit Violations vs. Average Daily Nitrogen Pollution

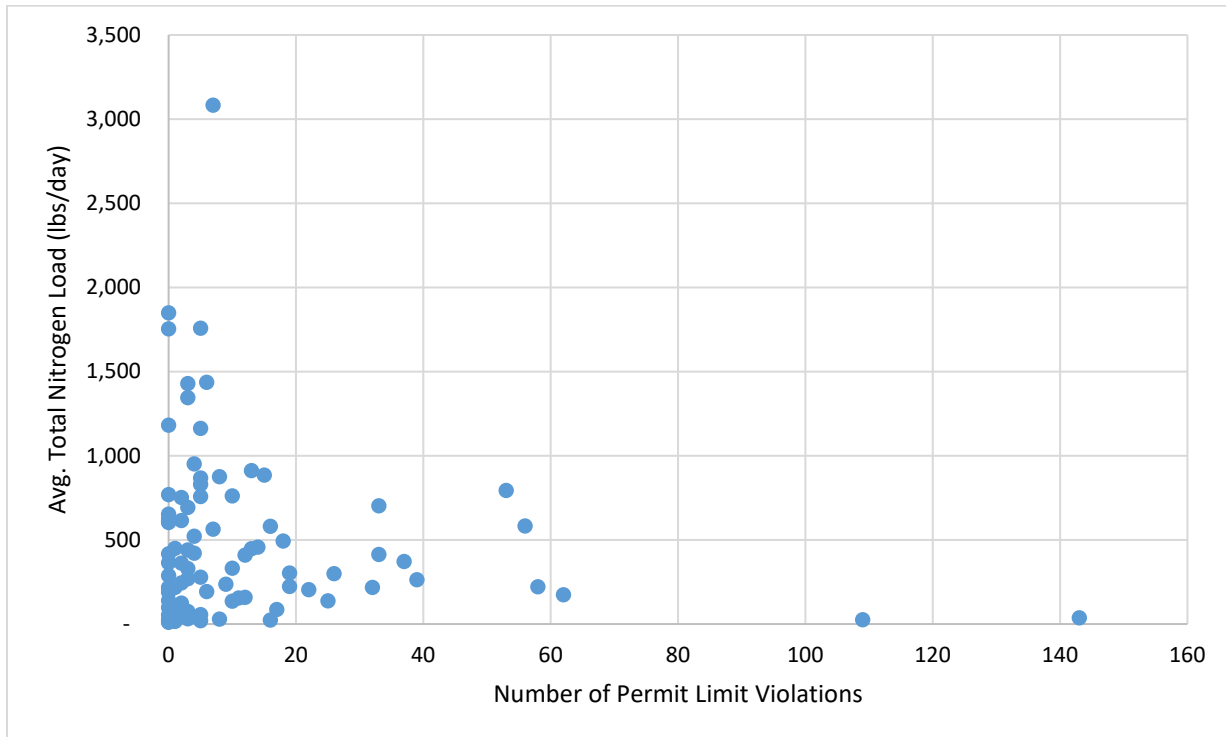


Figure B illustrates that many of the plants with the largest number of permit violations (the dots to the right, along the bottom) release some of the lowest amount of total nitrogen pollution. Meanwhile, facilities discharging some of the largest total amounts of nitrogen pollution (the highest daily “loads”), clustered along the left axis, often have few permit violations, because lax pollution limits are doing little to protect waterways from oversized pollution loads.

Less Pollution is Possible

Several slaughterhouses discharge much lower amounts of nitrogen and cause much less harm to waterways (Table 6). The reasons for the better plant performance likely include companies investing in more modern wastewater treatment systems and employing cleaner and more efficient operating procedures. Often these improvements are driven by state regulatory agencies imposing tighter pollution limits in the companies’ permits, and requiring more frequent and consistent monitoring.

Table 6: Plants that Discharged the Least Nitrogen Per Day, 2017

Plant (Location)	Type	Avg. Daily Loading Rate (lbs/day)	Avg. Concentration (mg/L)
Johnsonville Sausage LLC (Sheboygan Falls, WI)	Prepared meats	11	4.01
Michael Foods, Inc., (Lenox, IA)	Egg products	15	8.58
Cargill (Wyalusing, PA)	Beef	16	4.31
Empire Kosher Poultry (Mifflintown, PA)	Poultry	19	2.75
Peco Foods (Pocahontas, AR)	Poultry	21	2.15
Farmer's Pride (Fredericksburg, PA)	Poultry	24	4.76
FB Purnell Sausage Co. (Simpsonville, KY)	Prepared meats	27	21.48
Tyson Farms (Glen Allen, VA)	Poultry	28	4.3
Oakland Foods/OSI Industries (Oakland, IA)	Poultry	29	9.22
George's Chicken LLC (Edinburg, VA)	Poultry	32	2.75

Local Case Studies

This report examines three case studies – from Delaware, Florida, and Illinois – to evaluate different aspects of the industry’s behavior that make it complex and difficult to regulate. The first case discusses the tendency of meat processing plants to try to avoid the regulatory limits imposed by the federal Clean Water Act on discharging waste into waterways by instead spraying waste into farm fields, where it often contaminates nearby drinking water wells. The second and third cases illustrate how slaughterhouses that are owned by international corporations can contaminate local streams in small communities.

Delaware: Industry Concentration and Spray Waste Disposal

Sussex County, Delaware, has one of the largest concentrations of slaughterhouses in the U.S. – with five plants eviscerating, de-feathering, and cutting tens of millions of chickens a year, plus a sixth plant now proposed.

Long a farming community, the coastal Atlantic county of 215,000 is also home to a rapidly-growing tourism industry, with condos and subdivisions expanding westward into the cornfields from the beach towns of Rehoboth and Bethany Beach.

The growth of these two industries has clashed in recent years because of pollution caused by the slaughterhouses. This includes the contamination of many home drinking water wells with nitrates and bacteria, and foul odors that trigger asthma attacks, watering eyes, and other health problems, local residents complain.



Activist Maria Payan outside the Allen Harim poultry slaughterhouse in Harbeson, Del., which was fined by the state for dumping wastewater with fecal bacteria up to 9,000 times the permitted limit into Beaverdam Creek. “People’s health can’t handle it,” she said of the contamination.

“If you could get the two most opposing forms of industry possible in one place it’s in Sussex County,” said Maria Payan, who lives in Selbyville and is an activist for the Socially Responsible Agriculture Project, a nonprofit. “There is a cumulative impact of having this many poultry processing plants packed into one county. There is just too much waste in one area. The soils can’t handle it, the wells can’t handle it, and people’s health can’t handle it.”

On June 13, 2018, Millsboro residents Gary and Anna-Marie Cuppels and 695 of their neighbors filed a class action lawsuit against the Mountaire poultry company for dumping billions of gallons of “highly contaminated” wastewater over several years onto the farm fields surrounding the plant, including chicken fecal matter, blood, flesh, fat, grease, and parts of carcasses, according to the lawsuit.

The waste, with high levels of fecal bacteria, is sprayed from irrigation machines onto corn or soybeans. The wastewater has seeped into the drinking water wells of nearby residents, and made them sick with gastrointestinal problems and other illnesses, according to the complaint. It has also polluted the nearby Swan Creek and Indian River, preventing people from swimming in and enjoying these waterways.



Waste being sprayed by the Mountaire slaughterhouse onto corn fields near people's homes in Millsboro, Delaware, where it has contaminated at least 20 home drinking water wells.

“The smell is so bad, we can’t even go outside our homes to barbecue or anything like that,” said a resident of Herbert Road in Millsboro who asked not to be named because of the ongoing legal action with the Mountaire plant. “We have to just keep our windows closed and our air conditioner on. We can’t drink the water. And it’s impacting our health, too,” he said, holding a package of medication he just picked up from the drug store to treat his chronic stomach and intestinal problems.

He and his wife said that testing of their home’s drinking water recently showed 18 mg/liter nitrates, which is nearly twice the health limit of 10 mg/liter. Mountaire is supplying his and about 40 other homes in the community with bottled drinking water. “But the bottled water doesn’t take care of everything,” the man said. “We still have to shower in it, bathe in it. It’s bad.”

In response to the lawsuit, Mountaire issued a statement that said: “We will vigorously defend the allegations in court...Elevated levels of

nitrates in Sussex County is a very common widespread environmental condition that has existed for many decades, way before the arrival of Mountaire and certainly did not occur just in the past 17 years.”

Court records, however, show that homes uphill from the Mountaire slaughterhouse have lower average nitrate levels in their wells, only about 6 mg/liter over a five-year period, with none exceeding the 10 mg/1 health limit.

But at least 20 homes (and possibly more) downhill from the plant have registered more than 10 mg/liter nitrates in their drinking water or nearby monitoring wells, according to court records. Some of the readings in monitoring wells have hit nine times the legal limits, with one having 92.5 mg/1 in 2016, and another with 65.8 mg/L in 2017, according to a separate notice of intent to sue Mountaire for violating hazardous waste laws filed on March 27, 2018, by Public Justice and Food and Water Watch on behalf of 57 local clients.

“Human consumption of water containing more than 10 mg/1 of nitrate causes a variety of severe health problems, including but not limited to methemoglobinemia (‘blue baby

syndrome,' a potentially fatal condition that affects infants), some forms of cancer, and autoimmune system dysfunction," the notice states.

A second lawsuit against Mountaire was filed on June 28, 2018, by a neighbor of the plant named Joseph Balback and 98 other Millsboro residents who argue the company has created a "public nuisance," by contaminating their water, damaging their health and driving down their property values.



The Mountaire poultry plant in Millsboro, Delaware, whose owners have been sued for contaminating the drinking water wells of neighbors with nitrates and bacteria

The ailments described by neighbors in this lawsuit include bacterial infections, gastrointestinal problems, miscarriages, birth defects, cognitive impairment in children, asthma attacks and the "wrongful death" of a 24-year-old, Kiwanis Burton, who died from an asthma attack in 2014 that was allegedly triggered by the slaughterhouse's air pollution.

"It's a terrible smell from that plant, and it comes anytime in the day or night," said another of the plaintiffs in this lawsuit, Jay Meyer, 72, a retired purchasing agent for DuPont. "You can have your windows completely closed, and it will wake you up at 4 am with your eyes burning and your nose and throat burning."

Four of the five slaughterhouses in Sussex County have been hit with water pollution violation notices over the last four years, according to EPA and state records:

- The **Allen Harim Family Foods** plant at 18752 Harbeson Road in Harbeson received a notice from the state in November 2016 for more than 90 Clean Water Act violations over four years, including dumping illegal amounts of ammonia, phosphorus, nitrogen and fecal bacteria into Beaverdam Creek, which empties into the Broadkill River.²⁵ One day in June 2013, the discharge from the plant contained more than 9,000 times the permitted level of enterococcus bacteria, according to the notice. The state followed the notice with a proposed \$241,000 fine in March 2018.
- The **Mountaire Farms** plant at 55 Railroad Avenue in Selbyville has been in violation of the Clean Water Act every quarter for at least the last three years, according to EPA's online enforcement database.²⁶ The plant's effluent had 1,400 times permitted levels of enterococci bacteria in the third quarter of 2017, plus

violations for oil and grease and waste solids. State officials, however, issued only one violation notice to the plant during this period, on September 29, 2015.

- The **Perdue Farms** poultry processing plant at 20621 Savannah Road in Georgetown, Del., received a Clean Water Act violation notice from the state in September 2015 for discharging nearly eight times the amount of nitrogen its permit allows on a monthly basis and also exceeding its monthly enterococci bacteria limit.²⁷
- The **Mountaire Farms** slaughterhouse at 29106 John J. Williams Highway in Millsboro received a November 2017 violation notice for exceeding the permit limits in its spray irrigation waste system.²⁸ The plant was spraying wastewater with as much as seven times the permitted limits of ammonia in 2016 and 9,000 times permitted limits of enterococcus bacteria in 2013, according to the violation notice.

On top of all this, in the future Allen Harim Foods is planning to build the county's sixth chicken facility with waste spray fields. The company is opening a new headquarters and deboning facility in a 460,000-square-foot former Vlassic pickle factory building outside Millsboro.

The company has indicated the new plant will create 40,000 to 50,000 gallons of wastewater per day, which would be treated and then sprayed with an irrigation system on about 29 acres of farmland on the 107-acre property.²⁹

This same kind of spray irrigation disposal system is what caused the drinking water contamination with the nearby Mountaire Millsboro slaughterhouse, according to the lawsuits against the company.

Elsewhere in the county, more waste spray fields on farmland are being proposed as waste disposal systems – an alternative to piping liquid waste into streams and rivers, which is more strictly regulated under the federal Clean Water Act and requires permits with pollution limits and monitoring.

In response to the proposed \$241,000 water pollution fine in March 2018 for the Allen Harim Foods plant in Harbeson, the company proposed what it described as a better solution: Piping its waste eight miles north to dispose in a massive lagoon and spray operation in Milton, Delaware.

On a recent afternoon, Milton resident Keith Steck stood at the gate of the Allen Harim Foods plant in Harbeson and watched as a flatbed truck, loaded with chickens in cages, rumbled past toward the slaughterhouse, trailing a cloud of feathers and diesel fumes.

“Did you get a whiff of that?” asked Steck, 62, a retired analyst for the Government Accountability Office and a member of a local citizens group called Keep Our Wells Clean.

Steck said he is angry about this proposal to “solve” the Allen Harim Foods water pollution problem in Beaverdam Creek by piping the waste to spray in fields near his home. “Some people call this a solution. It’s not a solution. All they are doing is shifting where the wastewater is going...The real concern that people have is that this stuff will just seep through the ground and get into people’s drinking water. This will just make things worse.”

Local residents like Steck have good reason to worry, according to Attorney Chris Nidel, who is representing the dozens of Millsboro residents whose wells have been contaminated by Mountaire’s waste spraying operation.

Nidel said it is not a surprise that a growing number of slaughterhouses want to dispose of their waste in fields instead of rivers, because there is less accountability and government oversight for dumping on the ground than when waste is piped into a river.

“These guys are just finding new ways to dump stuff,” said Nidel. “Spray fields are like spreading your garbage in your backyard. It’s not a magic solution. They do not reduce the amount of waste, or change where it is eventually going to go. It’s all going into the environment, one way or the other.”



The wastewater pumping system outside at the Mountaire slaughterhouse in Millsboro, Delaware, next to the corn fields, where the waste is sprayed

Florida: Multinational Meat Company Sued for Polluting Local Waterway

In late 2017, Pilgrim's Pride, a subsidiary of a Brazilian company that is the largest meat processor in the world, settled a lawsuit brought by environmental groups in Florida for discharging illegal levels of wastewater pollution into a nearby river and repeatedly violating the Clean Water Act.

The case is an example of how cleaning up local waterways often requires wrestling with vast, well-funded and often politically influential corporations. Pilgrim’s Pride is owned by JBS S.A., the world’s largest protein company.

In this case, Environment America and the Sierra Club filed their lawsuit against Pilgrim's Pride Live Oak, a Florida-based chicken processing plant that already had a history of citations from environmental regulators for wastewater violations. The groups alleged that since 2012, the company had violated the Clean Water Act on 1,377 days, and that discharged wastewater had as much as tripled legal pollution limits.



In Live Oak, Florida, wastewater pours from a Pilgrim's Pride meat processing plant into the Suwannee River

In settling the suit, Pilgrim's Pride Corp. agreed to pay \$1.43 million in fines, of which \$1.3 million goes to Stetson University in Delaware to create a sustainable farming fund ultimately aimed at helping nearby farmers also reduce pollution. Pilgrim also agreed to take steps to upgrade equipment and limit waste and pollution, including conducting research into how to reduce wastewater discharges and toxicity violations.

The lawsuit didn't solve all of the problems, however, because it only applied to discharges in violation of Pilgrim's Pride's relatively lax state permit. According to the EPA's Toxics Release Inventory, the total pollution from the Live Oak plant into the Suwannee River was 379,641 pounds in 2014 alone.³⁰

According to the Florida Department of Environmental Protection, the Suwannee River is one of Florida's 41 "Special Waters," meaning it has exceptional recreational or ecological significance. It is home to 62 freshwater springs and runs through several state parks.

"Our state officials were not doing enough to protect one of Florida's most important rivers so we stepped in as citizen enforcers of the Clean Water Act," said Jennifer Rubiello, State Director of Environment Florida, a state affiliate of Environment America, in a statement at the time. "This great outcome demonstrates the importance of citizen lawsuits."

Illinois: Hog Waste from Slaughterhouse Causes Fish Kill

In Beardstown, Illinois, about two hours south of Chicago, JBS USA runs a 430,000-square-foot hog slaughterhouse that processes almost 20,000 animals a day to produce about a billion pounds of meat annually.³¹ Once owned by Cargill, since October 2015, the more than half-century old plant has been owned by the international, Brazilian-based meat company JBS, which also owns the well-known brands Pilgrim's Pride and Swift & Company, among others.³²

Beardstown is a small, rural community of only 6,000 people, and many of the 2,000 workers in the plant are immigrants, many from Mexico and about 30 other countries in Latin America, Africa and elsewhere. “Lower wages, along with increases in work speed and injuries – a trend in meatpacking plants across the Midwest in the late 1980s – made jobs less attractive for most white skilled workers,” according to a Reuters news report on the plant.³³ “Latino immigrants started coming to Beardstown, once an all-white town



A spill of 29 million gallons of hog waste from a JBS meat processing plant in Beardstown, Illinois, killed 64,566 fish in tributaries to the Illinois River in 2015.

settled mostly by Germans, in the 1990s. Immigrants are drawn to the Beardstown plant because meatpacking pays better than other available jobs, such as picking crops, and you don’t have to speak English to do it.” The plant was the subject of a high-profile raid by federal Immigration and Customs

Enforcement (ICE)

officers in 2007, during which 63 workers illegally employed by a cleaning contractor for the plant were arrested.³⁴

The meat processing plant is surrounded by waste lagoons and earthen berms. The slaughterhouse also has a wastewater treatment plant that processes about 2.5 million gallons of wastewater a day.

On March 7, 2015, an estimated 29 million gallons of hog waste spilled out of a 40-foot breach in one of the berms and flowed into ditches and waterways surrounding the plant, according to a report in The Chicago Tribune.³⁵ Local authorities then pumped the waste into a nearby bay and marina that lead into the Illinois River. When officials with the Illinois Environmental Protection Agency arrived to investigate 10 days later, they found 64,566 dead fish, including bluegill, largemouth bass and catfish, in Muscooten Bay and the linked waterways, according to the Tribune.

On May 11, 2017, after a lawsuit filed by the Illinois Attorney General on behalf of the Illinois EPA, the state imposed a \$150,000 penalty for unpermitted waste discharges from the plant, according to court records.³⁶ The company also agreed to pay \$34,081 to the Illinois Wildlife and Fish Fund to help compensate for the fish kill. State officials had concluded that the failure of the berm on one the plant’s treatment lagoons, and the release

of millions of gallons of untreated hog waste, violated state clean water laws and regulations.

However, the pollution from the Beardstown plant was not confined to that once incident. The Environmental Integrity Project's examination of data from the U.S. EPA's Enforcement and Compliance Online (ECHO) database revealed that the plant released an average of 1,848 pounds of nitrogen pollution per day in 2017 into a tributary to the Illinois River – the most nitrogen pollution of any pork slaughterhouse in the U.S. that year.³⁷

Conclusion and Recommendations

From spraying waste in farm fields next to homes, to shipping their problems to communities downstream, the meat processing industry has developed a number of strategies to try to reduce its costs of treating wastewater. State and federal environmental agencies have a responsibility to step up and police these practices, so the industry doesn't end up contaminating private drinking water wells and unfairly shifting the responsibility of dealing with the waste to taxpayers and municipal governments. But more importantly, state and federal regulators need to strengthen the pollution limits in the Clean Water Act permits issued to many slaughterhouses, and then be vigilant in enforcing these limits, with violation notices and substantial fines – when necessary – to protect public waterways. Below are some more specific recommendations:

1. **EPA should strengthen national limits on slaughterhouse wastewater:** Federal rules written in 2004 require all slaughterhouses to meet nationwide limits on the discharge of nitrogen and other pollutants. Those limits are out of date, as more recent data show this industry is capable of reducing their pollution much further. For example, the standard prohibits poultry plants from discharging wastewater with total nitrogen concentrations above 103 milligrams per liter. More than half the industry reports are already discharging at less than a third of that rate, showing that better performance by all of the plants is possible. Across the country, pollution limits should be updated to reflect the industry's leaders, not its laggards.
2. **States should limit wastewater discharges to impaired waterways:** While EPA sets nationwide discharge limits, the federal Clean Water Act requires states to require further reductions when needed to restore waters that are so polluted they endanger aquatic life or limit public use. Sixty-one of 98 plants studied are discharging to creeks or watersheds that states have already determined are impaired with pollution. But the states are falling down on the job by failing to develop cleanup plans and pollution limits to protect the waterways in two thirds of these cases. Lack of resources is no excuse – if needed, state agencies should collect fees from slaughterhouses and other major polluters to pay for the work needed to develop these cleanup plans.

3. **Regulators should require responsible waste disposal:** State and federal agencies should also bar irresponsible waste disposal methods that endanger public health and waterways. This would include prohibiting spray fields located too close to nearby homes or waterways, and the shipping of slaughterhouse waste to municipal sewage plants not engineered to treat it. Companies that profit from the sale of meat should invest some of those earnings in state-of-the-art wastewater treatment systems for their slaughterhouses to protect public health.
4. **Government should enforce the “rule of law:”** Permit limits mean nothing if they are not enforced, with violators made to clean up and pay appropriate penalties. EPA should take enforcement action if states are unwilling or unable to do so. And where the government’s response is weak or nonexistent, federal law gives local communities the right to take polluters to court and make them comply with permit limits. That enforcement depends on accurate and transparent monitoring records, which also give companies an incentive to police themselves.

Slaughterhouses get away with hundreds of illegal discharges without penalty, or by paying fines that are less than the amount they can be charged for a single day’s violation under federal law. Government agencies lack the resources to prosecute and the judicial system can be very slow, so almost every case is resolved through a negotiated settlement. It is unrealistic to expect EPA or states to recover the maximum penalties allowed by law, which also lets courts take into account a violator’s ability to pay fines or their good faith in returning to compliance. Those considerations are less compelling when companies with billions of dollars of annual revenue repeatedly discharge pollution far above the legal limit. There is no good argument for letting large corporations resolve hundreds of violations by paying token fines so small they are hardly worth collecting.

One problem is that almost every state has capped Clean Water Act penalties at \$10,000 per violation per day, far less than the amount authorized under federal law. Those ceilings were put in place many years ago and need to be raised or at least indexed for inflation, as Congress long ago required for all penalties assessed in federal cases.

Water pollution is not “free,” especially to those who live downstream and suffer the consequences. That is why the Clean Water Act prohibits the discharge of pollution without a permit. As noted earlier, 61 of the 98 slaughterhouses already contribute to pollution that has impaired rivers, creeks, or lakes that belong to everyone, making them unfit for swimming, fishing, or other public use. Minute concentrations of some pollutants, like chlorine, can be fatal to aquatic life and form toxic compounds that must be removed from drinking water intakes. Nitrogen can fill rivers and creeks with algae and weeds that consume the oxygen that fish need to survive, or seep into private wells and make their water unfit to drink.

Companies that spend millions of dollars every year to stay in compliance with environmental law have no incentive to do so if their competitors can violate the same

requirements for free. These slaughterhouses are not run by “mom and pop” operations or small municipalities struggling to pay their bills. The large companies that dominate the meatpacking sector are successful because of their relentless focus on the bottom line, and Clean Water Act violations will not get their attention unless they cost real money. The Securities and Exchange Commission extracts hundreds of millions of dollars from corporations that break the rules that Wall Street lives by. We should expect more from enforcement actions if we want to hold companies accountable for violating laws that protect our waterways and the public’s health.

Although the meat processing industry in America today is no longer “The Jungle” of a century ago, it remains far from clean and safe. The movement of slaughterhouses to remote, often low-income rural areas has in some ways hidden its problems, while contaminating the streams, rivers and drinking water wells of people who can least afford it. Both meat companies and government have a responsibility to clean up this problem and ensure that slaughterhouses don’t taint public waterways and water supplies.

APPENDIX A: Methods

Identifying Slaughterhouses and Meat and Poultry Processing Plants

This analysis focuses on 98 meat and poultry processing plants that, as of summer 2018: a) discharge over 250,000 gallons of wastewater per day directly to surface waters, and b) had monitoring data available from the U.S. Environmental Protection Agency’s Enforcement and Compliance History Online (ECHO) database. We searched for facilities using the Standard Industry Classification (SIC) codes, North American Industry Classification System (NAICS) codes, and key terms listed in Table A1 below.

Table A1. Search terms

Search Type	Search Terms
SIC Code	201X - Meat Products 2011 - Meat Packing Plants 2013 - Sausage and Other Prepared Meat Products 2015 - Poultry Slaughtering and Processing
NAICS Code	3116XX - Animal Slaughtering and Processing
Key Terms ³⁸	Tyson, Perdue, Koch, Cargill, meat, beef, sausage, ham, poultry, food, packing, slaughter, butcher, farm, agri

This search resulted in 278 active plants that held wastewater discharge permits. 52 of these plants did not have any discharge monitoring data available in ECHO, leaving 226 with available data. We focused our analysis on 98 plants that discharged over 250,000 gallons per day according to ECHO, after removing another 19 facilities that did not discharge directly to waterways according to a review of NPDES permits and available DMR data.

Effluent Violations

Effluent violations were identified using permit limits and sampling results from discharge monitoring report data available from ECHO.³⁹ We grouped effluent limit violations into pollutant categories. Bacteria includes fecal coliform, *E. coli*, and *enterococcus*. Nitrogen and nitrogen compounds include total nitrogen, nitrates, nitrites, total kjeldahl nitrogen, and ammonia. Phosphorus and phosphorus compounds include total phosphorus, ortho-phosphate, and dissolved phosphorus. Biochemical oxygen demand (BOD) and carbonaceous biological oxygen demand are grouped together. We grouped the pollutants that do not fall into any of these categories under “effluent violations for other pollutants.” These pollutants include chlorides, sulfates, toxicity standards, oil and grease, and any other parameters with numeric limits at a particular facility.

A number of factors drive the number of effluent violations. The most obvious is whether a facility operates in compliance with its permit limits. Otherwise, some facilities might have

more stringent monitoring and reporting requirements. Some may have lower numeric limits and may be required to monitor monthly and report multiple statistical measures (e.g. monthly average, daily max) or type of value (e.g. concentration, quantity) for the same pollutant during the same monitoring period, and sometimes from multiple outfalls. These facilities might have multiple violations for the same parameters in a single monitoring period. Other facilities might not have many violations because they don't have stringent permit limits or because they're not required to monitor frequently.

Our tally of effluent violations is based on data available in ECHO and data reported by regulated facilities. Errors may be present in government and industry-reported data that we are unable to correct.

2017 Average Concentrations, Average Daily Loading Rates

We calculated the average concentrations and average daily loading rates of total nitrogen and BOD or cBOD using DMR data available in ECHO from 2017. We limited our analysis to outfalls that discharged directly to waterways. We excluded stormwater outfalls because flow is inconsistent. In most cases, we calculated average daily concentrations using the average daily or monthly concentrations reported by each facility. In some cases, the facility only reported a mass loading (lbs or kg per day), and we back-calculated a concentration using the flow reported for that same monitoring period. Similarly, we calculated average daily loading rates using flow and concentrations, when available. Annual loads are the sum of total monthly loads based on available data. We did not estimate or attempt to fill in gaps in total loadings if a facility failed to report monitoring data.

Waterway Impairments

We identified waterways that receive wastewater using each facility's current NPDES permit or permit fact sheet. We determined impairment causes and TMDL status using facility permits or fact sheets, the most recent final state 303(d) and 305(b) integrated water quality reports, and EPA's WATERS database. We also referred to TMDLs when they were readily available.

Appendix B. Biochemical Oxygen Demand (BOD) Tables

Table B1: Plants that Released the Most Oxygen-Demanding Substances (BOD) in 2017

Plant (Location)	Type	Avg. Daily Loading Rate (lbs/day)	Avg. Concentration (mg/L)
1. Swift Beef- Lone Tree (Greeley, CO)	Beef	477	23.95
2. John Morrell & Co. (Sioux Falls, SD)	Pork	352	16.81
3. JBS Pork (Ottumwa, IA)	Pork	286	22.79
4. Smithfield Farmland Foods, Inc. (Crete, NE)	Pork	283	21.48
5. Cargill Meat, Fort Morgan Beef Plant (Morgan County, CO)	Beef	277	18.35
6. Tyson Farms, Inc. (Center, TX)	Poultry	189	15.81
7. Perdue Cromwell Processing Plant (Beaver Dam, KY)	Poultry	189	17.39
8. Tyson Farms, Inc. Carthage Processing Plant (Carthage, MS)	Poultry	178	9.5
9. Tyson Fresh Meats (Columbus Junction, IA)	Pork	163	31.52
10. Tyson Fresh Meats (Lexington, NE)	Beef	125	6.66

Table B2: Plants that Released the Fewest Oxygen-Demanding Substances (BOD) Per Day in 2017

Plant (Location)	Type	Avg. Daily Loading Rate (lbs/day)	Avg. Concentration (mg/L)
Pilgrim's Pride (Sanford, NC)	Poultry	0.85	0.24
Keystone Protein (Fredericksburg, PA)	Animal and marine fats and oils	1.42	2.33
Case Farms of Ohio Rendering Plant (Winesburg, OH)	Poultry	3.17	0.89
Gerbers Poultry Inc. (Wooster, OH)	Poultry	3.73	1.37
Tyson Poultry- River Valley Animal Foods (Texarkana, AR)	Poultry	5.65	2.2
Michael Foods (Lenox, IA)	Eggs	8.07	4.89
Tyson Poultry (Cumming, GA)	Poultry	8.09	0.89
Tyson Poultry (Grannis, AR)	Poultry	9.61	1.86
Sanderson Farms (Collins, MS)	Poultry	9.85	1.16
Farmers Pride (Fredericksburg, PA)*	Poultry	11.57	2.32

NOTES

¹ Data from EPA Enforcement and Compliance Online (ECHO) database, link: <https://echo.epa.gov/>

² Based on an estimate that each person generates 70 gallons of wastewater per day containing an average of 40 mg/L of nitrogen. <https://www.doh.wa.gov/Portals/1/Documents/Pubs/337-103.pdf> and <https://www.thewastewaterblog.com/single-post/2017/11/01/Total-Kjeldahl-Nitrogen>.

³ See note 1.

⁴ Fitzgerald, Amy J. (2010) “A Social History of the Slaughterhouse: From Inception to Contemporary Implications,” *Human Ecology Review*, 17:1. Available at: <http://w.humanecologyreview.org/pastissues/her171/Fitzgerald.pdf>, accessed 7/19/2018.

⁵ The National Provisioner, “The 2017 Top 100 Meat & poultry Processors,” available at: <https://www.provisioneronline.com/2017-top-100-meat-and-poultry-processors>, accessed 8/29/2018.

⁶ Delaware Department of Natural Resources, “Application for a Coastal Zone Permit, Processing Plant Expansion Mountaire Farms of Delaware,” May 18, 2017. Link: <http://www.dnrec.delaware.gov/Admin/CZA/Lists/Coastal%20Zone%20Act%20Application%20Status/Attachments/39/CZA%20permit%20application%20May%202017.pdf>

⁷ Government Accountability Office report, “Workplace Safety and Health: Additional Data Needed to Address

Continued Hazards in the Meat and Poultry Industry,” April 2016. Link:

<https://www.gao.gov/assets/680/676796.pdf>

⁸ Ibid.

⁹ Ibid.

¹⁰ Carol Robinson, “State inmate dies in industrial accident at poultry plant,” *The Birmingham News*, Oct 30, 2017. Link:

https://www.al.com/news/birmingham/index.ssf/2018/08/adamsville_inmate_jailed_on_mi.html

¹¹ Heidi Parsons, “Contract sanitation worker dies in Tyson plant accident,” *Food Navigator*, Feb. 19, 2015. Link:

<https://www.foodnavigator.com/Article/2015/02/19/Tyson-Foods-contract-sanitation-worker-poultry-plant-accident-OSHA>.

¹² Michael Grabbell, “Exploitation and Abuse at the Chicken Plant,” *The New Yorker*, May 8, 2017.

<https://www.newyorker.com/magazine/2017/05/08/exploitation-and-abuse-at-the-chicken-plant>

¹³ U.S. Bureau of Labor Statistics, “Labor Force Statistics from the Current Population Survey,” link:

<https://www.bls.gov/cps/cpsaat18.htm>. “Occupational Employment Statistics,” link:

<https://www.bls.gov/oes/current/oes513023.htm>.

¹⁴ EPA, Technical Development Document for Meat and Poultry Products Effluent Guidelines, 2004, pp. 6-8 to 6-9, available at: https://www.epa.gov/sites/production/files/2015-11/documents/meat-poultry-products_tdd_2004_0.pdf, accessed 7/16/2018.

¹⁵ EPA, Technical Development Document for Meat and Poultry Products Effluent Guidelines, 2004, p. 6-3, available at: https://www.epa.gov/sites/production/files/2015-11/documents/meat-poultry-products_tdd_2004_0.pdf, accessed 7/16/2018.

¹⁶ Iowa Citizens for Community Improvement website, “Cargill Ottumwa Plant Had Long History of Clean Water Act Violations Prior To March 3 Spill.” Link: <http://iowacci.org/in-the-news/cargill-ottumwa-plant-had-long-history-of-clean-water-act-violations-prior-to-march-3-spill/>

¹⁷ EPA “Developing Total Maximum Daily Loads,” available at: <https://www.epa.gov/tmdl/developing-total-maximum-daily-loads-tmdl>, accessed 8/30/2018.

¹⁸ Causes of these impairments include nutrients like nitrogen and phosphorus, ammonia, dissolved oxygen, algae, chlorophyll, and impaired biota or benthic communities.

¹⁹ See note 1

²⁰ Table 2, 83 Fed.Reg. 1193 (January 10, 2018).

²¹ Louisiana Department of Environmental Quality, “In the Matter of Pilgrim’s Pride Corporation,” 2016.

Link: https://deq.louisiana.gov/assets/docs/General/Settlement_Agreements/2016/Pilgrim0060_Final.pdf

²² Meat & Poultry, “Pilgrim’s Pride settles water pollution suit,” Nov. 16, 2017. Link:

<https://www.meatpoultry.com/articles/17464-pilgrim-s-pride-settles-water-pollution-suit>

- ²³ Delaware Department of Natural Resources and Environmental Conservation, “Notice of Administrative Penalty,” Allen Harim Foods, February 22, 2018. Link: <http://www.dnrec.delaware.gov/Info/Documents/Secretarys-Order-No-2018-W-0014.pdf>
- ²⁴ U.S. Department of Justice, “Tyson Poultry Fined \$2 Million for Violating the Clean Water Act,” February 27, 2018. Link: <https://www.justice.gov/opa/pr/tyson-poultry-fined-2-million-violating-clean-water-act>
- ²⁵ Delaware Department of Natural Resources and Environmental Control, Notice of Violation against Allen Harim Foods Harbeson Plant on Nov. 3, 2016. Link: <http://www.environmentalintegrity.org/wp-content/uploads/2017/02/DelAllenHarimNOV.pdf>
- ²⁶ EPA Enforcement and Compliance Online (ECHO) database. Link: <https://echo.epa.gov/detailed-facility-report?fid=110000720505>
- ²⁷ EPA Enforcement and Compliance Online (ECHO) database. Link: <https://echo.epa.gov/detailed-facility-report?fid=110037957486>
- ²⁸ Delaware Department of Natural Resources and Environmental Control, Notice of Violation against Mountaire Millsboro plant, Nov. 2, 2017. Link: <http://www.environmentalintegrity.org/wp-content/uploads/2017/02/Del-Mountaire-NOV-2017.pdf>
- ²⁹ Taylor Goebel, “Amid resident outcry, Allen Harim gets OK for chicken processing plant in Millsboro,” Delmarva Now, May 8, 2018. Link: <https://www.delmarvanow.com/story/news/local/delaware/2018/05/08/millsboro-chicken-processing-plant-approved/588636002/>
- ³⁰ <https://nelconline.org/environment-florida-sierra-club-v-pilgrims-pride-corp>
- ³¹ Mary Wisniewski, “Midwest Farm Town, Transformed by Immigration, Thrives,” Reuters, June 20, 2012. Link: <https://www.reuters.com/article/us-usa-immigration-meatpacking/midwest-farm-town-transformed-by-immigration-thrives-idUSBRE85J0FA20120620>. Also: Press release on Cargill website, “Cargill Illinois pork plant reaches 6 million work hours with no lost time injuries,” October 6, 2014. Link: <https://www.cargill.com/news/releases/2014/NA31701457.jsp>
- ³² JBS company website history page. Link: <https://jbsa.com/about/history/>
- ³³ Mary Wisniewski, “Midwest Farm Town, Transformed by Immigration, Thrives,” Reuters, June 20, 2012. Link: <https://www.reuters.com/article/us-usa-immigration-meatpacking/midwest-farm-town-transformed-by-immigration-thrives-idUSBRE85J0FA20120620>
- ³⁴ Ibid.
- ³⁵ David Jackson and Gary Marx, “Waste Spill at Cargill Slaughterhouse Contaminates Waterways,” the Chicago Tribune, August 5, 2016. Link: <http://www.chicagotribune.com/news/watchdog/pork/ct-pig-farms-pollution-cargill-met-20160802-story.html>
- ³⁶ People of the State of Illinois vs. Cargill Meat Solutions Corporation, May 11, 2017. Available on Illinois EPA website: <http://www.epa.state.il.us/cgi-bin/en/orders/orders.pl>
- ³⁷ Data from EPA Enforcement and Compliance Online (ECHO) database, link: <https://echo.epa.gov/>
- ³⁸ Results from the “Key Terms” search were reviewed to ensure they were not affiliated with a different industry. For example, fruit packing facilities would have been removed from the analysis.
- ³⁹ US Environmental Protection Agency. Enforcement and Compliance History Online. Effluent Charts. Available at (for example) <https://echo.epa.gov/effluent-charts#AL0001449>; We downloaded effluent data for each facility, which has its own URL. Effluent charts for each facility can be found at the link mentioned earlier by replacing the NPDES permit number with the appropriate number.