

animals

factories

For generations, Texans have raised cattle, poultry and hogs on the state's abundant land. But in recent decades, market forces and new technological advances have changed livestock production. According to the United States Department of Agriculture (USDA) and the Environmental Protection Agency (EPA), since the 1970s the number of animals produced in the US has increased while the number of animal feeding operations has decreased, indicating significant consolidation within the industry.¹ Concentrated animal feeding operations (CAFOs) now raise hogs and chickens, densely stocked, in confinement from birth to slaughter.

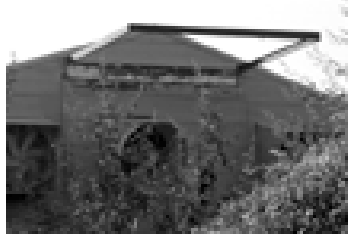
More like factories than farms, these meat producers confine thousands of animals in long rows, supplying them with feed and collecting the manure in open lagoons or piles. Today's animal

pollution and health
threats to rural



Texas

Grain elevators in downtown Perryton, Texas in rural Ochiltree County where factory hog corporations have been expanding their operations for several years. Local citizens organized and fought back, suing to overturn Texas regulations that opened the door for these operations while limiting public input.



Chickens are raised together in batches, with as many as 32,000 birds in each windowless house.



Pigs are raised in closed barns, often from birth. They stand on slotted floors which allow waste to drop below into a tank which is flushed through a separator then into lagoons.

production facilities dwarf their predecessors in size and output. In the Texas cattle industry, small operations (less than 50 animals on site) still make up approximately 65% of all farms, but they only account for approximately 12% of total production. In contrast, the state's largest operations (those that house 500+ animals) comprise less than 5% of all farms, yet they now dominate the industry by controlling almost half of the state's total cattle production.²

These large facilities are geographically concentrated as well—almost 80% of the largest Texas feedlots are located in the Panhandle. Almost one third of the cattle produced in confinement in the U.S. are fed within a 150 mile radius of Amarillo.³ Likewise, almost 75% of all hogs produced in Texas are also raised in the Panhandle,⁴ concentrating enormous quantities of animal waste in one geographical area.

The new technologies and mass production promote an unsustainable farming system with too much waste for disposal, too many animals in a small space, and too much dust, gas, and bacteria for a healthy neighborhood and working environment. Industrial animal producers use antibiotics to promote growth and prevent disease even though studies find that such antibiotic use results in the spread of drug

resistant bacteria. Factory animal production creates large quantities of industrial waste which may threaten the quality of local waters and the air as well as affect public health. The risks posed by CAFOs include environmental contamination with nitrogen, phosphorous, pathogenic bacteria, hormones, antibiotics, and ammonia; noxious odor; habitat loss; and groundwater depletion.⁵

A sustainable animal production system, by contrast, integrates human, animal and environmental requirements in a holistic way, substituting human labor and resources for capital and commercial inputs, weighing the costs of pollution against the economic benefits (i.e. profit) of the facility, and strengthening rural communities. Given the commitment and the will, livestock producers have the resources and knowledge to begin a transition to sustainability today. But until sustainable meat production can effectively compete with industrial producers, Texans also need strong environmental protections for air and water in the parts of the state where animal production is concentrated.

The Industrial Process

Feedlots are relatively simple operations. Animals eat food delivered directly to them and then defecate

where they stand. They may be in enclosed barns or yards, and the manure may be piled up (dry system) or fall into a water-flushed channel which flows into a lagoon (wet system).

Producers bring beef cattle to feedlots when they weigh approximately 500 pounds. Operators use low dose antibiotics on a regular basis as a feed additive to enhance growth. Meanwhile, crowded and unsanitary conditions lead to a high incidence of death and disease, so operators again use antibiotics in higher doses to combat diseases in the herd. This strategy fails to adequately address animal health concerns, since cattle operations in Texas still lose over half a million cattle and calves to death each year.⁶

In these facilities, cows stand in pens on piles of their own manure and eat, putting on 3 or more pounds a day, for five or six months. Each animal that is fattened produces almost one ton of dry manure solids in an average 150-day feedlot cycle.⁷ Every few days a workman enters the pen and piles manure into the middle to discourage cattle from churning it up with their hooves. Eventually the feedlot operator brings in a bulldozer to scoop the pile out of the pen and onto an even bigger stockpile—often near a

lagoon—where stormwater runoff from the pile collects. Contractors haul the manure to farmers, while wastewater runoff either evaporates or is piped over crops for irrigation.⁸

Pigs, by contrast, are raised in closed barns, often from birth. They stand on slotted floors which allow their waste to drop below into a shallow tank which is flushed out with water. Below the floor, waste mixed with water flows either to a “separator” (separating liquid waste from solid waste) or directly to a lagoon. This is called a liquid waste system. As with cattle, close confinement in unsanitary pens leads to frequent illness and death, and workers must drag the dead pigs from the pens regularly. Texas hog producers report as many as 60,000 animal deaths per year or about 5% of pigs marketed from their facilities.⁹

Some dairy facilities operate both dry waste and liquid waste systems. Dairy cattle may be raised in open lots where manure is scraped and piled about twice a week and then hauled to farmland for disposal. Run-off from the manure piles is channeled to a lagoon system. Dairies may also keep cattle in small stalls lined with bedding. On one end manure is deposited into a waste gutter which is flushed with water and sent to a lagoon. Dairy systems usually have a second waste gutter in the



Cows in feedlots stand on piles of manure, eating and defecating while they gain hundreds of pounds before slaughter.

milking parlors, where manure is also flushed through with water to a lagoon or first to a reception pit for solids separation.¹⁰

Large broiler farms may house close to 200,000 birds at a time, with as many as 32,000 chickens located in each windowless building.¹¹ Hanging heaters control the temperature and electric fans blow the accumulating ammonia and sulfide gases outdoors. The chickens eat from self-filling feeders and waterers. Most facilities use an ‘all in, all out’ stocking procedure, where thousands of chicks are reared together on a “litter” of accumulating manure and bedding material, such as rice hulls, straw, or sawdust, from one day old until slaughter at six weeks.¹² (In the case of egg production, laying hens are kept virtually immobile in individual cages until they no longer lay enough eggs to remain profitable.) During this time the birds are fed low-dose antibiotics in their feed to enhance growth and control disease.

At the end of each 6-week production cycle, workers remove the dirty litter, wash and disinfect the house and equipment, and bring in a new batch of chicks. Broilers generate about 5.8 tons of manure and litter per year per 1,000 birds,¹³ while each laying hen will excrete up to 18 pounds of manure per year.¹⁴ The litter contains high levels

of bacteria and pathogens, including *E. coli* and *Salmonella*, as well as metals like arsenic, copper and zinc. After it is removed from the house, the dirty litter and manure are usually spread as fertilizer on agricultural land.¹⁵ In fact up to 10 tons of litter per acre may be spread on Texas farm land in any given year.¹⁶ According to a survey of its operations conducted by Pilgrim’s Pride, growers raised about 99,000,000 birds in the Cypress Creek basin alone in 1997, generating 132,720 tons of litter. Growers applied 114,511 tons of this waste over 42,363 acres as fertilizer and sold the remaining litter as a cattle feed supplement.¹⁷

Waste Generation

Each year livestock facilities create a staggering amount of animal waste which is stored in earthen lagoons, piled up in the open air, or sprayed over agricultural land. Due to the concentration of facilities and dense stocking of animals, the waste produced may exceed the surrounding environment’s capacity to safely reintegrate the nutrients and waste products.

Texas ranks as the #1 state in the country for total animal waste production, creating

Table 1: Top Ten Animal Waste Producing States

Rank/State (in billions)	Pounds of waste
1. Texas	220
2. California	110
3. Iowa	102
4. Nebraska	94
5. Kansas	92
6. Wisconsin	78
7. Oklahoma	72
8. Missouri	70
9. Minnesota	66
10. North Carolina	62

(Source for comparison: Environmental Defense, http://www.scorecard.org/env-releases/aw/rank-states.tcl?drop_down_name=Total+animal+waste. ED figures based on 1997 data. CU calculates waste production to be 280 billion pounds based on 1998 and 1999 animal inventory data.)

twice as much manure as the # 2 ranked state (see Table 1).¹⁸ Overall, the state’s animal production facilities are creating an estimated 280 billion pounds of manure each year.¹⁹ If improperly managed, this waste output threatens the integrity of the state’s air and water resources and endangers the health and quality of life of Texas residents.

Texas ranks first in the nation for cattle production, with as many as 14.3 million head of cattle on site in Texas at a given time,²⁰ and cattle account for 88% of the state’s total animal waste production. Each animal may produce up to 47.3 pounds of feces and urine per day.²¹ Therefore, on a given day, Texas’ 14.3 million head of cattle produce approximately 676 million pounds of fresh manure. This translates into an estimated 247 billion pounds of waste per year that must be handled by Texas cattle facilities.

Waste generation by the state’s hogs and chickens adds

to the disposal burden. Texas is home to approximately 755,000 hogs,²² each of which produces approximately 11.3 pounds of manure per day.²³ In one year these animals generate an estimated 3.11 billion pounds of waste in Texas.

Finally, the Texas egg and broiler chicken industries—concentrated primarily in East Texas—further enhance the waste problem. Texas poultry facilities produced an average of 480 million broilers in 1998 as well as housed approximately 17.4 million laying hens. With each broiler and layer producing approximately 62 pounds and 95 pounds of fresh manure per year, respectively,²⁴ the Texas poultry industry generates almost 31.4 billion pounds of chicken waste each year. Most of these facilities use a dry waste system, which exempts them from permitting under Texas law. Therefore, East Texans may find their farmlands, air, and waterways at risk from the unregulated disposal of billions of pounds of poultry waste each year.

Air

Cattle in feedlots stand on piles of manure. In the hot, dry West Texas summer evenings, as the cattle rise and move in their pens, plumes of manure dust lift from under their hooves and travel miles in the wind.²⁵ Thousands of tons of manure dust fill the air in the Panhandle each year. One recent study estimated that Texas cattle feedyards with capacity over 1000 head produced 7,300 tons of inhalable small particulates (PM₁₀ regulated under the National Ambient Air Quality Standards) in 1998, largely in the Panhandle. This is a low estimate because the study excluded all late afternoon and evening particulate test data. Using EPA standard assumptions, actual 1998 particulate

emissions may have been four times this amount. Studies around individual feedlots have found particulate levels significantly above state and federal (US EPA) standards.²⁶

Dust from CAFOs may affect the health of nearby residents. When Koch Beef proposed to expand its Hale Center, Texas feedlot to 80,000 head, a number of neighbors opposed the expansion because the existing feedlot dust already caused health problems. “We live about...one mile north of the office of the Hale Center feedlot,” Elizabeth Jimenez told the Texas Natural Resource and Conservation Commission (TNRCC). “When my children and myself move here (sic) ...the cattle were quite far away. And we still had a lot of trouble adjusting to the smell and our allergies...the watery

burning eyes, the nose drainage and the burning of the throat...(T)here’s the cloud that picks up, you can see it coming because of the size of the cloud and the thickness of the cloud.”²⁷ Other residents note that the evening is the worst. “I live two miles north of the feedlot and at times in the afternoon the dust and the smell is so bad we have to leave the house for a while,” said John L. Ray, also of Hale Center.²⁹ At another feedlot, members of a nearby family developed such serious sinus and respiratory problems that their young son was hospitalized for respiratory distress before the family was finally forced to move from its homestead of 100 years (see sidebar, next page).

People who live nearby or work in animal confinement buildings have reported health

problems such as respiratory irritation, chest tightness, headaches, sore throat, diarrhea, and more related to the dust and gas, especially from swine operations.³⁰ These symptoms could affect residents as well as nearly 17,000 people who are occupationally exposed in animal confinement buildings in Texas.³¹ And because the dust from feedlots and animal housing units contains biologically active organisms such as bacteria, mold, and fungi from the feces and feed, this dust poses a greater health hazard than does general “nuisance” dust.³² For example, about 20 percent of swine confinement workers suffer from organic dust toxic syndrome (ODTS), “an acute influenza-like illness that follows four to six hours of intense exposure to agricultural dusts.”³³ Acute ODTS may last from twelve hours to 3 days and is characterized by flu-like symptoms such as fatigue, muscle aches, headaches, fever, dizziness, and shortness of breath.³⁴

In addition to dust, the odors from cattle, poultry and swine operations can be overwhelming. Animal manure odor is composed of, among other things, ammonia and sulfides (including hydrogen sulfide)³⁵—and swine manure odor is a combination of at least 121 different compounds.³⁶ Swine odors emanate from



Dean Paul #2 hog facility lagoon in Ochiltree County. Photo by ACCORD, 1996.



Feedlot operators pile manure in heaps in the pens to prevent cows from kicking it up under their hooves. But cows make themselves comfortable on top of the manure heaps in the afternoon, and walk on them in the evenings.



barns, waste lagoons, dead animal disposal areas, and wastewater during field applications.³⁷

Odors create health problems in both the animals and humans. For example, bacterial action in manure pits underneath confinement buildings releases ammonia, hydrogen sulfide, carbon dioxide, and methane, among other gases. Every year animal confinement workers report illnesses caused by exposure to these gases.³⁸ In swine production facilities air contaminants such as ammonia, carbon dioxide, dust, and microbes have been associated with animal disease, low productivity, and even death. Pneumonia, arthritis, and abscesses are not uncommon in swine raised in CAFOs and these diseases may be attributable in part to the presence of gas and dust contaminants in the air.³⁹ Furthermore, airborne ammonia can be detected downwind of swine facilities and may lead to psychological and physical distress in nearby communities.⁴⁰

Neighbors particularly notice the smell from barns. Pig barns and chicken houses have a large fan at one end which draws out the ammonia and sulfide soaked air. The heavy odor spreads on the wind.

“When they put the fans on the pigs [in the barns], there’s nothing like it,” said Elmer

Feedlot Dust Drives Family from West Texas Homestead

Feedlots can control dust plumes by spraying water from a water truck over the pens. And while sprinkling over feedlots on a regular basis may reduce dust emissions by at least half,¹ the procedure is only as good as its implementation. After years of negotiation over the water needed to adequately reduce fecal dust from Palo Duro Feeders in Hansford County in the High Plains, the Bergin family moved from its homestead of more than 100 years when two year old David Bergin developed severe respiratory problems.

Palo Duro Feeders opened in 1965 as a locally owned feedlot and operated with no complaints from nearby residents for almost two decades.² However, the Bergin family’s trouble began when the Texas Beef Group purchased the 19,000 head capacity feedlot in 1982. Over the next five years, the new operators illegally expanded operations to 32,000 head without getting an air permit and the Bergin family and others began complaining about the nuisance dust and odor.³ These complaints led to an investigation by the Texas Air Control Board (TACB--later a part of TNRCC). In March 1991, TACB found Palo Duro Feeders had expanded without a permit in clear violation of the Texas Health and Safety Code.⁴ By this time nearby residents were already beginning to suffer physically from the nuisance dust emitted by the expanded facility. Mrs. Bergin developed chronic sinus and respiratory problems due to the feedlot dust and by 1991 had spent at least six months under doctor’s care for her ailments.⁵

In May 1991, the company finally applied for an air permit to operate at its current 32,000 head capacity. As part of its permit application, the company calculated that it should apply 180,000 gallons of water daily to the lot from two tank trucks to keep the dust down.⁶ But the Bergins and several neighboring families asked TACB to deny the permit and asked for a contested case hearing to investigate the company’s dust control procedures.⁷ However, through negotiations with TACB and the neighbors, the company promised to pump the necessary water to control the dust and the families withdrew their protest.⁸

In March 1992, TACB issued a permit to the feedlot to operate at a maximum capacity of 32,000 head, with a special provision calling for sprinkling of the lot to control dust.⁹ Although the lot purchased equipment, it did not consistently water the yard as promised.

In February 1995, David Bergin again wrote the company about the effects of the dust on his family’s health, but the problem continued.¹⁰ According to well data for 1995 obtained by an attorney for the Bergin family, the lot did not pump any water from April 17 through May 10, although rainfall was light (less than an inch for the month).¹¹ On May 3, 1995, two year old John David Bergin was admitted to the hospital for respiratory problems and later that day he was air-lifted to Northwest Texas Hospital in Amarillo in severe respiratory distress.¹²

That same day the owners of Palo Duro Feeders filed a lawsuit against the Bergin family, claiming that Texas’ “Right to Farm Act” precluded the family from seeking damages from the feedlot and asking the court to bar the Bergins from suing them for nuisance conditions.¹³ And within days the company also asked TNRCC to further expand its permitted feedlot capacity to 37,000 head, against continued opposition from local residents.¹⁴

No longer willing to risk the lives of his family members, in June 1995, David Bergin moved his family away from their homestead,¹⁵ while the dust plumes continued through the summer months. TNRCC’s air program inspector confirmed a dust problem on July 14 and again on September 13, 1995, and recommended that the agency issue a notice of violation to the company because they were not applying enough water to affect the dust.¹⁶

“My family had lived in that Valley for over 100 years,” said T.J. Bergin, the young boy’s grandfather, “and we looked forward to completing 200 years. This turned out not to be an option if we wanted little John David to survive—the David Bergin family must move to get away from the fecal dust emitted from Palo Duro Feeders.”¹⁷

Koch Expands at Hale Center then Sells Facility

Koch Industries is a giant commodities corporation involved in oil, gas, and chemical operations, as well as mining, grain milling, and cattle feedlots. The Koch Beef Company is the 10th largest cattle feeder in the US and the 9th largest rancher, with many of its facilities located in Texas.¹

Koch Beef Company of Hale Center, Texas bought a cattle feedlot from Texzona Cattle Feeders in July 1996.² In January 1997, Koch filed for a Subchapter K permit to increase their feedlot capacity from 60,000 to 80,000 head. In response, citizens and companies of the area wrote to the TNRCC to oppose the expansion.³

Some businesses and farm owners expressed concerns over the health of their employees, some of whom would be housed within 300 feet of Koch's cattle pens.⁴ Other neighbors cited concerns over the potential for groundwater pollution, the amount of dirt, insects, and odors added to the area contributing to health problems, a decrease in quality of life for nearby residents, and the possible devaluation of land.⁵ (See main text).

On May 8, 1997, TNRCC declared that the comments by citizens did not demonstrate "technical merit" and the process of granting the permit would continue.⁶ Undeterred, certain citizens wrote to TNRCC challenging the "technical merit" response to previous letters. On June 20, 1997, TNRCC repeated its "lack of technical merit" stance and authorized the Subchapter K permit the same day.⁷

In 1998 Koch purchased Purina Mills, an acquisition which included six feed-making plants and a bulk feed-blending station—all in Texas.⁸ But Koch's investment soon turned sour when Purina Mills filed for bankruptcy in October 1999.⁹ Other financial considerations have caused Koch to begin re-evaluating its strategy for vertical integration of its feedlot and ranching operations.¹⁰ In March 1999, the company sold the Hale Center feedlot to Cactus Feeders, another corporate agriculture company, and the nation's (and Texas') largest cattle-feeding company.¹¹



Bill Pletcher sold his house rather than live with the smell of a large pig grow-out operation that moved in next door.



Barbara Philipps of Ochiltree County now lives near a large hog operation and frequently cannot go outside to work her garden or enjoy her home.

Schoenhals of Perryton, Texas.⁴¹

"Chicken houses have fans, the same as swine. Fans blowing out," said Dr. John Sweeten of Texas A&M, the state's leading expert on animal feedlot odor. "One thing you can do is erect a barrier, even plant some trees. But better, you set up a wet or dry scrubber. It can be water, or chemical, or packed beds. Like you have for a rendering plant. If you are located on a big tract of land with neighbors a long way off, there's no problem."⁴²

However, operators do not always voluntarily agree to use the best available technology—like aerobic rather than anaerobic lagoons, composting, or lagoon covers—to reduce the smell and ammonia emissions.⁴³

"In many ways, the industry has designed facilities to meet minimum regulatory standards. They have not adopted the best technology appropriate for a given site," said Sweeten. On the other hand, Sweeten argues that improved regulations drive consolidation and force out smaller operators. "The ones who are in jeopardy are the family farmers. If you have one set of standards that apply to a 1000 head feedlot and a 100,000 head feedlot, it's not realistic."⁴⁴

Some neighbors finally sell

out, often to the animal operation itself, rather than live in the constant smell. "This is our place, right here," said Bill Pletcher of Perryton, standing in front of his abandoned homestead. "My daughter sold it to Texas Farms...I was raised in this place. All we sold was the house. I'm still out here every day. Some days [the smell] is worse than others." Mildred Pletcher added, "They just got started. Wait 'til it's been out here a few years."⁴⁵

The Amarillo regional office of the TNRCC conducted ambient air monitoring near hog farms, feedlots, and slaughterhouses in 1998 and 1999. Sampling teams measured hydrogen sulfide and ammonia emissions downwind from the facilities. One ammonia sample was collected downwind from a Texas Farm, Inc. swine operation at the border between the hog farm and the neighboring property. The investigators found that the ammonia concentration in the air was almost nine times higher than TNRCC's "health-based effects screening level" or ESL. Sampling teams also measured ammonia concentrations over ESL guidelines downwind of a cattle feedlot and a broiler farm.⁴⁶

The agency uses an ESL as a benchmark for possible health



Members of ACCORD, a local group organized to advocate for better air and water safeguards as the hog industry grows in Ochiltree County, Texas.



Accord hires a helicopter to take arial photographs of the developing hog industry and its waste lagoons.

Table 2. Texas Waterways Impaired by CAFO Facilities

Water Body	Impaired Area	Impact
Wright Patman Lake	5,000 acres	No longer supports aquatic life
Lake O' the Pines	18,707 acres	Only partially supporting aquatic life
Big Cypress Creek (below Lake Bob Sandlin)	55 miles	No longer supports fish consumption; Only partially supports aquatic life
Black Bayou	24 miles	No longer supports aquatic life
Leon River (below Proctor Lake)	118 miles	No longer supports contact recreation (human use)
North Bosque River	178 miles	No longer supports contact recreation
Upper North Bosque River	13 miles	No longer supports aquatic life; No longer supports contact recreation
<hr/>		
<i>Total impaired stream miles</i>	388 miles	
<i>Total impaired lake acres</i>	23,707 acres	
Source: Texas Non-Point Source Pollution Assessment Report and Management Program (TNRCC, 1999)		

effects rather than as a strictly enforced standard. In the case of Texas Farms, the TNRCC concluded that “(e)xposure to the measured ammonia concentration may cause respiratory irritation...in sensitive individuals.”⁴⁷

For hydrogen sulfide, state law does limit emissions, and existing tests did not find H S levels in excess of the legal² limit at CAFOs.⁴⁸ TNRCC also assesses hydrogen sulfide based on a lower “odor threshold” range—a level which does not exceed the state emission standard but at which “the majority of exposed individuals can discern an odor.”⁴⁹ TNRCC personnel reported offensive odors downwind from anaerobic lagoons ranging from the rotten egg odors characteristic of H S to “strong fecal odor” and “strong dead animal odor.”⁵⁰ The investigators found that another Texas Farms facility and a Dean Paul Farms swine facility both exceeded the odor threshold range for hydrogen sulfide. The survey team found that the strength of septic odors from the waste lagoons correlated with increased hydrogen sulfide levels. The investigators also noted in their report that “the CAFOs may not have been operating at maximum permitted capacity during the collec-

tion of these monitoring data,” thus implying that the odor effects might have been even stronger if the facilities were stocked to capacity.⁵¹

In August 1999, investigators found strong hydrogen sulfide emissions downwind of rendering plants and slaughterhouses owned by IBP, Inc., Excel Corp., and Caviness Packing Co. that significantly exceeded the state’s emission standard.⁵² Ammonia emissions were also high downwind of feedlots. Ammonia emissions at Stratford Feedyard, Circle C Cattle (cattle CAFOs), Top of Texas, (a relatively small—2500 head— swine CAFO), as well as IBP, Excel, Caviness, and Hereford Bi-Products, all exceeded the health-based ESL.⁵³ Despite these findings, TNRCC has no mechanism in place to penalize the offending facilities because the health-based ESL is merely a benchmark for monitoring possible health impacts.

Slaughtering/rendering facilities are subject to compliance with the state hydrogen sulfide emission standard, however TNRCC does not regularly monitor CAFOs for emissions. While some rendering plants have been cited for exceedances, no CAFO has ever been subject to an enforcement action for

violating the state emission standard for hydrogen sulfide.⁵⁴

Water

Animal operations produce waste in industrial proportions, and seepage, spills, and ‘accidental’ pollution into waterways from barns, lagoons, feedlots and meat processing facilities is not uncommon.

Feedlots, dairies, swine and poultry growing operations also pollute indirectly as a result of their regular farm management practices. They spray or apply manure and wastewater onto fields to be absorbed as fertilizer by crops. But because CAFOs often have more manure to distribute than crops can readily absorb, the excess nutrients can seep from fields into the state’s waterways.

According to the EPA, agricultural practices contribute to the degradation of 60 percent

of the nation’s surveyed rivers and streams, 50 percent of the nation’s surveyed lakes, ponds and reservoirs, and 34 percent of the nation’s surveyed estuaries.⁵⁵ Feedlots adversely effect 16 percent of the rivers and streams impaired by agricultural practices overall.⁵⁶

In Texas the Gulf of Mexico already suffers from excessive nutrient levels. Nutrients from farm run-off, including animal waste, are linked to the formation of a seven thousand square mile “dead zone” of hypoxia (low oxygen) that cannot support most aquatic life.⁵⁷ As Table 2 shows, by 1998 animal confinement activities had caused significant pollution damage to at least 388 miles of Texas streams and rivers and over 23,700 acres of lakes,⁵⁸ largely in east and north-central Texas where dairies and poultry



Factory hog producers say the Texas panhandle is perfect for the hog industry because of its wide open spaces and long dry seasons. But locals say that sudden gully washers and long forgotten oil and water well test holes throughout the region mean that hog lagoons could pollute area waters.

operations dominate.

A study conducted by TNRCC for the Texas legislature in 1999 found that certain creeks running through areas with many poultry houses show higher fecal coliform and nutrient concentrations than reference creeks. "That the differences among the study streams are real, and do have some relation to poultry production activities, is suggested by several lines of evidence," the report states. "...The more intensively utilized sub-watersheds consistently exhibit elevated, but not always statistically significant, nutrient and oxygen demanding parameters."⁵⁹ While the study fell short of confirming a direct link between the application of poultry litter and the degradation of Big Cypress Creek or

Lake O' the Pines, the authors note that "the downstream portions of the basin (Big Cypress Creek, Lake O' the Pines, Caddo Lake) would continue to experience increasing nutrient loads if additional development [poultry production activities] employs today's management practices."⁶⁰

Erath and surrounding counties support a large dairy industry. Waste from Erath County dairies has significantly degraded the Upper Bosque River and the creeks of the Upper Bosque, which show increased microbe levels and increased phosphorus. The Texas Institute for Applied Environmental Research (TIAER) at Tarleton State University began to test sites in the North Bosque River watershed above Hico, Texas for fecal coliform in 1995.

TIAER found that substantially elevated fecal coliform levels were correlated with the application of dairy manure to the fields.⁶¹ This may pose a threat to drinking water supplies in cities such as Waco, which receives water from the Bosque at Lake Waco.

Over several years, TIAER conducted in-depth studies of instream water quality during storm events on the Upper North Bosque river watershed and also found that "the dairy industry emerges as the major contributor to nutrient loading."⁶² In particular, TIAER scientists found elevated phosphorus levels specifically associated with fields where animal waste had been applied.⁶³

Texas regulations limit application of manure and lagoon effluent to land based

primarily on the nitrogen requirements of the crop.⁶⁴ But application that meets crop nitrogen needs results in over-application of phosphorus. "When manure is applied at the nitrogen rate for plant uptake, phosphorus is typically over-applied by a factor of 2 1/2 to 3 times crop requirements, if not more," TIAER reported.⁶⁵ CAFOs must conduct an annual soil sampling analysis to determine, among other things, whether phosphorus levels are within an acceptable range (less than 200 parts per million).⁶⁶ However Texas regulations do not necessarily prohibit the land application of manure in cases where the phosphorus benchmark has been exceeded. If that occurs, a CAFO may continue to apply manure as

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Texas Agencies Slow to Demand that Smith Farms Egg Facility Get Proper Permits to Pollute

Smith Farms, Inc., is a large egg-layer poultry CAFO that has operated in Flatonia, Texas for several decades. In 1984 Smith Farms proposed a plan to the Texas Department of Water Resources (an agency which later became part of the Texas Water Commission and then the TNRCC) to house up to 228,000 laying hens in six buildings and utilize a liquid (lagoon) waste system.¹ Under departmental policy at that time, such facilities required no formal approval or permit to operate and Smith Farms was advised to continue with their plan.²

However, when Smith Farms proposed an expansion of their facilities in 1987, the agency notified the CAFO that regulatory changes now required the company to apply for a permit. The agency asked Smith Farms to submit an application and also provided a copy of the rules, a permit application, and other informational materials to the company.³

The agency did not follow-up its request until May 1989, when the Texas Water Commission (TWC) conducted an inspection of Smith Farms in response to a citizen complaint about a discharge from the lagoon.⁴ TWC sent another copy of the rules to Smith Farms and gave the CAFO a deadline of October 1, 1989 to submit the application.⁵ Smith Farms did not reply.

The agency did not take action on the delinquent permit until four years later, on March 2, 1993, when it investigated yet another illegal discharge complaint. Inspectors found the facility in violation of regulations, discharging excess waste into a second unlined pond which was overflowing manure waste onto neighboring property.⁶ The TWC issued a Notice of Violation to Smith Farms on May 3, 1993 and requested that corrective action be taken, as well as a permit application be filed, by June 4, 1993.⁷

Smith Farms did not honor that date to make a formal written response. Instead representatives from Smith Farms and the TWC met on June 24, 1993. During the meeting Smith Farms promised to correct the violations, however the company argued that it was not required to obtain a permit because of its exemption from permitting under the 1984 rules. It requested that the permit requirement be rescinded in lieu of a Waste Management Plan which the company promised to submit by October 1, 1993.⁸

Smith Farms did not keep its promise and the Plan was never submitted. The agency did not act again until April 1994, when TNRCC (having replaced TWC as the regulatory agency) revisited Smith Farms. Inspectors noted illegal waste discharges off-site, a pile of improperly disposed dead chickens on the property, and offensive odors.⁹ The same month, TNRCC investigated another complaint at the facility and discovered illegal discharges onto adjacent property as well as noxious odors.¹⁰

On June 1, 1994, a request for enforcement action was made against Smith Farms. The enforcement action request cited three major violations and detailed Smith Farms' history of non-compliance. However, the formal enforcement order was not issued until May 12, 1995—almost a full year later.¹¹ After operating illegally for almost a decade, Smith Farms finally agreed to apply

for its first permit and paid a \$10,000 fine for water quality violations to the TNRCC.¹²

Although this outcome satisfied the TNRCC, the Texas Department of Health sent a letter to TNRCC during the public comment period for the permit application, warning of the outstanding health-related issues to the operation of Smith Farms.¹³ Community members from Flatonia also filed their concerns with the TNRCC.

The Commission replied to both the Texas Department of Health and the citizens that their comments had not demonstrated "technical merit" and that the Smith Farms permit application met all the requirements for issuance.¹⁴ Unknown to the public, however, was that TNRCC facilitated the approval of the permit despite the fact that Smith Farms had submitted an incomplete application.

According to TNRCC documents, Smith

Farms "failed to submit the minimum information required for processing under the new rules" (Subchapter K).¹⁵ But rather than return the application as incomplete, the agency "decided... we will process [the application] under the old rules which allow for a longer period of time for review as well as allows more



Chicken truck hauls its load across East Texas backroads.

flexibility on the part of the applicant documentation."¹⁶ On November 1, 1996, TNRCC authorized the air and water quality permit for Smith Farms.¹⁷

Sustainable livestock production is an alternative to standard production methods which provides a reasonable rate of return to the farmer while taking into account the impacts that livestock operations have on local communities and the environment. To be sustainable, an intensive livestock operation must consider the availability of resources (feed, land, water), the ability of the environment to safely absorb wastes, human and animal health concerns, and the direct effect that the operation will have on the local community.

In its current form, the CAFO industry is not sustainable. Here are some reasons why:

Overstocking and environmental contamination: In the days of small “Mom and Pop” farms, it was natural to let animals dispose of their waste on farm land as a way to supply cheap fertilizer to the soil. Now, however, the higher concentration of animals in CAFOs means waste (especially nitrogen and phosphorus) is generated and cycled in excess through the air, water, and land, overburdening the ecosystem’s capacity to utilize it. For example, the amount of land needed to efficiently distribute the manure generated in a typical intensive cattle feedlot is 1000 times larger than the feedlot itself.¹ Most CAFOs do not have this much land available for manure application, so the excess may be over-applied to a smaller area. To make matters worse, there are few national and state regulations that set specific requirements for applying manure on land.² Texas regulations state that land application of wastewater from lagoons “shall not exceed the nutrient uptake of the crop coverage,” however this amount is calculated on a case-by-case basis.³ And waste application may still exceed crop requirements if a CAFO submits a “Nutrient Utilization Plan” which justifies its waste management practices.⁴

Human health impacts: Industries that pose significant threats to human health are not sustainable. The health impacts of CAFOs can be seen at many levels. Dust and odors contribute to respiratory problems in workers and nearby residents. Contamination from runoff or lagoon leakage degrades water resources and can

A sustainable animal production operation is one that maintains an environmentally and economically sound balance between the resources it uses, the output it produces, and the waste that results. In other words, in a sustainable livestock production system, success is not measured simply by profit. Rather, the operator also considers quality of life issues, environmental issues, and animal welfare issues when making production decisions.

contribute to illness by exposing people to wastes and pathogens in their drinking water. Finally, the misuse of antibiotics in animal production systems results in the development of antibiotic-resistant pathogens which may be passed through the food chain to humans.

Negative impact on local communities: CAFOs that contaminate air and water resources have a direct impact on the health and well-being of nearby communities. At the same time, odors from CAFOs can drive down property values⁵ and force some long-time residents to leave, as noted in this report. And the evidence is unclear whether CAFOs really do enhance the local economy. Larger, more mechanized farms may actually worsen community conditions because they may hire migratory agricultural workers for low wages⁶ (and with no promise of adequate housing), purchase feed and supplies outside of the local area (thereby draining economic resources away from the community), and eventually drive out family farms that can no longer compete.⁷

What could be expected from a sustainable livestock production system? It can be envisioned as an integrated and holistic approach: human labor and resources are substituted for capital and commercial inputs; externalities such as pollution ‘costs’ are considered and weighed against the economic benefits (i.e. profit) of the facility; stocking densities do not compromise animal health and well-being; waste production does not exceed the nutrient-absorbing capacity of the surrounding land or jeopardize water quality; forage crops are grown on-site or nearby to promote self-sufficiency and less reliance on outside feed shipments; and rural communities are strengthened and empowered. Given the commitment and the will, livestock producers have the resources and knowledge to begin this transition to sustainability today.



Hog barns on the high plains.

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long as it submits a nutrient utilization plan “to assure that the beneficial use of manure is conducted in a manner that prevents phosphorus impacts to water quality...”⁶⁷ In other words, the current regulatory mechanism for controlling nitrogen and phosphorus runoff from CAFOs into Texas waterways is sufficiently weak as to permit ongoing phosphorus contamination even in areas that already exceed the state’s phosphorus benchmark.

The Ogallala Aquifer

Feedlots and hog operations frequently locate near the numerous “playa” lakes that dot the High Plains. Playa lakes are large, circular natural depressions where water collects and seeps slowly down into the Ogallala Aquifer, the major source of both drinking and irrigation waters for the region.⁶⁸ Until 1993, operators could use the playa lakes as retention ponds for wastewater, and those who

started operations before September 1, 1993 may still do so.⁶⁹ The land throughout the Panhandle is also perforated with incompletely plugged wells, test holes, oil and gas wells, and other borings. These act as man-made recharge features for the Ogallala.

There have been few studies of groundwater in the High Plains. One study conducted for the feedlot industry found nitrate-nitrogen concentrations beneath feedlots that ranged from 0.25 to 9.1 milligrams per liter, all below state and federal standards for public drinking water (10 mg/L). While the study found the well water to be generally good, it noted “potential elevated nitrate from possible seepage from a playa used for runoff collection” into water supply wells between 100 and 200 feet of the aquifer surface.⁷⁰ In a follow-up study, J.M. Sweeten found no statistically significant evidence of contamination beneath two cattle feedlots located 270-320 feet above the water table.⁷¹

In general, industry studies emphasize that the quality of water in the Ogallala remains

high, but residents throughout the Panhandle believe man made holes, soil cracking, and seepage from the playa lakes represent a significant threat to the aquifer. “The playa lake system up here recharges the Ogallala,” said Jeanne Gramstorff of ACCORD. Gramstorff worries about seepage into the aquifer from cracking in the playa reservoirs. “When that soil cracks there is no bottom. When the clay cracks, it cracks all the way,” potentially allowing waste to seep down into the Ogallala.

In addition, members of ACCORD have reported waste runoff from hog barns flowing into a local drainage ditch. “[Dean Paul] had a pipe dumping into a ditch running alongside the road,” said Pat Peckenpaugh, another ACCORD member. “We tested it and it was full of feces. When he applied to expand [his facilities], we protested. Mr. Vasquez [one of the Commissioners] stood up for this violation, and he took the pipe out. But there’s an erosion there now and water still runs down from the barns.”⁷²

The lagoons themselves are

typically lined with compacted local clay, which may also be subject to cracking. “A clay lined lagoon is nothing but packed dirt they pulled out of the hole,” said Barbara Philipps.⁷³ Members of ACCORD have asked that CAFOs build lagoons to a much higher standard, with synthetic (rather than in situ clay) liners, leak detection and ground water monitoring.⁷⁴

Regulatory Environment

The most important environmental controls that apply to industrial meat producers arise out of the 1972 Federal Clean Water Act, which requires a National Pollution Discharge Elimination System (NPDES) permit for all “point source” polluters. Confined animal feeding operations, including beef feedlots are regulated by the Environmental Protection Agency as “point source” polluters under the Clean Water Act.⁷⁵ Traditionally, federal and state regulators have implemented this Act by requiring permits for the on-site waste containment system

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There is growing concern over the consequences of over-use of antibiotics in livestock operations. Persistent use of antibiotics leads to the development of resistance in bacterial populations. Once a particular type of bacteria has developed resistance to an antibiotic, that antibiotic can no longer be used to combat the infectious organism.

In livestock industries, farm operators not only treat their animals with antibiotics for disease, but they also add antibiotics to the feed to promote growth. This long-term overuse of antibiotics in livestock production is now contributing to the development of resistant pathogens. This poses a problem for managing animal health, and it also may impact human health—antibiotic resistance can be passed between different types of bacteria and may therefore create resistance to antibiotics that humans depend on.

The US produces approximately 50 million pounds of antibiotics each year and 40% of that is given to animals, usually as a feed additive to promote growth.¹ More and more evidence shows, however, that infectious bacteria are quickly developing resistance to even the newest, most powerful antibiotics. Researchers have published disturbing reports that antibiotic resistance in *Salmonella* and *Campylobacter*, two human pathogens, is on the rise² and evidence is mounting that these resistant bacteria can be passed from chickens and pigs to humans through the food chain.³ This poses a great health risk to the human population because it makes it easier for humans to become infected with resistant pathogens for which there are few effective treatment options.

It takes years to develop, test and gain approval for new antibiotic drugs. So while pharmaceutical companies are slowly developing potent new classes of antibiotics, resistance is developing at a rate faster than the drug companies can develop replacements. For example, within the last few years there has been an emergence of bacteria resistant to vancomycin—a last defense drug for some illnesses, including deadly blood infections and pneumonia caused by *Staphylococcus* bacteria⁴—and there is evidence that resistant bacteria may have been passed to humans in the meat products from livestock who were fed a similar antibiotic for growth purposes.⁵ Likewise, a rise in antibiotic-resistant *Campylobacter* infections in humans has occurred in conjunction with the increased use of new classes of antibiotics such as the fluoroquinolones in animal production.⁶

As early as 1969, policy makers in other countries were calling for an end to the use of certain antibiotics as growth promoters in livestock.⁷ In 1997, the World Health Organization issued a report re-emphasizing those recommendations,⁸ yet livestock regulatory

agencies failed to respond. In January 1999 the US Food and Drug Administration (FDA) proposed a policy for addressing the growing concern over antibiotic use in food animals.⁹ Unfortunately, the proposed framework was weak on two key points:

- It focused mainly on evaluating new drug approvals while ignoring the millions of pounds of approved antibiotics that are already used for livestock production on a regular basis.
- It did not sufficiently address the risk of antibiotic resistance.

The FDA proposed a category and ranking system for antibiotics based in part on each drug's relative importance in human medi-

Researchers have published disturbing reports that antibiotic resistance in *Salmonella* and *Campylobacter*, two human pathogens, is on the rise. Evidence mounts that these resistant bacteria can be passed from chickens and pigs to humans through the food chain.

antibiotic resistance

cine. The most important drugs are those which treat serious diseases in humans and for which there is no alternative cure—these are listed as “Category 1” antibiotics. However, the FDA’s proposal would allow even some Category 1 antibiotics to be used in livestock as long as the level of resistance that develops does not exceed a given “threshold” level.¹⁰ Many people fear that even a limited use of Class 1 antibiotics will increase the chance that bacteria will develop resistance. When that happens, it may be too late to preserve the effectiveness of these important life-saving drugs in human medicine.

As an alternative, the National Research Council has reported that adopting simple production changes such as lowering stocking densities (less overcrowding), controlling stress, and improving hygiene could reduce the need for antibiotics without affecting output.¹¹ And now a broad coalition of environmental, farm, and public health groups are endorsing a new bill introduced to the US Congress (H.R. 3266) which would limit the sub-therapeutic use of certain antibiotics in livestock.¹²



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of CAFOs above a certain size, but not for small operations or off-site land application of waste even if that application may result in increased nutrient load or other contamination of local waterways. Yet many community and environmental groups say that these layers of regulation fail to protect either the environment or human health because enforcement is lax, water quality monitoring is rare, and states have little staff to devote to feedlot programs.⁷⁶

Technically speaking, Texas environmental laws prohibit the direct discharge of any animal waste into Texas waterways except during a chronic or catastrophic rain event. If these regulations were adequate in scope and strictly monitored, Texans should expect to see little CAFO-related contamination in the state's water sources.

The regulations do not, however, ensure that CAFOs will discharge only during chronic or catastrophic rainfall events. Standard manure management practices can lead to discharges and subsequent water contamination under normal operating circumstances. The TNRCC implicitly acknowledged this fact when it estimated that its 1999 enforcement actions reduced water contamination from illegally discharged manure waste by at

least 1,056,151 pounds.⁷⁷

This does not take into account other illegally discharging CAFO facilities for which TNRCC has not taken enforcement action. And in one case of an illegally operating poultry CAFO in Central East Texas, TNRCC's failure to act swiftly and severely—despite its knowledge of the facility's violations—allowed the CAFO to pollute nearby property for almost a decade without penalty (see sidebar, page 15).

Elimination of Common Law Nuisance Actions

Because CAFO operating guidelines are inadequate in Texas, CAFOs often adversely affect their neighbors by causing severe odors, manure dust plumes, and surface water contamination. Traditionally, these neighbors could have brought a common law nuisance action to try to recover money damages or to get a court order requiring the CAFO to stop causing the nuisance. As a further hindrance to environmental protection, however, the state legislature passed a "Right to Farm" bill in 1981, which virtually eliminates the nuisance liability of agricultural operations, including CAFOs, for nuisances after the facilities have been permitted for a year. It also requires the complainant to pay all attorney fees and other legal costs incurred by the CAFO

owner for his defense against the lawsuit—even if the owner loses.⁷⁸

In 1997 the Texas Legislature passed an amendment to the law which shielded CAFOs from nuisance suits even if they expand their facilities. It defined certain expansions (addition of pens, barns, etc.) as "agricultural improvements" and declared that "[s]uch an improvement does not constitute a nuisance."⁷⁹ Because the Right to Farm Act eliminates neighbors' ability to bring a nuisance action to protect their rights to use and enjoy their own property, neighbors must rely upon the TNRCC to protect their rights. The TNRCC's failure to require CAFOs to operate in compliance with the law and with respect for their neighbors is therefore even more egregious.

Threats to Public Participation in Decision-making

Until 1995, Texas required each new CAFO above a certain size to obtain separate individual water and air pollution permits from the state. As part of this permit process, people affected by the new facility (usually neighbors) could formally contest the permit and ask for a quasi-judicial hearing before an impartial judge. During such a hearing, members of the public could directly question applicants and negotiate changes to the permit to reduce odors or

ensure the safety of local drinking water sources.

But in 1995, Texas "streamlined" the state permit process. The TNRCC passed new CAFO regulations (the Subchapter K rules) that consolidated air and water permits and created a "more efficient and objective public notice and comment procedure based on consideration of only qualified issues that have 'technical merit.'"⁸⁰ This change effectively eliminated the ability of local communities to contest permits for new hog, chicken and feedlot operations springing up around them by requiring members of the public to demonstrate the "technical merit" of their case before they could even begin to pursue such a case. It also instituted a "permit-by-rule" system rather than individual permits. "Permit-by-rule" generally allows a facility to get a permit if it meets the requirements set out in the rule. There is no consideration of site-specific issues or local protests for individual facilities.

Shortly after enactment of Subchapter K, Texas Farm Inc., a subsidiary of Nippon Meat Packers Inc. of Osaka, Japan, sought authorization of a new 249,600 head hog operation in Ochiltree County. Active Citizens Concerned Over Resource Development (ACCORD) attempted to contest the permit under the new rule.

ACCORD members, many of them farmers, and other residents of the county sent dozens of letters to TNRCC protesting the permit based on concerns about the noxious smells, increased flies and airborne diseases, depletion of the Ogallala Aquifer and contamination of Kiowa, Gilhula and Wolf Creeks, problems with the proposed lagoon system (including concerns that the lagoons were too small), inadequacy of the proposed buffer zone, and decreased land values adjoining the facility. Many people also felt that this facility would only compound the problems associated with existing hog facilities in the area.⁸¹

TNRCC responded that all the complaints in the letters lacked “technical merit” under Subchapter K, and authorized the hog facility. ACCORD appealed the TNRCC’s grant of the permit in district court. A judge ruled for ACCORD and declared this permit “invalid.” The District Judge found that the commission lacked “reasoned justification” to adopt Subchapter K.⁸² Specifically, the Judge expressed concern about the new rules’ elimination of contested case hearings. The six specific permits-by-rule mentioned in the lawsuit were invalidated by the judgment. The status of the approximately 60 other Subchapter K permits-by-rule that were issued prior to the Judge’s ruling is unclear.

Shortly after the ruling, the TNRCC enacted new revisions to the existing CAFO regulations, known as Subchapter B rules, which essentially sidestepped the court ruling by offering “authorization by individual permit or by registration under a permit-by-rule”



Texas rules allow hog and other CAFOs to dispose of waste by spray irrigation onto crops, a system which neighbors believe creates heavy odor problems and environmentalists believe encourages runoff into surface waters.

[emphasis added].⁸³ The revisions allow CAFOs to “register” with TNRCC as long as they meet the requirements of the Subchapter B rules. In general, individual permits are not required unless a CAFO cannot meet the provisions of the permit-by-rule registration.⁸⁴ TNRCC made this revision, as well as others, despite much public opposition to the new rules.

The Greenbelt Municipal and Industrial Water Authority (Greenbelt) submitted lengthy comments to TNRCC regarding the proposed rule changes. Greenbelt is located at Greenbelt Lake in the Panhandle, near the convergence of several creeks which provide the sole source of potable water to five member cities.⁸⁵ Large manure lagoons at CAFOs upstream of these drinking water sources and wildlife areas threaten public health and the environment if the lagoons leak or spill. Expressing fears that the current regulations were too weak, Greenbelt asked the TNRCC to modify its proposed rules to create water quality buffer zones to protect surface water used for a municipal water supply.

“The provision that the required retention system be designed to contain the runoff from a twenty-five year, twenty-four hour rainfall event virtually assures that there will

be rainfall events that exceed the capacity of the retention system. For us, this would result in pollution of Kelly Creek and Greenbelt Lake...Pollution could also occur as a result of the catastrophic failure of the lagoon, particularly during dry weather seasons when a highly concentrated stream of pollutants would then enter the surface water body resulting in pollution of the drinking water supply.”⁸⁶ Despite the Authority’s concerns, the TNRCC’s adopted final rules did not include provisions for surface water quality buffer zones. The commission determined that to consider such a request, it would have to substantially change the proposed rules. Rather than do that, it elected to have the executive director “study” the issue and “provide a recommendation to the commission” after the adoption of the rules.⁸⁷ Later, TNRCC suggested that its implementation of Texas House Bill 801 (1999)—requiring individual permits for CAFOs located near sole source drinking water supplies—would address Greenbelt’s concerns.⁸⁸

TNRCC Ignores Cumulative Impacts
Opposition to TNRCC’s proposed regulatory changes extended beyond Texas. The

US Fish and Wildlife Service also submitted comments on the rules, expressing concern that “the proposed rules do not appear to consider the potential cumulative impacts on waters within the state from multiple CAFOs permitted within the same watershed.”⁸⁹

TNRCC does not have a strong record of addressing the cumulative impacts of multiple CAFOs. Several years earlier, TNRCC began designating Dairy Outreach Program Areas (DOPAs) in eight counties of the state, including the Bosque and Lake Fork watersheds—areas where water quality degradation has already been linked to CAFO operations—in an attempt to address the ‘cumulative impacts’ of dairies. However, the program has done little to limit the expansion of new or existing dairies in the impacted areas. Instead, it merely requires that smaller dairies (300 to 1000+ head) obtain permits to operate and that owner/operators complete 8 hours of animal waste management training every two years.⁹⁰

US Fish and Wildlife expressed particular concern about Tierra Blanca Creek, an intermittent waterway in the Panhandle, which flows into Buffalo Lake National Wildlife Refuge in Randall County—and is also home to a large number of cattle feedlots. During the 1960s and 1970s several fish kills, attributed to surface water runoff from cattle feedlots upstream, occurred at Buffalo Lake within the Refuge.⁹¹ According to US Fish and Wildlife, poor water quality and reduction in flow in Tierra Blanca Creek resulted in the eventual disappearance of the

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alternatives to the factory farm

what is 'natural' meat?

Consumers Union SWRO conducted a phone survey of 28 major chain grocery stores and specialty food stores throughout Texas to determine whether organic and/or sustainably-produced meat¹ is readily available in Texas supermarkets. We found that while nationwide consumer interest in sustainably-produced meat is growing, very few stores in Texas (other than “natural foods” specialty stores) carry it, and no stores currently sell “certified organic (by)” meat.²

Consumers Union phoned major supermarket chain stores (supermarkets) and local or chain “natural foods” specialty stores (specialty stores) in ten Texas cities to ask whether they carried organic or “natural” meats. Sustainably-produced pork was not available in any of the major supermarket stores that we surveyed. Only four major supermarkets carried any other “natural,” antibiotic- and hormone-free meat, and choices were limited to either Laura’s Lean Beef or Buddy’s Natural Chicken. In addition, in three of these stores we were mistakenly told that they carried “organic” beef when in fact the clerks were referring to various brands of “natural” (antibiotic/hormone-free)—but not organic—beef.

We found that most supermarket employees were misinformed about organic and natural meat products. Several meat department clerks incorrectly informed us that they sold “natural” meats in their stores, namely Pilgrim’s Pride and Sanderson Farms chicken. When

asked if these products were truly natural and produced without antibiotics or hormones, we were told that they were. In fact, Pilgrim’s Pride and Sanderson Farms operate large, vertically integrated, conventionally managed CAFOs in Texas and do not make any antibiotic or hormone claims for their products. Two other clerks informed us that they sold a Morningstar Farms frozen organic meat product when in fact they were referring to Morningstar’s veggie burgers which are neither organic nor contain any meat at all. Neighborhood supermarkets clearly are not providing many options or adequate facts on existing sustainably-produced meat for consumers to make informed decisions.

On the other hand, specialty stores such as Whole Foods or local co-operative markets do tend to carry one or more types of “natural” meat such as Laura’s Lean Beef, Peterson’s Pork, or Buddy’s Chicken, all of which make claims of limited or no antibiotic and hormone use during production. However, the employees at these stores are just as likely to be misinformed about the various products and production methods as their chain supermarket counterparts. For example, two stores informed us incorrectly that they sold organic meats when in fact they do not. In one case, a Fort Worth store specializing in organic produce and “natural meats” told us they sold organic beef. When we asked if the cattle had been fed only organic grain (as is generally required for “organic” status), they assured us that the meat—Spring Creek Beef from northeast Texas—was organic. A trip to the company’s webpage, however, shows that while the cattle are produced without antibiotics and hormones (i.e. “natural”), they are *not* fed organic feed and therefore do not produce organic meat. In the other case, a specialty store clerk in San Antonio assured us that they carried a brand of organic beef. However, the product sold, B3R Beef, is not organically produced and the company makes no claim to do so. Finally, a specialty store in Corpus Christi initially told us that they sold organic meat, but, upon further questioning, conceded that they sold only “natural” meat products. In addition, the clerk incorrectly listed Pilgrim’s Pride chicken among the available antibiotic- and hormone-free products sold at the store.

So while consumers with access to specialty stores in some cities may be able to purchase sustainably produced meats, there is no guarantee that they will receive the correct information about the products they are buying. Consumers need clearer meat labeling and more accurate information from grocery providers before they can benefit fully from the meat choices available.

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lake, but the watershed still supports an endangered species, the bald eagle. "If a storm occurs in this watershed that exceeds current wastewater retention system designs, it would be expected that the stream would receive inflow of untreated wastewater from multiple CAFOs. In turn, based on the language of the proposed general permit, the National Wildlife Refuge could possibly receive up to 22,000,000 gallons of raw, untreated wastewater in a given 24-hour

period."⁹² US Fish and Wildlife recommended that the agency adopt stricter capacity requirements for wastewater retention systems that are located in watersheds with multiple CAFOs.⁹³ TNRCC failed to address the cumulative impacts issue in the final adopted rules.

In September of 1998, EPA officially delegated NPDES permit authority to Texas regulators as part of a national program designed to streamline the permit process

and eliminate duplication between Federal and State requirements. Finalized in June of 1999, the CAFO regulations in Texas now implement both federal and state environmental laws in a single permit process.

The new rules require few changes to the operation of existing facilities, unless they want to expand or otherwise make a major change to the operation.⁹⁴ Despite EPA's delegation of permit authority to Texas, the federal agency "expressed concerns that the

cumulative or individual permitted discharges from CAFOs might result in or contribute to violations of state water quality standards."⁹⁵ TNRCC responded that "for those Texas waters that are currently maintaining their approved water quality standards, there is little, if any, verifiable evidence that CAFO management practices and discharges...permitted under existing EPA and Texas rules...have caused or contributed to impairment of aquatic

Texas to introduce organic meat standards

Consumers today cannot readily discern from the label if fresh cuts of beef, chicken or pork come from a farm that uses sustainable growing methods. Although the FDA recently began to allow meat producers to seek certification as "organic" from a number of certifying agencies, Consumers Union SWRO found that "organic"-labeled meat is rarely available on the grocery store shelves (See sidebar). Instead, many producers who have rejected or moved away from industrial meat practices label their meat "natural," a term that has little or no real meaning. In order to create and support a viable market for meat produced in a sustainable manner, Texas needs significant labeling reforms, as well as the expansion of alternative markets where producers can sell directly to consumers.

With concerns about the environment and the sustainability of our food system, more consumers are demanding organically produced vegetables and meat. Over the past 2 decades, total retail organic food sales have risen from \$178 million in 1980 to \$6 billion in 1999.¹ In 1990, Congress passed the Organic Foods Production Act (OFPA), which established a National Organic Standards Board to address issues related to crop and livestock standards, labeling and packaging, certifier accreditation and international issues. After lengthy consideration, the Board made recommendations to the USDA in 1996. When the USDA published a substantially weaker national organic standards rule in December 1997, over 275,000 comments, largely critical, were submitted and USDA postponed finalizing the rule.² USDA did not act again until March 2000 when it announced its revised proposal for national organic standards.³ Unlike the 1997 version, the new proposal more closely follows the recommendations of the National Organic Standards Board, including prohibiting antibiotic use, requiring 100% organic feed, and providing for more spacious and sustainable rearing conditions (i.e. no continual confinement).⁴ However, until

the federal organic rule is formally adopted, meat production continues to be regulated, if at all, by state law or voluntarily through organic certification agencies.

Currently, 33 private and 11 state certifying entities, including Texas' Department of Agriculture (TDA), provide organic certification for grain and produce.⁵ Texas law requires that organic producers obtain certification through the state or a private certifying entity.⁶ Currently, two private organic certifiers are accredited in Texas⁷ and they may certify Texas organic producers as long as their certification standards meet, at a minimum, the TDA standards.⁸ Therefore Texas consumers can be reasonably assured that when they buy "organic"-labeled grain and produce, they are getting a "certified organic" product.

However, the certification and marketing of organic animal products (meat, poultry, eggs, dairy, etc.) is not as well-defined. Without any state or federal organic livestock rules in place, animal products have not been allowed to use the word "organic" in their label. This has impeded the marketing of alternatively-produced meat and dairy products to conscientious consumers, many of whom are willing to pay a price premium for "organic"-labeled food.

In the face of this restriction, a complicated and confusing alternative—the "natural" meat label—has come into use. Unfortunately for consumers, the term "natural" is so loosely defined by USDA that virtually all fresh cuts of meat and poultry qualify as "natural." Specifically, the Food Safety and Inspection Service (FSIS) of the USDA defines a "natural" meat product as one that "contains no artificial ingredients" and is "not more than minimally processed."⁹ This would apply to most fresh meat and eggs, whether they have been produced conventionally, organically, or through sustainable practices. In fact, "natural" meat producers may regularly use antibiotics and hormones for all aspects of production

life uses.”⁹⁶

However, TNRCC agreed to conduct a “comprehensive study” in cooperation with the EPA, Texas Parks and Wildlife Department, and the United States Fish and Wildlife Service in which they would perform data analysis, modeling, and instream sampling of at least two distinct areas of Texas. TNRCC would then use the results to determine “what changes, if any, should be made in Subchapter B at its renewal.”⁹⁷ As of March 2000,

however, no research has been completed and the study remains in the planning stages.

The new rules do take some small steps toward improving CAFO regulation. They require applicants to submit a pollution prevention plan, require short buffer distances between facilities and well water supplies, and restrict the night-time application of manure.⁹⁸

Many residents and environmental groups feel that the rules do not go far enough

in protecting Texas’ natural resources. The rules still allow operators to dispose of liquid waste by spray irrigation onto crops, a system which many environmentalists believe encourages run-off, and they continue to use nitrogen as the limiting nutrient.⁹⁹ The rules do not require lagoons to be covered or require filters for barns that blow hog and chicken odors out into the community. Despite the possibility that high levels of manure dust or organic com-



yet still legally market their meat as “natural” under this definition. As a result, producers who adhere to a variety of alternative production practices have come up with even more label claims to distinguish their products from conventionally produced meat. For example, claims such as “raised without added hormones,” “no antibiotics used in raising,” and “no subtherapeutic antibiotics used in feeds” are commonly used by producers to describe the “naturalness” of their products.¹⁰

Such varied claims make it difficult for consumers to make informed decisions at the supermarket. Further complicating the matter, the US Food and Drug Administration (FDA) sets residue limits which must be met by all producers, regardless of production methods. Strictly speaking, producers can meet the FDA standard for allowable residue limits whether they raise their animals conventionally (regular antibiotic use), organically (no antibiotic use), or with limited antibiotic use.

What matters to many consumers is whether the meat they buy is produced sustainably in a way that minimizes drug and hormone additives. Consumers who wish to support sustainable food production practices may find themselves misled into buying products that do little to address these sustainability issues. For example, a “natural” cut of meat labeled, “No antibiotics administered 120 days prior to finishing,” means that the producer could still administer antibiotics to the animal on a routine basis from birth until the last 120 days of the animal’s life. While this may assure the consumer that the meat carries no detectable antibiotic residue at slaughter, the growing practices still allow antibiotic use for much of the production cycle. Therefore, “natural” label claims do not necessarily provide consumers with sufficient details to make informed decisions at the supermarket.

In January 1999, the Secretary of Agriculture and the FSIS

announced that until a national standard for organic meat and poultry production is established, it will allow certified organic meat producers to market and label their products as “certified organic by (a certifying entity).”¹¹ This is a first step in providing consumers more choices in the meat products they buy, although “organic”-labeled meat has yet to appear in the supermarket.

In October 1999, the Organic Trade Association (OTA)—a 1000-member business association of organic growers, processors, certifiers, and others—adopted the American Organic Standards, a model to provide guidance to the industry. USDA then used OTA’s standards as one of its references in developing its new proposed organic rules.¹² In December 1999, the Texas Department of Agriculture also proposed standards for organic livestock production in the state.¹³ The Texas proposal adheres to many of the same guidelines as the national proposed standards, including the requirement for 100% organic feed and prohibition of sub-therapeutic antibiotic use. And under the proposed national organic rules, a state’s standards cannot be less restrictive than the federal standards.¹⁴ Therefore, the state’s standards will have to comply with the federal regulations once those are in place. Texans will then be assured that the organic animal products they buy are certified to the highest standard.

The adoption of a unifying national standard for organic production would demonstrate a commitment on behalf of government and the organic industry to expand and promote sustainable livestock production practices. A strong, standardized “certified organic” meat label would boost consumer confidence in alternative meat products and allow for more informed purchasing. Without such a standard, conscientious consumers will continue to second-guess the meaning of the labels on the meat products they buy.

pounds from manure gases may equally affect people's health and well being,¹⁰⁰ TNRCC does not describe or require any specific odor abatement practices, except to declare that CAFOs should operate "in such a manner as to prevent the creation of a nuisance or a condition of air pollution" as described by the state's Health and Safety Code.¹⁰¹ Nor do TNRCC rules address the concern expressed by many adjacent landowners that the smell and flies significantly devalue their property.

Enforcement: Ignoring Odors and Pollution

TNRCC does investigate odor complaints, however "nuisance" conditions are difficult to document because the assessment of odor is completely subjective. An investigator responding to a complaint has no tools to measure odor intensity—other than his own nose—which he uses to quantify the odor on a scale of 1 to 5. In order to issue a violation, the odor must fall under category 5, which is described as an odor that is bad enough to make people nauseous or force nearby residents to stay inside their homes. One TNRCC investigator in the Panhandle told a National Public Radio reporter that he only issues violations if the odor is strong enough to make him sick, and that has never happened.¹⁰² The subjective nature of these investigations makes it difficult to document nuisance conditions and "even more difficult to litigate successfully except in the most severe and persistent cases."¹⁰³ For example, poultry facilities owned by Tyson Food Corp. were investigated at least four times between 1997 and 1999 for possible odor viola-



Small, intermittent creek with noticeable foam on surface near Pilgrim's Pittsburg grain elevator in 1999.

tions. In one case, the TNRCC complaint report listed the initial problem as "horrendous odors" which caused the office workers to become "nauseated."¹⁰⁴ In another case, the initial problem was described as "nauseating gas odors and smoke."¹⁰⁵ In two cases, odors were detected but did not constitute "nuisance conditions" in the opinion of the inspectors.¹⁰⁶ In another case, the odors were unconfirmed, but "inspection of the facility indicated (sic) the potential for odor does exist."¹⁰⁷ No formal action was taken in any of the investigated cases because Texas air quality regulations do not provide enforceable, quantified standards to address these kinds of complaints.

Compounding this problem are other TNRCC policies which hinder investigation and response to odor complaints. Because odors are variable and dependent upon climactic conditions and operating procedures, a quick response is necessary to document the problem. In the instances where TNRCC does investigate odor complaints, however, inspection may take place days or even weeks after the complaint.¹⁰⁸ Because of the variable nature of odors, it is unlikely that the odors which a neighbor complains about will

still be present when the inspector arrives.

No matter how many neighbors call in complaints, TNRCC will not act on an odor problem unless it is documented by one of its inspectors. On the other hand, if an inspector personally observes nuisance level odors at a CAFO, he or she cannot cite a violation unless a private complaint has been filed.¹⁰⁹ In other words, the agency will knowingly ignore odor violations until a complaint has been filed but then demand strict verification once a complaint has been made. Yet TNRCC's policy discourages neighbors from making repeat complaints if inspectors cannot confirm the complaint. Agency policy states that "[i]f a regional office concludes that such repeat complaints are without merit...it may forward a recommendation to Austin requesting that response to complaints by that individual against that entity be discontinued."¹¹⁰

And, unlike investigations for all other industries, TNRCC policy does not allow inspectors to cite a CAFO nuisance violation in the field. Instead, the agency has created a separate procedure for processing CAFO odor complaints which requires the investigator

to first submit a report to an agency "screening committee" in Austin. The committee, not the investigator, then determines whether to cite the violation or send a warning letter to the CAFO.¹¹¹ Taken together, these policies severely hinder the agency's ability to effectively respond to citizen complaints against CAFO odors.

National Ambient Air Quality Standards limit particulate emissions into the air. If particulate levels in a region of the state often exceed the standard, it can be designated a nonattainment area and must implement procedures to reduce pollution. The standards may also be used to estimate downwind emissions from a feedlot during the permit process. Although the particulate standards apply to feedlots, TNRCC rarely tests the air around feedlots for compliance, and when it has the results have been inconclusive in part because the dust events are sporadic and vary with weather conditions.

To further complicate the regulatory framework, TNRCC does not consider the manure dust kicked up under the hooves of cattle to be an emission for purposes of feedlot compliance with the federal Clean Air Act. The federal Clean Air Act requires a "major source" of pollution to get a federal permit, but each state determines what kinds of emissions will be used to define a "major source." Currently in Texas fugitive emissions from the feedlot surface are not included. If they were, feedyards as small as 8000 head could be considered "major sources" of particulates.

Texas Regulations Lag

Behind Other States

In contrast to Texas, other states have implemented more stringent rules. Recent regulatory changes in the State of Washington authorized the environmental agency to include fugitive emissions from feedyards in the emissions inventory for federal Clean Air Act compliance.¹¹² The Georgia Department of Natural Resources recently adopted new rules for large swine operations that include air tight lagoon covers for larger facilities, topsoil injection of wastewater rather than spray irrigation, ground water monitoring, and financial responsibility provisions to cover the costs of closure and cleanup of the facilities as well as any fines that may be imposed.¹¹³ And in North Carolina the state legislature passed a bill in 1997 which directed the state's Department of Agriculture to develop a plan to phase out the use of anaerobic lagoons and sprayfields at swine farms.¹¹⁴ Iowa also recently passed a law requiring injection or incorporation of manure when applied within 750 feet of residences.¹¹⁵ Kansas requires CAFOs to apply waste based on the phosphorus needs of the crops if soil samples indicate that phosphorus levels will exceed the holding capacity of the soil within five years.¹¹⁶ And when Vall Inc., a multinational hog company, tried to set up facilities in Kentucky in 1997, local officials requested—and received—a moratorium on new CAFOs until the legislature could meet to review the state's environmental regulations.¹¹⁷

Several other states have found the health and environmental threats posed by CAFOs so overwhelming that they have



A neighbor by the intermittent creek has repeatedly complained to the city about the quality of the creek's water, but told CU that she has seen no improvement.

imposed a moratorium on any new operations. The Mississippi state legislature enacted a moratorium on new hog CAFOs in June 1998, and in November 1999, the state Department of Health recommended an extension of the moratorium.¹¹⁸ North Carolina first enacted a moratorium on CAFOs in August 1997,¹¹⁹ and a subsequent bill continued the moratorium.¹²⁰ Georgia's Board of Natural Resources imposed a moratorium on hog CAFOs in January 1999 to give the state an opportunity to strengthen its regulations.¹²¹ Now that the state has adopted new rules requiring lagoon covers and subsoil injection of waste, the Board has lifted the moratorium.

Unlike these states, Texas welcomes corporate agriculture. In contrast to Kentucky, for example, Texas opened its doors to Vall, Inc. in 1997 and issued permits for three hog facilities that would house up to 54,000 swine in Sherman County in the Panhandle.¹²² In 1999 Vall, Inc. applied for two additional permits for facilities in Sherman County to house another 97,200 hogs. A nearby tourist ranch submitted public comments opposing one of the facilities and the US Fish and Wildlife Service expressed concerns over the impact of

Vall, Inc.'s waste management practices on threatened bird and fish species in the area. The Office of Public Interest Counsel (OPIC) of the TNRCC recommended that a contested case hearing be granted on one of the permits, but the TNRCC's Executive Director recommended that the agency deny the hearing request. Both permits were approved in August of 1999, within three months of posting notice to the public.¹²³

This is not surprising given that the TNRCC had already established a willingness to welcome large hog producers to the state—in 1994 the agency extended a permit to Premium Standard Farms to house up to 925,000 hogs in one site in Dallam County. In 1996 it issued a permit to Texas Farm Inc. for its 249,600 head facility in Ochiltree County. And a few months after approving the Vall Inc. permits in 1997, the TNRCC permitted another Premium Standard facility in Dallam County to house almost a quarter million pigs.¹²⁴

While Minnesota has taken action to safeguard CAFOs' neighbors from hydrogen sulfide emissions by applying strict ambient air standards for hydrogen sulfide to CAFOs, Texas continues to monitor the situation.¹²⁵ The Minnesota

Department of Health is developing even more stringent ambient air standards to protect health and quality of life.¹²⁶ Kentucky has taken the very important step of making livestock corporations jointly liable for the environmental performance of the contractors who raise the animals and manage the waste. In February 2000, the Kentucky Governor signed emergency regulations that require both the animal owner and the contract operator to obtain Clean Water Act permits.¹²⁷ In Texas, the individual contract growers, not the large corporate farms, are held responsible for pollution violations, even if the animals are the property of the large corporation. Similarly, Texas CAFOs are not responsible for contamination caused by manure and waste if it has been sold or given away for off-site application.

The 76th Legislature—in HB 2—stated that agriculture, including livestock production, “renews the natural resources of this state” and is a vital part of the state economy. HB 2 directed the state to assess the condition of agriculture and the role of government, keeping in mind several state priorities including the promotion of Texas agriculture, protection of property rights and the “right to farm,” and infrastructure development. Supported by the Texas Farm Bureau, the new law did not specify that *sustainable* agricultural production is a state priority, nor did it direct the interim committee to balance the needs of factory farming with the needs of neighboring property owners or the environment. The interim study will be drafted this summer with input from the public.

In addition to the lack of



strong environmental regulation of livestock facilities, the 75th Texas legislature authorized TNRCC to implement a new permitting process in which the agency could authorize one “general permit” for a region or for the whole state.¹²⁸ In this case, most CAFOs would no longer be permitted or regulated individually—instead they could simply file a “notice of intent to operate” under the general permit that applies to the whole state, stating their intention to comply with the general conditions set out in that ‘permit.’ There would be no opportunity to include site-specific conditions for a particular facility as is now possible with an individual permit. There also would be little opportunity for public comment or a contested case hearing for general permit facilities. Instead, public comment would only be solicited every five years at the time that the general permit expires.

On March 6, 1998, TNRCC issued public notice of a proposed general permit, a first step in implementing this process.¹²⁹ Many concerned citizens and environmental groups submitted comments in opposition to the proposal. TNRCC has left the matter pending but is expected to eventually act on its authority to issue the general permit

Recommendations

Vertically integrated, multi-national agricultural corporations must balance local public health and environmental issues against the demands

of the shareholders and corporate profit.

US Senator Tom Harkin of Iowa, who has supported legislation to restore fairness and competition in the livestock industry, has said, “The consolidation of our food system into fewer and fewer hands also poses serious risks to the security and well-being of consumers.”¹³⁰ Consumers Union supports efforts to move away from a consolidated corporate food structure and toward sustainable food production.

Moving toward sustainable practices in the meat and dairy industries will require a re-thinking of current intensive animal production practices. The necessary changes in production methods and philosophy will not occur overnight. However, there are short- and long-term measures that CAFO owners and government agencies such as TNRCC, USDA, and EPA can begin taking which will make the industry more accountable for public health and environmental protection.

Short-term Recommendations:

Address Water Quality Concerns

Surface and ground water quality is at risk whenever CAFOs are creating more waste than the ecosystem can absorb. There are several ways in which this risk can be lessened:

- TNRCC should set more stringent standards for facilities, including minimum buffer zone requirements

(setbacks) based on proximity to watersheds, recharge zones, drinking water sources, residential areas, and pristine or protected habitats. For larger CAFOs, setbacks should be at least 2 miles.

- No new CAFOs or expansions should be allowed in areas that have water bodies that have already been negatively impacted by CAFO-related pollution (i.e. Clean Water Act 303(d) listed waters—see Table 2).¹³¹

- TNRCC should also implement requirements for groundwater monitoring, recordkeeping of monitoring results, and regular inspections of lagoon structures to locate possible leakages. Surface waters should also be regularly monitored for bacteria and pathogens that are carried in runoff.

- The cumulative effects of multiple CAFOs located in one watershed should be considered when determining how and where CAFOs may operate. We recommend that TNRCC more stringently regulate watersheds that contain multiple CAFOs *before* water quality is negatively impacted and actively reduce the concentration of CAFOs in areas where the environmental damage has already been done.

- All waste lagoons should be lined to prevent seepage. Although lagoons can self-seal, cracks and pores may develop over time and increase the risk of groundwater contamination.¹³² Liner inspection should be included



as part of an annual lagoon evaluation since the periodic lowering of the waste level results in dry cracks that may not reseal properly.

- In the case of dry manure systems such as those used in beef cattle feedlots, the dry manure should be covered and stored in non-permeable structures to prevent runoff.

Address Air Quality Concerns and Odor Problems

Farm managers should implement simple technologies to improve air quality and odors near CAFOs.

- Regular sprinkling of feedlots with water can significantly diminish the amount of particulate contamination in the air without affecting animal growth and performance.¹³³

- A layer of straw on top of a lagoon absorbs odors until a more permanent lagoon cover can be fitted.

- An air “scrubber” or filter, in which dust and odorous compounds are removed from the air by forcing it through a shaft of water or soil can decrease ammonia concentrations in the air by 97-99% and odor intensity by 30-80%.¹³⁴

- Eliminate aerial spraying of liquid manure to application fields to reduce odor.

- Direct waste injection into the soil or application with a spreader, turning it in, limits potential dispersion to waterways and surrounding areas while reducing odors.

TNRCC Permits and Enforcement

TNRCC should implement stronger regulations.

- Reduce hydrogen sulfide and ammonia emission limits at CAFOs, slaughterhouses, and rendering plants and conduct regular monitoring to ensure compliance.

- Reauthorize field investigators to issue nuisance odor Notices of Violation if they confirm a complaint.

- Refuse to implement a general permit for all CAFO operations.

- Take into account cumulative pollution effects (from multiple CAFOs in one area), prior violations by the facility in question, and proximity to residential and environmentally sensitive areas when making permit decisions.

- Require individual permits for all facilities housing 1,000 or more animal units and for smaller facilities if they are located in impaired watersheds, have a history of discharging pollutants, or have been the subject of numerous complaints.

- Follow the lead of other states and hold corporate animal owners jointly responsible with their contract growers for the pollution created by CAFOs.

- Direct more attention to monitoring and enforcing existing laws, including swift response to evidence of non-compliance and illegal pollution discharges and assessment of adequate penalties against non-compliant facilities.

- Eliminate the criteria that members of the public affected by a new permit or expansion of an existing permit must show the “technical merit” of their issues before TNRCC will grant them standing to present these issues to an impartial adjudicator.¹³⁵

- Give affected neighbors opportunity for contested case hearings, especially for new facilities or significant expansions which pose risks to health, the environment, and the use and enjoyment of adjacent property.

Long-term recommendations:

Prioritize and promote research on innovative and sustainable alternatives to current livestock production methods in Texas, including environmentally responsible waste disposal.

- Develop new statewide agricultural priorities that include special emphasis on sustainable methods for growing animals and utilizing livestock waste.

- Prioritize economic development of the state’s growing organic farming industry, including organic meat production.

- Investigate new methods to reduce the ammonia levels in livestock waste and decrease ammonia released into the atmosphere.¹³⁶

- Encourage the development and use of composting systems that help eliminate odor and break down animal waste into a safe and useful agricultural product.¹³⁷

- Investigate systems that

reuse animal waste for energy or fertilizer production.¹³⁸

- Promote alternatives to antibiotics, with the eventual goal of eliminating the use of antibiotic feed additives in livestock production.

- Develop educational strategies to promote alternatives to antibiotic use, such as improved animal hygiene and less overcrowding, which can enhance animal growth and well-being without the need for intensive drug therapy.

- Develop a standard, consumer-friendly label for sustainably produced meat and dairy products that may not be “organic” but represent significant production reforms over the industrial model (for example, animals that may have ingested some non-organic feed but ingested no antibiotics and did not grow in close confinement). Such an “eco-label” might include a checklist of well-defined sustainable production practices—for example “no antibiotics used ever”—which would easily inform the consumer about the specific production practices that were utilized on the farm.

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¹ “Organic” meat refers to meat produced under the general standards proposed by the Organic Trade Association and includes practices such as the prohibition of antibiotics and hormones in production, the use of 100% organic feed, and no continual confinement. If available, these products would appear with a “certified organic (by)” label. “Sustainably-produced” meat refers to meat produced using any alternative management practices, such as limited or prohibited antibiotic and hormone use, limited confinement, etc. These products, if available, would generally appear with a “natural” or “negative claim” label.

² Phone survey conducted July 21-22, 1999 to 27 Texas grocery stores in Austin, El Paso, San Antonio, Tyler, Lubbock, Corpus Christi, Amarillo, Houston, Dallas, and Fort Worth.

