Rolling Stone

oss Hog—Part 1

rica's top pork producer churns out a sea of waste that has destroyed rivers, l millions of fish and generated one of the largest fines in EPA history. Welcome e dark side of the other white meat.

TIETZ

14, 2006

mithfield Foods, the largest and most profitable pork processor in the world, killed 27 million hogs last year. Hogs ce three times more excrement than human s do. The 500,000 pigs at a single Smithfield generate more fecal matter each year than 5 million inhabitants of hattan. The best esti- s put Smithfield's total discharge at 26 million a year. That would fill Yankee Stadiums.

mithfield's pigs live by undreds or thousands in house-like barns, in rows ll-to-wall pens. Sows are cially inseminated and and delivered of their ts in cages so small they ot turn around. Forty grown 250-pound male hogs often occupy a he size of a tiny apartment. They trample each to death. There is no sunlight, straw, fresh earth. The floors are slatted to allow excre- to fall into a catchment pit under the pens.

he temperature inside hog houses is often r than ninety degrees. The air, saturated st to the point of precipitation with gases feces and chemicals, can be lethal to the Enormous exhaust fans run twenty-four s a day. The ventilation systems function like entilators of terminal patients: If they break for any length of time, pigs start dying.

rom Smithfield's point of view, the problem this lifestyle is immunological. Taken together, the immobility, poisonous air and terror of confinement badly damage the pigs' immune systems. They become susceptible to infection, and in such dense quarters microbes or parasites or fungi, once established in one pig, will rush spritelike through the whole population. Accordingly, factory pigs are infused with a huge range of antibiotics and vaccines, and are doused with insecticides. Without these compounds—oxytetracycline, draxxin, ceftiofur, tiamulin—diseases would likely kill them. Thus factory-farm pigs remain in a state of dying until they're slaughtered. When a pig nearly ready to be slaughtered grows ill, workers sometimes shoot it up with as many drugs as necessary to get it to the slaughterhouse under its own power. As long as the pig remains ambulatory, it can be legally killed and sold as meat.

Forty fully grown 250-pound male hogs often occupy a pen the size of a tiny apartment. They trample each other to death. There is no sunlight, straw, fresh air or earth.

The drugs Smithfield administers to its pigs, of course, exit its hog houses in pig feces. Industrial pig waste also contains a host of other toxic substances: ammonia, methane, hydrogen sulfide, carbon monoxide, cyanide, phosphorous, nitrates and heavy metals. In addition, the waste nurses more than 100 microbial pathogens that can cause illness in humans, including salmonella, cryptosporidium, streptocolli and girardia. Each gram of hog feces can contain as much as 100 million fecal coliform bacteria.

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Boss Hog—Part 2

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Dec. 14, 2006

Smithfield's feces holding ponds—the company calls them lagoons—cover as much as 120,000 square feet. The area around a single slaughterhouse can contain hundreds of lagoons, some of which run thirty feet deep. The liquid in them is not brown. The interactions between the bacteria and blood and urine and excrement and chemicals and drugs turn the lagoons pink.

The lagoons themselves are so viscous and venomous that if someone falls in it is foolish to try to save him. A few years ago, a truck driver in Oklahoma was transferring pig feces to a lagoon when he and his truck went over the side. It took almost three weeks to recover his body. In 1992, when a worker making repairs to a lagoon in Minnesota began to choke to death on the fumes, another worker dived in after him, and they died the same death. In another instance, a worker who was repairing a lagoon in Michigan was overcome by the fumes and fell in. His fifteen-year-old nephew dived in to save him but was overcome, the worker's cousin went in to save the teenager but was overcome, the worker's older brother dived in to save them but was overcome, and then the worker's father dived in. They all died in pig feces.

Studies have shown that lagoons emit hundreds of different volatile gases into the atmosphere, including ammonia, methane, carbon dioxide and hydrogen sulfide.

Studies have shown that lagoons emit hundreds of different volatile gases into the atmosphere, including ammonia, methane, carbon dioxide and hydrogen sulfide. A single lagoon releases many millions of bacteria into the air per day, some resistant to human antibiotics. Hog farms in North Carolina also emit some 300 tons of nitrogen into the air every day as ammonia gas, much of which falls back to earth and deprives lakes and streams of oxygen, stimulating algal blooms and killing fish.

Looking down from a plane, we watch as several of Smithfield's farmers spray their hog feces straight up into the air as a fine mist: It looks like a public fountain. Lofted and atomized, the feces is blown clear of the company's property. People who breathe the feces-infused air suffer from bronchitis, asthma, heart palpitations, headaches, diarrhea, nosebleeds and brain damage.

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Boss Hog—Part 3

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Each of the company's lagoons is surrounded by several fields. Pollution control at Smithfield consists of spraying the pig feces from the lagoons onto the fields to fertilize them. The idea is borrowed from the past: The small hog farmers that Smithfield drove out of business used animal waste to fertilize their crops, which they then fed to the pigs. Smithfield says that this, in essence, is what it does—its crops absorb every ounce of its pig feces, making the lagoon-sprayfield system a zero-discharge, nonpolluting waste-disposal operation. In fact, Smithfield doesn't grow nearly enough crops to absorb all of its hog waste. The company raises so many pigs in so little space that it actually has to import the majority of their food, which contains large amounts of nitrogen and phosphorus. Those chemicals—discharged in pig feces and sprayed on fields—run off into the surrounding ecosystem. At one point, three hog-raising counties in North Carolina were producing more nitrogen, and eighteen were producing more phosphorus, than all the crops in the state could absorb.

Many studies have documented the harm caused by hog-waste runoff; one showed the pig feces raising the level of nitrogen and phosphorus in a receiving river as much as sixfold. In eastern North Carolina, nine rivers and creeks in the Cape Fear and Neuse River basins have been classified by the state as either "negatively impacted" or environmentally "impaired."

To appreciate what this agglomeration of hog production does to the people who live near it, you have to appreciate the smell of industrial-strength pig feces. To get a really good whiff, I drive down a narrow country road of white sand and walk up to a Smithfield lagoon. There is an unwholesome tang in the air, but there is no wind and it isn't hot, so I can't smell the lagoon itself. I walk the few hundred yards over to it. It is covered with a thick film; its edge is a narrow beach of big black flies. Here, its odor is leaking out. I take a deep breath.

The smell at its core has a frightening, uniquely enriched putridity, both deep-sweet and high-sour.

I fight an impulse to vomit. I've probably smelled stronger odors in my life, but nothing so insidiously and instantaneously nauseating. The smell at its core has a frightening, uniquely enriched putridity, both deep-sweet and high-sour. I back away from it and walk back to the car but I remain sick—it's a shivery, retchy kind of nausea—for a good five minutes. That's apparently characteristic of industrial pig feces: It keeps making you sick for a good while after you've stopped smelling it. It's as if something has physically entered your stomach.

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Boss Hog—Part 4

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Studies show that those who live near hog lagoons suffer from abnormally high levels of depression, tension, anger, fatigue and confusion. Sometimes the stink literally knocks people down: They walk out of the house to get something in the yard and become so nauseous they collapse. When they regain consciousness, they crawl back into the house.

That has happened several times to Julian and Charlotte Savage, an elderly couple whose farmland now abuts a Smithfield sprayfield—one of several meant to absorb the feces of 50,000 hogs. Sitting in the kitchen, Charlotte tells me that she once saw Julian collapse in the yard and ran out and threw a coat over his head and dragged him back inside. Before Smithfield arrived, Julian's family farmed the land for the better part of a century. He raised tobacco, corn, wheat, turkeys and chickens. Now he has respiratory problems and rarely attempts to go outside.

A river that receives a lot of waste from an industrial hog farm begins to die quickly. Toxins and microbes can kill plants and animals outright; the waste itself consumes available oxygen and suffocates fish and aquatic animals; and the nutrients in the pig feces produce algal blooms that also deoxygenate the water.

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The biggest spill in the history of corporate hog farming happened in 1995. The dike of a 120,000-square-foot lagoon owned by a Smithfield competitor ruptured, releasing 25.8 million gallons of waste into the headwaters of the New River in North Carolina. It was the biggest environmental spill in United States history, more than twice as big as the Exxon Valdez oil spill six years earlier. The sludge was so toxic it burned your skin if you touched it, and so dense it took almost two months to make its way sixteen miles downstream to the ocean. From the headwaters to the sea, every creature living in the river was killed. Fish died by the millions.

It's hard to conceive of a fish kill that size. The kill began with turbulence in one small part of the water: fish writhing and dying. Then it spread in patches along the entire length and breadth of the river. In two hours, dead and dying fish were mounded wherever the river's contours slowed the current. Within a day dead fish completely covered the riverbanks. The smell of rotting fish covered much of the county; the air above the river was chaotic with scavenging birds. There were far more dead fish than the birds could ever eat.

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Boss Hog—Part 5

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Corporate hog farming contributes to another form of environmental havoc: Pfiesteria piscicida, a microbe that, in its toxic form, has killed a billion fish and injured dozens of people. Nutrient-rich waste like pig feces creates the ideal environment for Pfiesteria to bloom: The microbe eats fish attracted to algae nourished by the waste. Pfiesteria is invisible and odorless—you know it by the trail of dead. The microbe degrades a fish's skin, laying bare tissue and blood cells; it then eats its way into the fish's body. After the 1995 spill, millions of fish developed large bleeding sores on their sides and quickly died. Fishermen found that at least one of Pfiesteria's toxins could take flight: Breathing the air above the bloom caused severe respiratory difficulty, headaches, blurry vision and logical impairment. Some fishermen forgot how to get home; laboratory workers exposed to Pfiesteria lost the ability to solve simple math problems and dial phones; they forgot their own names. It could take weeks or months for the brain and lungs to recover.

Several state legislatures have passed laws prohibiting or limiting the ownership of small farms by pork processors. In some places, new slaughterhouses are required to meet expensive waste-disposal requirements; many are forbidden from using the waste-lagoon system. North Carolina, where pigs now outnumber people, has passed a moratorium on new hog operations and ordered Smithfield to fund research into alternative waste-disposal technologies. South Carolina, having taken a good look at its neighbor's coastal plain, has pronounced the company unwelcome in the state. The federal government and several states have challenged some of Smithfield's recent acquisition deals and, in a few instances, have forced the company to agree to modify its waste-lagoon systems.

The volumes of concentrated pig waste produced by industrial hog farms are plainly not containable in small areas. The land "just can't absorb everything that comes out of the barns."

These initiatives, of course, come late. Industrial hog operations control at least seventy-five percent of the market. According to Dr. Michael Mallin, a marine scientist at the University of North Carolina at Wilmington who has researched the effects of corporate farming on water quality, the volumes of concentrated pig waste produced by industrial hog farms are plainly not containable in small areas. The land, he says, "just can't absorb everything that comes out of the barns."

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Livestock and Poultry Environmental Stewardship (LPES) curriculum

CAFO Fact Sheet series

Fact Sheet #13B: CAFO Requirements for Large Swine Operations

By Don Jones, Purdue University; Glenn Carpenter, USDA–NRCS; Karl VanDevender, University of Arkansas; and Peter Wright, Cornell University

In December 2002, EPA released new rules defining and clarifying the Concentrated Animal Feeding Operation (CAFO) regulations.

Requirements for Swine Operations

The CAFO program for swine applies only to those confined feeding operations that have a one-time capacity of 2,500 head (each weighing more than 55 pounds) or 10,000 swine (each weighing less than 55 pounds).

Common Manure-Handling Systems—Liquid Manure Storage

Most swine manure is handled as a liquid. Manure typically falls through a slotted floor into either a gutter or a concrete storage pit. Four- to ten-foot-deep storage pits, typically providing from 3 to 12 months of manure storage, are usually located directly under the slotted floor. In some operations, the manure falls through the slotted floor into a shallow gutter and is periodically removed to a larger outside storage. Storage is usually sized large enough to hold at least six month's accumulation, preventing the need to apply manure during the crop-growing season or when weather conditions are unsuitable.

Stored liquid manure must be agitated thoroughly to make the manure nutrient content more uniform from load to load when it is hauled to the field for application.

Note: Take precautions when agitating an underslat storage unit or unit connected to the building through the drain system. Even in low concentrations, the hydrogen sulfide gas released during agitation is toxic.

When a deep pit is agitated, animals on a slotted floor over the pit should be removed if possible. Ventilation fans should be operated at high capacity, and humans should stay out of the building. These precautions are especially important during the first 10 to 20 minutes of agitation. Pipes or drain openings between rooms and the outside storage should be gas trapped or sealed.

Liquid manure is either surface applied or incorporated into the soil. Spray irrigation is an efficient method of land application. However, since odor emissions can be significant with spray or surface application, it should be avoided in populated areas.

Regulatory Definitions of Large CAFOs, Medium CAFOs, and Small CAFOs

A large CAFO confines at least the number of animals described in the table below.

A medium CAFO falls within the size range in the table below and either:

- has a manmade ditch or pipe that carries manure or wastewater to surface water; **or**
- the animals come into contact with surface water that passes through the area where they're confined.

A small CAFO confines fewer than the number of animals listed in the table **and** has been designated as a CAFO by the permitted authority as a significant contributor of pollutants.

Animal Sector	Size Threshold (number of animals)		
	Large CAFOs	Medium CAFOs[1]	Small CAFOs[2]
cattle or cow/calf pairs	1,000 or more	300–999	less than 300
mature dairy cattle	700 or more	200–699	less than 200
veal calves	1,000 or more	300–999	less than 300
swine (weighing over 55 pounds)	2,500 or more	750–2,499	less than 750
swine (weighing less than 55 pounds)	10,000 or more	3,000–9,999	less than 3,000
horses	500 or more	150–499	less than 150
sheep or lambs	10,000 or more	3,000–9,999	less than 3,000
turkeys	55,000 or more	16,500–54,999	less than 16,500
laying hens or broilers (liquid manure handling systems)	30,000 or more	9,000–29,999	less than 9,000
chickens other than laying hens (other than liquid manure handling systems)	125,000 or more	37,500–124,999	less than 37,500
laying hens (other than liquid manure handling systems)	82,000 or more	25,000–81,999	less than 25,000
ducks (other than liquid manure handling systems)	30,000 or more	10,000–29,999	less than 10,000
ducks (liquid manure handling systems)	5,000 or more	1,500–4,999	less than 1,500

[1] Must also meet one of two "method of discharge" criteria to be defined as a CAFO or may be designated.
[2] Never a CAFO by regulatory definition, but may be designated as a CAFO on a case-by-case basis.