Pork, Pollution, and Pig Farmer: The Truth About Corporate Hog Production in Kansas

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I. Background

The Swine Industry

1. Corporate Swine Production Trend

Many family swine farmers produce, slaughter, and process their hogs at one facility. Other small swine farmers produce hogs and sell the full grown swine to a slaughter and processing operation. A recent trend in the swine production industry, however, is an increase in the number of hogs per farm. Many of these large hog production farms are owned and operated by corporations. Kansas swine production reflects this trend. This trend towards larger production facilities exists in Kansas although corporate ownership of swine production operations was illegal in Kansas until 1994.[1] The trend towards large production farms is even more pronounced in North Carolina where corporations have always been free to produce swine.

In general, these corporate hog producers differ from the "family" hog producer in size as well as ownership. A good example of a corporate swine production facility is National Hog Farms in eastern Colorado. National's 17,000 sows produce 320,000 swine per year in a facility consisting of 220 buildings across 27,000 acres. The swine are housed in corrugated metal buildings which are air conditioned in the summer and heated in the winter. The buildings have grated metal floors, and water flushes out the hog waste every twelve hours. This waste is sent to lagoons where it evaporates or is sprayed over fields as fertilizer.[2]

The reproductive history of each sow is computerized. At the age of seven months, the sows are bred in a special building. Exactly 115 days later, a litter of approximately nine piglets is born. At twenty-one days the piglets are weaned from their mother and are sent to a nursery building for another six weeks. It takes six more buildings and eighteen more weeks for the pigs to finish on feed. The cycle repeats for sows, and the hogs are sent to slaughter. In this system, a pig grows from birth to the marketable weight of 240 pounds in six months at a rate of approximately one and one-half pounds per day.[3]

The ideal climate for these hog production operations consists of moderate temperature with low rainfall and low humidity. A proximate supply of corn and soybeans for feed and a low water table are also positives. A hog population of low density in the area of the operation helps prevent the spread of disease. Finally, a low density of human population lessens the need to diffuse the odor. These attributes are typical of southwest Kansas, making the region attractive to corporate swine producers.[4]

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2. Production Contract Trend

Another trend in swine production is the use of production contracts. Since 1980, the percentage of swine produced under contract has risen from 2% to 20%.[5] A swine production contract is entered into by a contractor, usually a large producer or slaughter-processor, and a producer. The contract provides that the producer will care for and feed hogs owned by the contractor. The producer must invest in the type of facility that is required by the contract and follow the exact method of care and feeding specified by the contract. The contractor provides for the feed and pays the producer a price for delivery of the hogs at a specified time. Finally, the contract usually runs for a fixed number of years.[6]

Production contracts are attractive to contractors for two reasons. By controlling the way its hogs are produced, the contractor essentially becomes vertically integrated. This vertical integration is advantageous to a swine contractor because it gives the contractor the ability to be assured of a consistent source of high quality hogs that might not be available in the open market.[7] Second, the contractor does not have to spend capital to increase the capacity of its own facility or bear the risk of the unprofitability of expansion.[8]

II. Issues

The battle over whether corporations should be allowed to own agricultural land and produce agricultural products has been raging since the turn of the century.[9] Since the Kansas corporate farm law was originally enacted in 1931, the Kansas Legislature has continually amended the law in an attempt to balance the interests of family farm supporters and corporate farm supporters.[10] The more specific debate over corporate ownership of swine production farms in Kansas has been labeled agriculture's "abortion fight."[11] Recently, the issue of a swine producer's contribution to water and air pollution has been added to the debate. Corporate swine producers, family farm supporters, and environmental groups make several arguments and offer conflicting evidence in support of their positions on corporate ownership of swine production facilities.

A. Arguments for corporate swine production

1. Economic Development Arguments

Supporters of corporate swine production make several arguments based on the potential for economic growth in rural Kansas. These arguments focus on jobs directly related to hog production, jobs indirectly related to hog production, community viability, tax revenue, efficiencies of scale and product quality, and cost.

First, supporters maintain that the influx of corporate-owned production facilities will create jobs directly related to pork production.[12] For evidence, they point to job creation in other states. National Hog Farms' 320,000 hog-per-year production facility in eastern Colorado employs 165 people at an average of $15,000 per year.[13] Circle Four Farms, a Utah corporate swine producer that will produce 2.08 million swine per year, expects to employ 600 workers across three Utah counties.[14] These supporters also maintain that corporate swine production will attract large corporate slaughter and processing facilities to Kansas to be close to the large and steady hog supply created by the new corporate producers. These slaughter and processing facilities can have an even greater impact on a community's job market. Supporters again point to Circle Four Farms which plans to build a slaughter and processing operation in Utah creating 550-1,200 jobs.[15] In addition, Seaboard's slaughter and processing plant, which was wrestled away from Liberal, Kansas, by Guymon, Oklahoma, has promised to create 1,400 jobs and maintain a $25 million payroll.[16]

Second, proponents argue that corporate swine farms increase the wages, salaries, and profits of businesses that directly interface with pork production.[17] These businesses include: feed processors, feed suppliers, feed transporters, construction contractors, construction equipment, veterinarians, consultants, and suppliers of animal health products.[18] An especially large impact allegedly occurs in the market for feedgrains. Colorado's National Hog Farms receives fifty-five semi-trailer loads of corn and fourteen truckloads of soybean meal a week.[19] That is 3.4 million bushels of corn and 19,000 tons of soy a year. The construction boon includes construction of the corporate swine facility, the construction of businesses that support the production facility, and construction of housing to support the larger community.[20] Logically, much of this construction creates investment business for local banks.[21]

Third, supporters for corporate production suggest that wages, salaries, and profits in retail and investment will increase when employees and business owners spend their increased wages, salaries, and profits. These increases should occur for food, clothing, health care, appliance, automobile, home, and apartment suppliers.[22] Supporters point to the effect Circle Four Farms had on that community's local housing industry. At the early stages of the operation, the corporation only employed thirty-five new workers, but the available housing in the 1,500 person town was completely booked.[23] The anticipated 600 person workforce will necessitate the construction of many new homes and raise current home values. In addition, personal banking services and consumer lending will increase.[24]

Fourth, many believe that corporate swine production facilities result in increased community viability, variety, and quality of life. They suggest that this will be evident by more churches and denominations, larger schools with broader opportunities for students, more community activities due to broader interests, and increased need and funding for recreational activities.[25]

Fifth, proponents maintain that local tax revenues will increase. A higher property tax base will increase funding for county services and schools. In addition, the spending of new wages, salaries, and profits will result in higher sales tax revenue for local government.[26]

Sixth, proponents of corporate swine farming argue that a corporate farm law that protects family farmers is economic protectionism. They claim that when the government tries to protect a sector of industry from the rigors of the free market, the economy is hurt. These proponents believe that although southwest Kansas has ideal conditions for swine farming, this protectionism is the reason that swine production in Kansas has fallen behind the rest of the country. As examples, they cite Dekalb Corporation and Seaboard Corporation which were prevented from locating large swine operations in Kansas by the Kansas corporate farm law. Instead, these swine operations moved to Oklahoma, bringing a large boost to its economy and a cost to the Kansas economy. To bolster their arguments, these proponents point to the cattle industry which is exempt from the Kansas corporate farming law and has prospered in Kansas.[27]

Seventh, supporters claim that corporate swine production is economically more efficient than the family farm because of the corporate operation's scale and size.[28] The advantages due to scale and size include:

> [the corporation's] ability to organize and pool the financial and other resources of many individuals and entities, . . . 'the facilitation of intergeneration transfers, limited liability, pooling of capital, ease of transfer of ownership of fractional interests, favorable tax treatment and increased availability of fringe benefits for both employer and employee.' Other advantages include the ability to raise and transfer funds from activities and sources outside of agriculture, and the economies of large scale operations which can result from the investment of those funds.[29]

These efficiencies of scale and size have two alleged results. First, a more efficient producer results in a lower priced and higher quality product. Second, if Kansas law protects the family farmer, the more efficient corporate swine producers will go to other states where their efficiency will still be able to run Kansas family swine farmers out of business.

Supporters of corporate hog production maintain that the above arguments result in concrete economic growth numbers. For example, Table 1 is a breakdown of the impact of 1,000 sows on a state's economy.

Table 1: Impact of 1000 sows on a state economy[30]

Category	Impact
Direct jobs in swine industry	7.29 jobs
Jobs in other agricultural sectors	3.49 jobs
Jobs in other sectors	12.48 jobs
Wages, salaries and profits	$993,390
Tax revenues (federal, state and local)	$82,878
Total economic activity	$2,993,122
Value added per bushel of corn	$4.71

Proponents of corporate swine production maintain that the above economic development possibilities are real. As evidence, they point to communities in Colorado, North Carolina, and Utah that were allegedly saved by corporate swine production. Proponents claim that the five new corporate swine operations in eastern Colorado have revitalized an area which was so economically depressed as the result of farm failures that plans to turn the area into a buffalo preserve were proposed.[31] In Utah, the corporate swine farms allegedly saved communities from the decline of railroading;[32] in North Carolina, corporate swine farms came to the rescue when the tobacco industry stumbled.[33] Proponents maintain that corporate swine production could similarly reverse the declining economic situation in rural Kansas.[34]

2. Production Contract Argument

Finally, proponents say that corporate swine production allows young farmers entry into the business of swine production through the use of production contracts. Without a production contract, the high front-end cost of starting a sophisticated, modern production facility closes out many young farmers. With the production contract, the corporate contractor assists the young farmer with obtaining the capital to begin the expensive business of hog production.[35] Proponents also say that the production contract reduces risk, stabilizes returns, reduces operating capital, improves cash flow, and provides a fuller use of labor and facilities for the young hog producer.[36]

B. Arguments for family farm swine production

1. Social Cost Arguments

Opponents of corporate hog production maintain that family swine farms will be run out of business for two reasons if corporations are allowed to operate. First, as seen above, the corporate producer realizes efficiencies of scale and size which allow it to undercut the family farm on price.[37] Second, large corporate swine producers may standardize the product such that slaughter and processing facilities will only want to purchase from the corporation in order to stabilize their own operations.[38]

To support this assertion, opponents point to developments in North Carolina since corporate swine production began to take hold in 1984. There the number of swine farms has been cut to about 30% of its 1984 level while the number of swine in the state has tripled. Opponents also point to the cattle and poultry industry. They claim that the cattle industry is dominated by three slaughter-processing companies — Iowa Beef Processors, Excel Corporation, and ConAgra, Inc. In 1990, these three companies slaughtered and processed 80% of all cattle in the United States.[39] In the poultry industry, the opponents of corporate swine production ask what happened to the chickens that used to populate almost every barnyard in rural America.[40] After arguing that corporate involvement in swine production will drive the family farmer out of business, opponents give several justifications for saving the family farm.

[O]pponents maintain that corporate hog operations create rapidly expanding communities which are plagued with social costs.

First, they maintain that the rural way of life is a value worth protecting, and this value is not protected by the free market. They claim that family farmers are an American tradition which have greatly contributed to and shaped America. In addition, they adopt Thomas Jefferson's view that agriculture producers should be morally sound, politically free, and not subject to the demands of the marketplace. Opponents claim that family farms, not corporations, fit Jefferson's model.[41]

Second, opponents maintain that corporate hog operations create rapidly expanding communities which are plagued with social costs. As a result of this expansion, they suggest that schools become over-crowded and drop-out rates increase. For an example, they cite the 46% jump in enrollment in the Garden City public schools after Iowa Beef Processors began its cattle slaughter and processing operation in 1980. In further support, the drop-out rate in Garden City is also the highest in Kansas — 36%. In addition, opponents maintain that crime increases dramatically in these communities, allegedly because the turnover of employees in these corporate operations is so high. They point to the rise in violent crime and property crime in Garden City for the decade following the 1980 opening of IBP's slaughter and processing plant and note that these crimes dropped in Kansas as a whole. Opponents also argue poverty has increased in the area by citing that 36% of the students in Garden City public schools qualify for the federal lunch program, and that food boxes for the indigent have increased two and one-half times since the plant's opening. Finally, they maintain that providing affordable housing and adequate medical care are social costs imposed upon these communities. Local governments are unable to pay for these social costs exacted by corporate operations because of the tax abatements and concessions afforded to attract these corporate entities to the community.[42]

Third, family farm supporters maintain that a large number of small producers is a more stable economic structure than a concentrated number of large producers. They say that efficiencies of scale and size inherent in corporate hog production will force small producers out of business, concentrating hog production in the hands of a very few. They claim that this lack of competition will allow producers to increase the price and decrease the quality of the hogs they produce. In this scenario, the pork consumer would suffer.[43] In addition, opponents maintain that this concentration of hog production can be devastating to a community that is dependent on a corporate entity for its economic vitality if the corporate entity goes out of business or relocates. They claim that jobs, both directly and indirectly related to hog production, would vanish and social problems related to unemployment would skyrocket. They also maintain that replacement jobs could not be found at the small production farms, already driven out of business by the corporate producer. Moreover, the local government might be forced to offer more tax abatements and concessions to keep the corporate facility open, further limiting the government's ability to deal with the increase in social problems.[44]

Fourth, opponents maintain that it is unfair to allow corporate producers from other states or other countries to force Kansas family hog producers out of business. As an example, opponents cite Japan's Nippon Meat Packing's 540,000 swine-per-year plant in Texas which will drive a number of small Texas hog producers out of business.[45]

Fifth, opponents claim that the corporate hog producer will not create as large an economic boost to the local community because of the corporation's tendency to vertically integrate. For example, they say that it is economically efficient for a corporate hog producer to grow and transport its own feed because this vertical integration eliminates the cost of paying a local feed producer and transporter a profit-making price. Therefore, opponents argue, the local feed producer and transporter will not benefit from new sales to the corporation, and local feed producers and transporters will lose their sales to family hog producers run out of business by the corporate hog producer.[46] Similarly, corporate farms also buy their needed equipment and supplies from national, out-of-state suppliers, eliminating local businesses which supply the family swine farmer.[47]

2. Production Contract Argument

Finally, opponents argue that contract hog production is not a viable substitute for non-contract hog production because the small producer does not have the power to bargain for a fair contract with the large contractor. Typically the contract is drafted by the sophisticated corporate contractor's lawyers. The small producer is accustomed to making deals on a good faith handshake without a contract, while the contractor is experienced in the business of formal contracting. The producer often does not have any choice but to contract because the producer cannot compete with the hog contractor's efficiency. Because of the limited number of large contractors in the small producer's general area, a producer might be limited to one contractor while the contractor can chose the least expensive of the many small producers. Finally, it is economically efficient for the contractor to produce its own hogs unless the contractor can pay a small producer a depressed price.[48]

Opponents are concerned that this unequal bargaining power will, in essence, transform farmers into low-wage slaves for large corporate contractors. They argue that the producer loses managerial control, facility use is not guaranteed, swine are commingled increasing the chance of disease, returns are not enough to cover facility costs or facility replacement costs, profit potential is reduced over time, and the contractor can abandon the producer with an expensive facility after the contract term is met.[49]

C. Sustainable Agriculture, Water Pollution, and Odor

Both large corporate producers and small family producers have the potential to pollute the ground and surface water with swine waste. Both types of facilities can also emit a foul odor or fail to engage in sustainable agriculture. However, because of the intense concentration of swine in a corporate production facility, environmental groups claim that the magnitude of potential harm is much larger. For support, they point to the fact that the sewage produced at a single corporate swine facility in Missouri is equivalent to the sewage that flows through the sewers of Springfield, Columbia, and St. Joseph, Missouri combined.[50]

1. Sustainable Agriculture

Environmental groups maintain that the traditional family farm is a model for sustainable agriculture. Livestock consume crops from the fields, and the waste from the livestock is returned to the land to enrich the soil for next season's crop. These groups argue that sustainable agriculture is necessary to keep the soil rich with nutrients without the use of artificial fertilizer. They claim that the efficiencies of corporate hog production will force the family hog producers to specialize in hog or crop production in order to compete; therefore, these farmers will not be engaging in sustainable agriculture.[51] In addition, environmentalists argue that large corporate hog producers do not always have access to enough cropland to accommodate the great amount of waste the corporation's hogs generate. They claim that this also is not sustainable agriculture.[52]

2. Spills from Waste Storage Lagoons

Environmental groups maintain that the waste storage lagoons spill hog waste which contaminates the ground and surface water. They point to the major spills in the summer of 1995 as seen in Table 2.

Table 2:
The summer of 1995's fish kills[53]

Date	State	Waste	Gallons of Waste
June 21	North Carolina	Hogs	25 million
June 21	North Carolina	Hogs	1 million
July 3	North Carolina	Chickens	8.6 million
July 6	North Carolina	Hogs	1 million
July 15	Iowa	Hogs	1.5 million
July 18	Iowa	Hogs	16,000
July 22	Iowa	Hogs	Undetermined
Aug. 3	North Carolina	Hogs	Less than 1 million
Aug. 3	Minnesota	Hogs	Undetermined
Aug. 28	Missouri	Hogs	Undetermined
Aug. 31	Missouri	Hogs	Undetermined
Sept. 3	Missouri	Hogs	Undetermined

These spills polluted more than seventy-five miles of rivers and streams. In Missouri, one spill from a corporate swine farm lagoon killed at least 173,000 fish.[54]

Environmentalists point out that spills from lagoons can occur in a number of ways. Pipes or caps can burst.[55] Rain can weaken the earthen walls of the lagoon, causing a wall to collapse,[56] or raise the sewage level in an open lagoon, causing it to overflow.[57] Ironically, the hog operation might not be able to spray waste over fields in order to prevent lagoon overflow because the fields are too wet from the same rain that caused the rise in the sewage level.[58]

Environmental groups maintain that a spill of hog waste into a river virtually destroys the entire river. Solid swine waste settles to the bottom of the river smothering clams, crawfish, and insect larvae. Ammonia from the swine urine kills almost all of the aquatic life, sparing only bloodworms and sludgeworms that can shut down their metabolism to survive the polluted water. Bacteria in the waste makes the fish more vulnerable to the ammonia. Moreover, the nutrients in the river stimulate the growth of algae thereby depleting the oxygen in the river and killing more fish. Finally, the dangerous microorganisms giardia

and cryptospridium found in swine waste can be a great risk to human swimmers and seafood eaters.[59]

3. Leaks in Waste Storage Lagoons

"Green" groups maintain that lagoons can leak enough waste to pollute nearby groundwater. They point to a recent study that showed that half of the existing lagoons in North Carolina, the nation's second leading swine producer, are leaking badly enough to contaminate groundwater.[60] Another study showed that the ammonia level, normally two parts-per-million, climbed to 178 parts-per-million in monitoring wells near a lagoon.[61] Pork industry officials, however, claim that the lagoons are sealed when the heavy waste sinks to the bottom and is compacted.[62]

4. Ammonia Gas

Environmentalists also claim that the lagoons create an excess of ammonia gas. They say that as the waste decomposes in the lagoon, 70% to 80% of the nitrogen in the waste is transformed into ammonia gas. The ammonia allegedly falls to the earth with rain and adds to the nitrogen content of rivers and lakes. The increased nitrogen content contributes to algae growth which depletes oxygen and kills aquatic life.[63]

5. Waste Application to Land

Environmental concerns have been raised over the application of hog waste to land. Environmental groups claim that fields in North Carolina have been over-sprayed because of the lack of acres available for spraying. Test wells at fields where hog waste is spread for fertilizer showed nitrate contaminant threatening the groundwater.[64]

6. Dead Swine Disposal

A developing concern is the disposal of hogs which have died in the production phase. Some recent studies have shown that burial pits can be a significant source of surface and ground water pollution. Groundwater running through the burial pits allegedly can carry nitrates, ammonia, and disease organisms into surface and groundwater supplies.[65]

7. Odor

Neighbors of hog producers are concerned about odor. This odor has three sources: swine barns, manure sprayed fields, and manure lagoons. Neighbors claim that the odors can be extremely powerful, but new studies show that the odors are only detectable a few times a week. In addition, rain and high humidity increase the smell. The odor compounds can get trapped in shingles, siding, and fabrics at night and can be released in the heat of the day. These compounds can also be trapped in the fatty tissues of the human body. Consequently, the odor can follow a person in fatty tissue and clothing until the person and the clothes are cleaned.[66]

III. Past and Present Kansas Corporate Farm Law

A. Pre-1981 Corporate Farm Law

The first Kansas statute to prevent corporations from engaging in agricultural activities was passed in 1931. The statute prevented corporations from "producing, planting, raising, harvesting or gathering wheat, corn, barley, oats, rye or potatoes, or the milking of cows for dairy purposes."[67] The 1931 statute, however, did not prevent corporations from engaging in swine production.

B. 1981-1993 Corporate Farm Law

In 1981, the Kansas Legislature amended the corporate farm law to prohibit a corporation, other than a family farm corporation or authorized farm corporation, from engaging in swine production.[68] Under the law, a family farm corporation is a corporation founded for the purpose of farming with the majority of the stockholders related to each other. In addition, at least one of the stockholders must reside on or actively engage in the farming operation.[69] An authorized farm corporation is defined as a corporation founded for the purpose of farming with all the incorporators being Kansas residents. In addition, the authorized farm corporation is limited to a maximum of fifteen stockholders and 30% of the stockholders must reside on or engage in the day-to-day operations.[70] The exemptions for these types of corporations allow small hog producers to obtain the advantages of incorporation while preventing larger corporations from engaging in hog production.

In 1984, Dekalb Swine Breeders wanted to operate a swine breeding facility in Plains, Kansas. The Attorney General issued an opinion that this operation would violate the corporate farm law because Dekalb would own agricultural land for the purpose of swine production. Consequently, a bill was introduced which would exempt "swine confinement facilities" from the corporate farm law. The bill defined "swine confinement facilities" as the structures and related equipment used for housing, breeding, farrowing, or feeding of swine in an enclosed environment. The final definition of the term would have "permitted corporations to own or lease agricultural land for use as a swine confinement facility, but only as much agricultural land as necessary for the proper disposal of liquid and solid wastes and for isolation of the facility to reasonably protect the confined animals from exposure and disease." The bill, however, died in the House Agriculture and Livestock Committee.[71]

In 1987, the Kansas Legislature passed House Bill 2076 which exempts poultry confinement facilities and rabbit confinement facilities from the corporate farm law.[72] Consequently, any entity, including corporations, can operate poultry or rabbit confinement facilities. The bill did not, however, contain an exemption for swine confinement facilities.

In 1988, the corporate farm law was amended by making it unlawful for hog slaughter and processing facilities to contract for the production of swine if the slaughter-processor owned the swine for more than thirty days before slaughter.[73] This prevented slaughter and processing corporations from controlling the production of their hogs through production contracts, effectively preventing these corporations from vertically integrating.

In 1991, the corporate farm law was amended to prohibit general limited liability companies from engaging in, among other farming activities, swine production.[74] The 1991 amendments, however, added limited liability agricultural companies to the list of entities which can engage in farming activities.[75] A limited liability agricultural company is defined as a limited liability company founded for the purpose of farming agricultural land, the members do not exceed ten, and at least one member resides on or actively engages in the farming operation.[76] This allows certain small hog producers to take advantage of the benefits of being a limited liability company.

Two federal statutes address water pollution: the Clean Water Act and the Safe Drinking Water Act.

C. 1994 Amendments

In 1994, the Kansas Legislature amended the corporate farm law, giving Kansas counties the option to create an exception to the prohibition on corporate ownership of agricultural land for "swine production facilities." The amendment defines a "swine production facility" as:

> [L]and, structures and related equipment owned or leased by a corporation or limited liability company and used for housing, breeding, farrowing or feeding of swine. The term includes within its meaning only such agricultural land as is necessary for proper disposal of liquid and solid wastes in environmentally sound amounts for crop production and to avoid nitrate buildup and for isolation of the facility to reasonably protect the confined animals from exposure to disease.[77]

The 1994 amendments to the corporate farm law allow Kansas counties to opt to permit corporations or limited liability companies to own agricultural land for swine production facilities in one of two ways. First, the Board of County Comissioners may adopt a resolution, subject to notice and protest petition, to permit the establishment of corporate swine production.[78] Second, voters in a county may submit a petition to the county's Board of Commissioners requesting the establishment of a corporate swine production facility in the county.[79] Both the protest petition in the first method and the voter petition in the second method require the signatures of 5% of the voters in the last preceding general election for the Secretary of State.[80]

The 1994 amendments also prohibited any city or county from granting:

> any exemption from ad valorem taxation under section 13 of article 11 of the Constitution of the State of Kansas for all or any portion of the appraised valuation of all or any part of the buildings, improvements, tangible personal property and land of any . . . swine production facility which is on agricultural land and which is owned or operated by a corporation. [81]

This prevents Kansas counties from reducing property tax for a corporate hog producer in an attempt to attract the producer to the county. In addition, the amendments prevent the State of Kansas from attempting to attract corporate hog farms by issuing revenue bonds to enable a corporation to "purchase, acquire, construct, reconstruct, improve, equip, furnish, repair, enlarge or remodel property for any swine production facility . . . ."[82]

As the corporate farm law in Kansas now stands, no corporation, limited liability company, limited partnership, or corporate partnership, other than a family farm corporation, limited liability agricultural company, or limited agricultural partnership, can own agricultural land for the purpose of farming. Swine production facilities, however, are an exception to this restriction in the counties which have opted to create the exception.

IV. Kansas Production Contract Regulation

In 1994, when the Kansas Legislature amended the Kansas corporate farm law to allow corporations to produce swine, the legislature envisioned small producers contracting with large corporate contractors — producers or slaughter-processors — for the production of the corporation's hogs. Because of a perceived inequality in bargaining power between the small producer and the corporate contractor,[83] the Kansas Legislature enacted statutory provisions designed to protect the small producer in these contract situations.[84]

The law provides the following protections for a producer who enters into a production contract with a contractor:

(1) If the contractor is a subsidiary, the parent company is liable to the producer for the contractor's failure to pay on the contract.[85]

(2) All contracts are read to include implicitly implied promises of good faith,[86] and the law allows for the recovery of damages, court costs and attorney fees if the contract has not been applied in good faith.[87]

(3) All contracts must include a provision requiring producers to comply with state and federal environmental laws, and contractors must provide compliance information to the producers upon request.[88]

(4) If a producer fails to comply with a contract that requires a capital investment of $100,000 or more and has a useful life of at least five years, the contractor must give the producer 90 days notice of the termination of the contract, and the notice must state the reasons for termination. The contractor can then terminate the contract after the ninty days if the producer fails to correct the reasons for termination within sixty days of the receipt of the notice.[89]

(5) Swine producers can form swine marketing pools and register the pools with the Kansas State Board of Agriculture. The pools may assume their member's debt or enter into and negotiate contracts for the sale and delivery of hogs. Corporate slaughter-processors and producers who contract for the production of hogs must actively negotiate in good faith with all registered swine marketing pools that desire to market swine to the corporate slaughter-processor or producer.[90]

(6) Any contractor who contracts for the raising of hogs must pay a fair price to the producer.[91]

(7) All swine production contracts must provide that all contract disputes be settled by mediation or arbitration.[92]

V. Federal and Kansas Environmental Regulation

A. Federal Law

Federal attention to animal waste issues has been focused on water pollution. Two federal statutes address water pollution: the Clean Water Act and the Safe Drinking Water Act.

1. Clean Water Act

The Clean Water Act treats point and nonpoint sources of water pollution differently. The Act expressly defines a hog production facility as a point source of water pollution,[93] but hog waste run-off from fields into surface and groundwater is considered a nonpoint source of water pollution.[94]

Point sources are regulated by a federal mandatory permit program.[95] The Environmental Protection Agency (EPA), however, can approve a state permit program if the state program's permit requirements are no less strict than the requirements of the federal program.[96] Upon approval, the state program not the federal program, is administered.[97] Kansas administers an approved permit program; therefore, Kansas law establishes the water pollution controls on Kansas hog production facilities.

The Act does not require any mandatory regulation of nonpoint water pollution. Therefore, rainwater runoff of hog waste is not subject to federal regulation. The Act, however, does establish the Rural Clean Water program which allows the United States Department of Agriculture (USDA) to enter into cost sharing contracts for implementing voluntary best management practices (BMP's) for the reduction of nonpoint source pollution.[98]

2. Safe Drinking Water Act

The Safe Drinking Water Act requires that the EPA promulgate National Primary Drinking Water Standards for public drinking water drawn from surface and ground water. These standards establish maximum contaminant levels and treatment techniques.[99] If hog waste which enters a water supply raises contaminant levels over the maximum allowed, the water supply must be treated — sometimes at a great expense to the taxpayer.[100]

B. Kansas law

1. Statutes, Regulations, and Guidelines

As discussed above, Kansas administers an EPA-approved permit program for point sources of water pollution. Because a hog production facility is a point source, Kansas requires a permit before the construction of a new hog production facility.[101] Kansas statutes, regulations, and Kansas Department of Health and Environment (KDHE) guidelines establish the requirements for obtaining such a permit.

The severity of the permit requirements depends on the "animal unit capacity" of the regulated hog production facility. "Animal unit capacity" is defined as the maximum number of "animal units" which a production facility is designed to accommodate at a single time.[102] An "animal unit" is defined as "the number of swine weighing more than 55 pounds multiplied by .4."[103]

Prior to construction, a hog production facility with an animal unit capacity of less than 300 *may* register with the Secretary of Health and Environment (Secretary). If the Secretary identifies the facility as having significant water

pollution potential, such facility is required to obtain a permit before construction.[104]

Prior to construction, a hog production facility with an animal unit capacity of 300-999 *must* register with the Secretary. Once again, if the facility has significant water pollution potential, it must obtain a permit from the Secretary before construction.[105] Facilities with more than a 999 animal unit capacity must always obtain a permit.[106]

In addition, any new construction or expansion of a swine production facility must meet or exceed the following separation distances from a habitable structure:

> (1) 4,000 feet for facilities with an animal unit capacity of 1,000 or more;
>
> (2) 1,320 feet for facilities with an animal unit capacity between 300-999;
>
> (3) no separation requirement for facilities with an animal unit capacity of less than 300.[107]

[L]arge corporate producers are more efficient; therefore, the pork consumer benefits from a lower priced and higher quality product.

A habitable structure is defined as "any of the following structures which is occupied or maintained in a condition which may be occupied: A dwelling, church, school, adult care home, medical care facility, child care facility, library, community center, public building, office building or licensed food service or lodging establishment."[108] The required separation distance, however, may be waived upon written agreement from all the owners of habitable structures within the separation distance.[109] This waiver is filed with the register of deeds office to give notice to future owners of the habitable structures.[110]

In order to merit a construction permit for a hog production facility, the facility plans must include, at a minimum, a waste retention lagoon for water pollution control. These lagoons must be capable of retaining all waste and three inches of rainfall. Provisions must also be made for periodic removal of waste material from the lagoons.[111] If waste is removed from the lagoons and spread on land, the waste must be spread in a way which will prevent the runoff of waste.[112] In addition, KDHE-approved minimum standards of design, construction, and maintenance must be complied with in order to obtain a construction permit.[113] These minimum requirements, however, can be waived if adequate water pollution control can be effected with less than the minimum controls.[114]

If a permit is issued for a hog production facility, the proposed permit can include conditions such as effluent limitations, schedule of compliance, special conditions, and a monitoring program.[115] In addition, after a permit is issued, the swine production facility will be inspected periodically depending on the size of the facility. The frequency of inspections vary from twice a year for facilities with over 25,000 hogs to once every three years for facilities with less than 1,000 head. Facilities are also inspected in response to complaints by the public.[116] Finally, the director of the KDHE can modify, terminate, and reissue permits,[117] and the maximum duration of any permit cannot exceed five years.[118]

2. Nuisance common law

In addition to the statutory separation distances, nuisance common law can have a regulatory effect on odor created by hog production facilities. Under Kansas nuisance jurisprudence, the landowner will be enjoined from engaging in a particular use of her land if the use is held to be a nuisance. Kansas common law defines a nuisance as "any use of property by one which gives offense to or endangers the life or health, violates the laws of decency, *unreasonably pollutes the air with foul, noxious odors* or smoke or obstructs the reasonable and comfortable use and enjoyment of the property of another."[119] Consequently, odor from a hog production facility might be considered a nuisance which could be enjoined.

K.S.A. § 2-3202, however, provides that certain agricultural activities are not nuisances:

> Agricultural activities conducted on farmland, if consistent with good agricultural practices and established prior to surrounding nonagricultural activities, are presumed to be reasonable and do not constitute a nuisance, public or private, unless the activity has a substantial adverse effect on the public health and safety.
>
> If such agricultural activity is undertaken in conformity with federal, state, and local laws and regulations, it is presumed to be good agricultural practice and not adversely affecting the public health and safety.

Consequently, a Kansas hog production facility is probably not a nuisance if the facility has obtained a permit to operate, and the plaintiff cannot show that the facility is violating its permit. A nuisance might, however, be established if the hog production facility began operation after the plaintiff purchased her land.

VI. Policy Alternatives and Analysis

A. Corporate Farm Laws

1. Laws Prohibiting Corporate Hog Production

Minnesota, South Dakota, North Dakota, Iowa, Nebraska, and Wisconsin completely prohibit corporations from engaging in swine production.[120] A complete ban in Kansas would provide the most protection to the family swine producer. Given the drop in Kansas hog production when corporations were banned from hog production, however, a complete ban on corporations might not even save the family hog producer. This is because corporations in surrounding states which allow corporate production have efficiencies of scale which would still threaten the competitiveness of Kansas family hog producers. In addition, large corporate producers are more efficient; therefore, the pork consumer benefits from a lower priced and higher quality product. Consequently, a reinstatement of the complete ban on corporate hog production is probably not the optimum alternative for Kansas.

2. Laws Not Prohibiting Corporate Hog Production

North Carolina, Missouri, Oklahoma, Texas, and Utah do not prohibit corporations from producing swine, and these states use several similar approaches to attract corporate hog producers to their states. North Carolina uses many incentives to attract corporate swine producers. In 1985, a tax on gas used by feed delivery trucks was cut by four cents per gallon. In 1986, all materials used for repairing, building, or improving a structure used for housing, raising, or feeding swine was exempted from North Carolina's sales tax. In 1987, the largest swine producers were exempted from the twelve cent per ton tax on feed. In 1988, the North Carolina Legislature eliminated the property tax on swine feed.[121] In Utah, tax credits are available for corporations that relocate to established economically depressed enterprise zones.[122] Oklahoma uses state sales tax revenues to attract corporate swine producers.[123] Recently, even Kansas got in the game by using a legislative "loop-hole" to issue tax-exempt revenue bonds to help finance a corporate hog operation.[124]

These types of incentives have attracted corporate producers to states offering the incentives. In exchange, corporate swine producers create jobs and stimulate economic growth. Since encouraging corporate involvement in hog production, North Carolina has become the number two hog producer in the nation,[125] and the North Carolina hog production industry now employs 25,000 people.[126] The tax breaks used to attract corporate producers are not, however, without disadvantages. Large corporations cause an explosion in a community's population, and tax concessions do not help a local government deal with school overcrowding, lack of housing, and the increase in crime that can come with a population increase. Consequently, social costs that can be at least partially attributed to the new corporate producer are not paid for by the corporate producer. In addition, tax breaks combined with a corporate hog producer's efficiencies of scale make it very difficult for the small producer to compete. Finally, tax breaks for the corporate producer exacerbate water pollution costs caused by an increase in hog production. For example, North Carolina had to hire an additional ninteen inspectors for its environmental control agency because of hog waste threats to ground water and numerous spills of waste into surface water.[127]

When the Kansas Legislature decided to allow corporations to engage in swine production in 1994, it also prohibited counties from reducing the ad valorem property taxes of corporate hog producers.[128] The 1994 amendments also prohibit the state from helping corporations finance their hog operations by issuing most types of tax-exempt bonds.[129] Although these prohibitions may discourage corporations from engaging in swine production in Kansas, they ensure that counties will not bargain with the financial resources needed to fight the social and environmental problems which may come with a population increase. In southwest Kansas, where conditions are excellent for corporate swine production, Kansas counties may not need tax break incentives to attract corporate swine producers. In fact, eastern Colorado has attracted corporate hog producers without the use public funds or tax breaks.[130]

Regardless of the tax incentives used to attract a corporate hog producer, the relocation of an established corporate producer could be devastating to a community.[131] Before allowing a corporate producer to enter a local community, the community or the State of Kansas might require the corporation to remain in the community for a number of years or to give notice to the community before relocating. Although these requirements do not fully protect the community and are a disincentive for the corporation to locate in Kansas, the requirements do provide some valuable protection to a local community.

B. Production Contract Alternatives

1. Background

Use of the production contract might save the family swine producer while taking advantage of the corporate swine producer's efficiencies of scale. The production contract is an agreement between a corporate contractor — a slaughter-processor or producer — and a small producer. The corporate contractor owns the swine, and the production contract provides that the small producer raise the swine for the contractor. The small producer provides the housing and equipment to raise the swine, and the contractor provides the feed and medicine and controls the method of raising the swine. When the swine are fat for slaughter, the contractor pays the producer a set price.[132]

As discussed, small producers argue that the large corporate contractor has more bargaining power than the small producer for

three reasons. First, small family producers make deals with a handshake while the corporate contractor's attorneys draft the sophisticated contract. Second, small producers have a limited choice in corporate contractors while the contractor can chose the best offer from many small producers. Third, the producer must contract at any cost or be driven out of business by the more efficient corporate contractor. The small producers argue that this unequal bargaining power leads to production contracts unfair to small producers.[133]

Use of the production contract might save the family swine producer while taking advantage of the corporate swine producer's efficiencies of scale.

2. *Alternatives*

a. *No Legal Protection for the Small Producer*

Most states have no laws which protect the small producer from unfair production contracts.[134] Corporate contractors are probably more likely to locate hog production facilities in these states. The small producer's ability to survive, however, is greatly reduced in the absence of legislative protections for the producer in production contract situations. For example, a contract might require a producer to invest in an expensive production facility, but might not prevent the contractor from terminating the contract before the producer has recouped the investment. A producer probably will be unable to negotiate an appropriate non-termination contract provision without a more equal bargaining position.

b. *Kansas Legal Protection for the Small Producer*

In response to the claim that unequal bargaining power between the corporation and the small producer makes a fair production contract infeasible, Kansas adopted legislation which attempts to protect the small swine producer in these contract situations.

Kansas law attempts to lend protection to the small producer's investment in the facility required by the contract. The law requires that the corporate contractor give notice of termination of the contract to the producer, and the contractor must give the producer time to cure any problems the producer is having in complying with the contract. This provision allows the producer time to come into compliance with the contract or negotiate a contract with another contractor before termination of the contract. This lends some protection to the producers investment in the facility while it allows contractors the ability to eventually terminate producers who do not comply with the contract. In addition, Kansas law provides that an implied promise of good faith is read into every production contract. This prevents the contractor from terminating the contract for a technicality.

Kansas law provides that all contract disputes be settled by mediation or arbitration. This provision is essential to protect the producer from an expensive lawsuit over a contract dispute with a large corporation's experienced attorneys. Without the provision for mediation or arbitration, the fear of an unaffordable and protracted lawsuit might preclude a small producer from seeking the law's protections or challenging a corporate contractor's abuse of a contract.

The provision authorizing swine producers to form swine marketing pools also provides the small producer with advantages. The pool can better negotiate production contracts for the small swine producer because many small producers make up a pool. In addition, the law requires that the contractor negotiate in good faith with all registered swine marketing pools, thereby giving the small producer associated with a pool even more bargaining power. The swine marketing pool can also assume a member's debt, lessening the risk of investing in an expensive swine production facility. Finally, the pools provide an information-sharing network which can educate the small producers on the pitfalls of the production contract. In all, swine marketing pools provide the small producer a way to acquire more bargaining power without directly intruding on the corporate contractor's freedom to negotiate a favorable contract.

The Kansas provision that all production contracts must be for a fair price, however, might intrude too greatly on the ability of the corporate contractor to negotiate a beneficial contract. For instance, this provision might allow inefficient small producers that produce poor quality hogs to command a price higher than deserved because the contractor fears a lawsuit if it doesn't pay the inefficient producer the same "fair price" as an efficient producer. This provision might also increase litigation over what is a "fair price." Other provisions the Kansas production contract law might give the small producer enough bargaining power to fairly negotiate with the contractor without the "fair price" provision.

c. *The Minnesota Production Contract Law*

The Kansas production contract law was based on a Minnesota law, and both states' laws are virtually identical. The Minnesota law, however, creates a position within the Minnesota Department of Agriculture "to provide information, investigate complaints . . . and provide or facilitate dispute resolutions."[135]

This provision provides a full-time, neutral expert to deal with the inevitable problems that arise as the production contract business evolves. The Kansas Legislature or the Kansas Department of Agriculture should consider creation of a similar position.

d. *The Wisconsin Production Contract Law*

Wisconsin is the only state other than Kansas and Minnesota to enact production contract legislation. Wisconsin's law contains two provisions which are not provisions in either the Minnesota or Kansas scheme. First, the Wisconsin law provides for a seventy-two hour period after the contract is signed during which the small producer can cancel the contract.[136] This provision seems to give the producer the ability to ensure that the contract contains the terms that the producer agreed to originally. Second, Wisconsin law provides that key terms such as price must be "clearly and conspicuously" disclosed in the contract.[137] This will prevent the corporate contractor who drafts the contract from burying key terms in the contract's fine print. Because of the scope of Kansas's production contract legislation, neither of these provisions would provide needed protection for the small producer in that state.

e. *Louisiana's Proposed Production Contract Legislation*

A 1993 Louisiana proposal to enact production contract legislation was never passed, but the proposal provides another possible model for Kansas. The Louisiana proposal provided that the contractor must inform the producer of the "producer's bill of rights."[138] The proposal did not address whether the contract is void if the producer is not informed of the "bill of rights." If such a contract is void, the provision might provide a convenient way out of the terms of an unfavorable contract which the producer assented to originally. In Kansas, swine marketing pools should perform the function of informing producers of their rights.

The Louisiana proposal also provided that corporate contractors could not engage in any activity that would pressure a producer into not joining a producer's association or discriminating against a producer which joins a producer's association.[139] Although Kansas law prevents a contractor from discriminating against members of a swine marketing pool, the Kansas law does not prevent a contractor from pressuring a producer not to join a swine marketing pool. If this pressure is exerted by contractors, a similar provision might be needed in Kansas.

Finally, the Louisiana proposal created a process in which the state could investigate alleged violations and issue cease and desist orders. If the orders were not followed, the Attorney General could enforce civil penalties.[140] Kansas law provides for arbitration and mediation which might allow for resolution of disputes. If, however, the Kansas production contract law is not adequately enforced by arbitration and mediation, a provision allowing state enforcement of the provisions of the law might be needed.

f. *Iowa's Proposed Production Contract Legislation*

A 1990 Iowa proposal which was not enacted would have required the state to develop model production contracts. If a model contract was not used, any other contract was voidable.[141] This proposal would prevent small producers from getting fooled by a complex contract drafted by the contractor's attorneys. The model contract, however, probably cannot address all production situations, thereby forcing the parties to enter a contract which is not best suited for the situation. In addition, the fact that a model contract is not used would provide an easy way out of an unfavorable contract which a party assented to originally. A better approach might be to provide the model contracts to swine marketing pools and small producers as an educational tool to assist the producers when contracting. The provisions in the model contract include:

(1) the exchange of financial information;

(2) the party responsible for insurance;

(3) terms for the delivery of the swine to the producer including notice, delays, and compensation for delays;

(4) the producer's right to refuse swine delivered in less than normal condition;

(5) information on the payment for feed and other expenses;

(6) any requirements for capital improvements needed;

(7) a term on veterinarian care;

(8) a term on who bears risk of death of swine;

(9) procedures, conditions, and grounds for termination of the contract;

(10) compensation paid to producer;

(11) a mediation or arbitration requirement.[142]

g. *Advantages of Properly Controlled Production Contracts*

Benefits can be realized by a number of Kansans if hog production contracts are properly regulated. Production contracts

allow hog slaughter and processing corporations and corporate producers to standardize their product by controlling the way in which the small producer raises the corporation's swine. A standardized product results in efficiency in processing and a better quality product. Consequently, efficiency creates a lower-priced product which benefits the consumer. The production contract also allows the small family hog producer to remain in business, albeit with less control. The competition between these small farmers for contract business will force the small producer to be more efficient, produce a higher quality hog, and decrease the price charged for hog production. The beneficiaries of contract production include consumers, local feed producers, equipment suppliers, banks, and construction companies. Although large slaughter-processors and producers usually buy their feed and equipment from a national supplier, small producers that survive under the production contract scheme will buy feed and equipment from local suppliers. Similarly, small producers employ local construction companies to build their facilities and borrow funds from local banks.

Contaminated groundwater is extremely expensive to clean, and the cleaning process might take decades.

h. *Potential Pitfalls with Production Contract Regulation*

The benefits of contract production will not be realized in Kansas if large corporate producers and large corporate slaughter-processors decide to produce all their own hogs. Excessive legislative control of Kansas production contracts might drive large producers and slaughter-processors to produce all their own hogs instead of dealing with contracts that are not beneficial to the large corporation. With this in mind, Kansas law must allow contract production to be profitable to the large corporations. In addition, large corporate producers and slaughter-processors might forego contract production because the best way to standardize your product is to produce all of the product yourself. Corporations also have an incentive to produce all their own swine because the corporation can produce the swine at cost without paying the small producer a price which makes the small producer a profit. Consequently, a law requiring a corporate hog producer or slaughter-processor to contract a certain percentage of their hog production might be necessary in Kansas.

C. Environmental Protection Alternatives

1. Generally

Most solutions to the environmental issues associated with swine farming focus on solving the following problems: unsustainable agriculture, lagoon spills and leaks, land application of manure, dead animal disposal, ammonia, and methane gas production and odor.[143] The alternatives consist of strictly voluntary programs, incentive-based programs, and mandatory regulatory schemes. Voluntary programs and incentive-based programs are least discouraging of corporate swine production, but regulatory schemes are usually the most effective in preventing these environmental problems.

In Kansas, construction permits for hog production facilities are required only for facilities with an animal unit capacity of more than 999 or other facilities that have significant pollution potential.[144] Consequently, most of the statutes, regulations, and guidelines on environmental control do not apply to the majority of the facilities with an animal unit capacity of less than 1,000. Arkansas's regulations apply to all hog production facilities regardless of size.[145] Although large producers potentially can do more damage to the environment than smaller producers, small producers can also pollute. In fact, the original environmental protections applicable to Kansas hog producers were enacted after a number of environmental problems were caused by small producers. Moreover, 94% of the hog production facilities presently in Kansas are too small to be automatically subject to the permit system.[146] Consequently, exempting small producers from these environmental regulations poses a risk to the environment although it enables small producers to cut costs and, therefore, better compete with the large corporate hog producers.

2. Specific Solutions

a. *Lagoon Leaks*

Minnesota requires that all earthen lagoons have clay or synthetic liners to prevent leaks. The clay liners must be at least two feet thick and compacted by a roller before the lagoon is used. The synthetic liners must be approved by Minnesota's environmental agency.[147] Missouri requires a compacted soil liner for earthen lagoons. The thickness of the liner depends on the depth of the lagoon and the compactability of the soil used for the liner.[148]

Kansas regulations do not require a liner for lagoons, and the KDHE guidelines for the construction of lagoons only provide that a minimum of one foot of nonporous soil should be present in these lagoons.[149] The KDHE guidelines do not require the soil to be compacted before swine waste is routed into the lagoon. The theory behind these lagoons is that the weight of the waste in the lagoon will compact the soil on the bottom of the lagoon, therefore preventing leaks. This same type of non-lined lagoons, in use in North Carolina, is believed to be leaking waste stored in that state.[150]

Concrete lagoons are an alternative to earthen lagoons. KDHE guidelines only provide that concrete lagoons have six inch thick walls, a four inch thick bottom, and be water tight. The guidelines do suggest that professional design assistance be used in order to prevent structural failure.[151]

The KDHE guidelines do not provide as much assistance in preventing lagoons from leaking as the Minnesota or Missouri guidelines. The KDHE guidelines could be supplemented by a scheme which requires different thicknesses and types of lagoon liners depending on the depth of the lagoon and the type of soil surrounding the lagoon. A system that requires a thicker liner or a clay, synthetic, or concrete liner for only the largest lagoons would not hurt the ability of the small producer to compete with larger producers because small producers do not build the larger lagoons. This system would be more effective in protecting the surface and ground water from leaking lagoons. A greatly complex or expensive system of requiring liners might, however, discourage corporate swine producers from locating in Kansas or decrease the ability of Kansas producers to compete with other states with no liner requirements.

If a lagoon does leak, the groundwater must not be contaminated. Contaminated groundwater is extremely expensive to clean, and the cleaning process might take decades. The KDHE guidelines provide that a lagoon must be located at a minimum of ten feet above the water table[152] while Minnesota allows properly-lined lagoons to be only two feet above the water table.[153] In North Carolina, there is no limitation on the location of a lagoon with respect to the depth of the groundwater. Some studies, however, show that some of the groundwater beneath the sandy soils of northeastern North Carolina where the groundwater is thirty feet below the surfact, has been contaminated by leaking lagoons.[154]

KDHE guidelines could be more specific as to the required depth of ground water levels for lagoon construction. The requisite depth should depend on the porousness of the soil surrounding the lagoon and whether the lagoon is lined. The KDHE guidelines do provide that the lagoon be located at least 100 feet from water supply wells.[155] This, however, does not prevent contamination of ground water which eventually migrates to the well.

Monitoring the ground near waste storage lagoons is also a possible method of protecting the ground water from contamination. Kansas does not presently require lagoon monitoring. Virginia, however, automatically issues a permit for hog production if the producer's lagoons are lined and monitored for leaks.[156] Although the liner and monitoring well are expensive for the producer, the producer obtains the permit and renews the permit more easily and less expensively. In addition, periodic inspections can be less frequent and less expensive for the state environmental agency; therefore, the state agency saves precious resources. Finally, a lined lagoon with a monitoring well provides better protection for the groundwater.

b. *Lagoon Spills*

Spills from lagoons can contaminate rivers, streams, and lakes. Most spills occur when rainfall causes the lagoon to overflow. Other spills occur when the lagoon becomes too full, and the lagoon walls collapse. Kansas regulations provide that the waste in the lagoon should be kept to a level at least two feet below the top edge of the lagoon to prevent overflow.[157] Although spillways are not required under Kansas regulations or KDHE guidelines, spillways might be helpful in protecting surface water if an overflow does occur.

A less expensive method of protecting surface water from a spill would be to require protective separation distances between a lagoon and a lake, stream, or river. The KDHE guidelines do not presently provide for a separation distance between a lagoon and surface water, but Minnesota regulations provide that a lagoon must be located 1,300 feet from a lake and 600 feet from a river or stream.[158] Separation distances would be easy to implement in southwestern Kansas where surface water is scarce.

c. *Lagoon Covers: Protection From Odor, Ammonia Gas, Methane Gas, and a Source of Energy*

Although no state has adopted the requirement, some European countries have begun to require that waste storage lagoons be covered. A covered lagoon has several advantages. A large rainfall will not cause a spill. The air within the cover can be ventilated, therefore eliminating the odor caused by the decomposing manure. The methane gas produced by the decomposing manure can be trapped and transformed into energy used to help run the facility.[159] Methane gas from feedlots is also believed to be a large contributor to the depletion of the ozone layer. Finally, excess ammonia gas produced by decomposing manure can cause algae growth in surface waters. The algae decrease the oxygen supply in the water which may kill fish and other aquatic life.[160] A ventilation system in a covered lagoon can prevent the release of excess ammonia gas.

The main disadvantage of lagoon covers and ventilation systems is the expense. It might be possible, however, to require that only the largest corporations with the largest lagoons cover and ventilate those lagoons. Because the large lagoons produce the greatest amounts of odor, methane, and ammonia, these lagoons likely cause the greatest environmental concern. Therefore, it makes sense that the owner's of the largest lagoons should bear the cost of preventing the potential damage caused by the release of these gases. In addition, imposing this cost on large producers might better enable small producers to compete.

The cost of covering lagoons might, however, discourage large corporate producers from locating in Kansas. An incentive

tax break for producers who cover their lagoons might be the answer. Taxes can be used to pay for environmental costs not born by private entities, therefore a private entity which prevents pollution at its own cost seemingly deserves to pay less tax.

d. *Land Application of Hog Waste*

The most popular method of disposal of the hog waste stored in lagoons is application of the waste to cropland. Agriculture becomes sustainable when the nutrients from the soil help grow crops which are fed to the hogs, and the crops' nutrients are returned to the soil by application of the hog waste.[161] Sustainable agriculture limits the use of artificial fertilizer which reduces a farmer's cost and reduces water pollution from artificial fertilizer run-off. Consequently, Kansas should encourage application of all hog waste to cropland.

A reenactment of the prohibition of corporate ownership of hog production facilities would not adequately protect the small family hog producer.

Nutrients like nitrogen, however, can contaminate ground water if the hog waste is applied too generously. To help ensure that hog producers apply the correct amount of waste to cropland, Minnesota requires that producers disclose on the construction permit application the number of acres on which manure will be spread. If the acres on which the hog manure will be spread are not owned by the producer, a land application contract is required between the producer and the land owner. If the acreage specified in the permit is not enough to prevent ground water contamination when the waste is applied, the permit to produce hogs is denied. Minnesota has also adopted the Federal Clean Water Act's best management practices (BMP's) for nitrogen management. The implementation of the BMP's is not required by federal law, but the information can be very useful to producers. The BMP's provide guidance on testing hog waste and soil for nitrogen content, estimating the nitrogen absorption potential of crops and calculating the best acreage for waste application.

In Arkansas, testing of waste and soil for nitrogen content is required as a prerequisite to land application of waste. Arkansas also requires that land application records be kept and that the producer pass a certified training course in waste management.[162]

Kansas regulations only provide that land application of hog waste must be executed in a manner which will not contribute to water pollution.[163] The KDHE guidelines provide that the amount of hog waste applied to land should vary between 5,000 and 10,000 gallons-per-acre according to the type of crops being grown.[164] Neither the regulations nor the guidelines outline testing procedures for nitrogen content in the waste or the soil. The state might consider requiring a more specific plan of land application of hog waste before granting a permit to produce swine. Kansas could also implement requirements like testing and formal waste management training, or could provide producers with BMP's for nitrogen management.

e. *Inspections*

After a swine producer obtains a permit to operate in Kansas, the production facility is inspected periodically. The frequency of inspection depends on the size of the operation. Production facilities in Kansas are also inspected on a complaint basis.[165] In Iowa and North Carolina, inspections of swine producers are on a complaint basis only.

Periodic inspection of swine production facilities deter producers from violating regulations and rules. Periodic inspections are also a form of preventative maintenance, that a periodic inspection might discover a potential problem before a river becomes so polluted that a complaint is filed by a concerned citizen. Clean-up costs and costs to the environment are reduced. Moreover, the greater the frequency of inspection, the greater the chance that problems will be discovered before damage is done. Periodic inspections, however, are expensive. The money for increased periodic inspections could come from increased permit fees or increased fines for violations. The larger farms should pay more in fees and fines because larger farms are inspected with more frequency and can do more damage to the environment. Large fines and fees for large producers may, however, discourage the large producers from locating in Kansas, but this increased cost to large producers would make small operations more competitive.

f. *Dead Swine Disposal*

Recently, some have expressed concern that ground and surface water may be contaminated by dead animal burial pits.[166] Kansas does not have any statutes, regulations, or guidelines concerning the burial of hogs that have died during the production process. The only regulations concerning burial of dead hogs are relevant to hog slaughter and processing facilities.[167] In Arkansas, burial of dead animals is only allowed in the event of a major die-off. Otherwise, under the Arkansas regulation, dead animals may only be disposed of by composting, extrusion, on-farm freezing, rendering, cremation, and incineration.[168]

In Kansas, the burial of hogs that died during the production process was feasible before corporations could produce hogs because hog producers only produced a small number of hogs per

year and only a small number of these hogs died. Corporate hog facilities have a more frequent rate of death; therefore, more hogs require burial. Although burial pits may not cause groundwater contamination in areas of low water table levels, precautions might be necessary where ground water levels are high. Any Kansas regulation should consider these aspects of the increased concentration of hog production and differences in ground water levels.

g. *Odor*

Implementation of zoning laws might be a possible solution to the odor problem associated with hog production. For example, Iowa has created agricultural areas where agricultural operations will be exclusively located.[169] Another possible solution is the construction of wind break structures. Chippewa county in Oklahoma requires these wind breaks for large hog producers.[170] Finally, an amendment of the Kansas Right to Farm statute that would make it easier to sue hog producers for nuisance odor would encourage producers to implement odor reduction provisions. This, however, would subject hog producers and other farmers to an increase in litigation.

D. Conclusion

A reenactment of the prohibition of corporate ownership of hog production facilities would not adequately protect the small family hog producer. In addition, a prohibition would prevent Kansans from realizing the economic benefits of corporate hog production. Kansas communities, however, must be careful not to offer too significant a tax break to corporate producers because tax revenue is needed to cope with the social and environmental costs associated with these large producers.

In addition, a Kansas production contract law which levels the parties' bargaining power can be used to enable the small family hog producer to be competitive with the corporate producer. Large corporate producers should also be more strictly regulated by Kansas environmental law than small producers because large hog producers have a potentially greater impact on the environment, and strict regulation of large producers will make the small producer more competitive.

Notes

1. *See infra* text accompanying notes 67-83 (discussing the past and present Kansas corporate farm law).
2. Mark Obmascik, *Welcome to Hog Heaven: Midwest Tilt Toward Family Farms Turns Colorado into a Pork Paradise*, DENVER POST, July 31, 1994, at B-01.
3. *Id.*
4. *Testimony on Senate Bill 554 Before the Kansas Senate Agriculture Comm.*, 1994 Legislative Sess. (Jan. 26, 1994) (testimony by Rick Hoffman, Vice President of Finance for Seaboard Corporation)[hereinafter Seaboard].
5. Neil D. Hamilton, *State Regulation of Agricultural Production Contracts*, 25 MEM. ST. U. L. REV. 1051, 1056 (1995).
6. *Id.* at 1058.
7. *Id.* at 1055.
8. *Id.*
9. *See* Martin J. Troshynski, *Corporate Ownership Restrictions and the United States Constitution*, 24 IND. L. REV. 1657, 1658 (1991).
10. *See infra* text accompanying notes 67-83 (discussing the past and present Kansas corporate farm law).
11. Personal Interview with Raney Gilliand, Analyst for the Kansas Legislative Research Department (Sept. 1995).
12. KANSAS PORK PRODUCERS COUNCIL, HOG INDUSTRY'S CONTRIBUTION TO LOCAL AND STATE ECONOMIES (1995)[hereinafter HOG INDUSTRY'S CONTRIBUTION].
13. Obmascik, *supra* note 2.
14. John Keahey, *Pig Farm to Bring Home Big Bacon, But Utahns Not Whole Hog In Support*, SALT LAKE TRIB., Apr. 9, 1995, at F1.
15. *Id.*
16. Donald D. Stull, *Of Meat and (Wo)Men: Meatpacking's Consequences for Communities*, KAN. J.L. & PUB. POL'Y, Spring 1994, at 112, 113 (1994).
17. HOG INDUSTRY'S CONTRIBUTION, *supra* note 12.
18. *Id.*
19. Obmascik, *supra* note 2.
20. HOG INDUSTRY'S CONTRIBUTION, *supra* note 12.
21. *Id.*
22. *Id.*
23. Keahey, *supra* note 14.
24. HOG INDUSTRY'S CONTRIBUTION, *supra* note 12.
25. *Id.*
26. *Id.*
27. *Piggies - Kansas' Corporate Farming Law Hampers State's Economic Growth*, WICHITA EAGLE, Jan. 24, 1994, at 12A [hereinafter *Hampers Economic Growth*].
28. Brian F. Stayton, *A Legislative Experiment in Rural Culture: The Anti-Corporate Farming Statutes*, 59 UMKC L. REV. 679, 692 (1991). *But see* Keith D. Haroldson, *Two Issues in Corporate Agriculture: Anticorporate Farming Statutes and Production Contracts*, 41 DRAKE L. REV. 393, 397 (1992)(claiming that corporate farms and family farms are on equal footing as far as economic efficiency due in most part to the fact that the owner-operator is not fully compensated for her managerial contribution).
29. Stayton, *supra* note 28, at 692.

30. HOG INDUSTRY'S CONTRIBUTION, *supra* note 12.
31. Obmascik, *supra* note 2.
32. Keahey, *supra* note 14.
33. Joby Warrick & Pat Stith, *The Smell of Money*, NEWS & OBSERVER, Feb. 25, 1995, at 1A.
34. Seaboard, *supra* note 4.
35. Betsy Freese & Rod Fee, *Livestock-Hungry States*, SUCCESSFUL FARMING, Jan. 1994, at 19, 33.
36. *Contract Hog Production*, DOANE'S AGRICULTURAL REPORT (Doane Information Services, St. Louis, Mo.), Oct. 1, 1993, at 243.
37. *See supra* text accompanying notes 28-29.
38. Richard F. Prim, *Saving the Family Farm: Is Minnesota's Anti-Corporate Farm Statute the Answer*, HAMLINE J. PUB. L. & POL'Y 203, 206 (1993).
39. *Id.*
40. *Id.*
41. Stayton, *supra* note 28, at 689.
42. Stull, *supra* note 16, at 116.
43. *See* Stayton, *supra* note 28, at 687.
44. Stull, *supra* note 16, at 113.
45. Steven H. Lee, *Giant, Corporate Hog Farms Are Gaining a Foothold in the Panhandle, But Small Operators Are Raising a Stink*, DALLAS MORNING NEWS, July 30, 1995, at 1H.
46. *Testimony on Senate Bill 554 Before the Kansas Senate Agriculture Comm.*, 1994 Legislative Sess. (Jan. 26, 1994)(testimony of Vaughn Woolf, President of the Kansas Swine Growers Association).
47. *Testimony on Senate Bill 554 Before the Kansas Senate Agriculture Comm.*, 1994 Legislative Sess. (Feb. 1, 1994)(testimony of H. Wayne Wigger, General Manager for the Producers Cooperative Association).
48. Haroldson, *supra* note 28, at 397.
49. *Contract Hog Production, supra* note 36, at 243.
50. Mike Hendricks, *Manure Spills Threaten Waterways*, KAN. CITY STAR, Sept. 24, 1995, at A1, A20.
51. Prim, *supra* note 38, at 207.
52. *Id.*
53. Hendricks, *supra* note 50.
54. *Id.*
55. *Id.*
56. *Id.*
57. Joby Warrick, *124 of State's Hog Farm Lagoons at Danger Level, Survey Shows*, NEWS & OBSERVER, July 28, 1995, at 1A.
58. *Id.*
59. Martha L. Noble & J.W. Looney, *The Emerging Legal Framework for Animal Agricultural Waste Management in Arkansas*, 47 ARK. L. REV. 159, 162-66 (1994).
60. Joby Warrick & Pat Stith, *New Studies Show that Lagoons are Leaking*, NEWS & OBSERVER, Feb. 19, 1995, at 1A.
61. *Id.*
62. *Id.*
63. *Id.*
64. *Id.*
65. Noble, *supra* note 59, at 188-89.
66. *Researcher Gives Lowdown on Hog Odor*, NEWS & OBSERVER, Feb. 25, 1995, at 8A.
67. Act of Mar. 6, 1931, ch. 153, § 1, 1931 Kan. Sess. Laws 232.
68. Act of Apr. 23, 1981, ch. 106, § 2(a), 1981 Kan. Sess. Laws 523, 526. The statute provided: "No corporation, trust, limited corporate partnership or corporate partnership, other than a family farm corporation, authorized farm corporation . . . shall, either directly or indirectly, own, acquire or otherwise obtain or lease any agricultural land in this state." Id.

The statute defined agricultural land as "land suitable for use in farming." *Id.* § 1(f). The statute then defined farming as:

> the cultivation of land for the production of agricultural crops, the raising of poultry, the production of eggs, the production of milk, the production of fruit or other horticultural crops, grazing or the production of livestock. Farming does not include the production of timber, forest products, nursery products, or sod, and farming does not include a contract to provide spraying, harvesting or other farm services.

Id. § 1(g).
69. *Id.* § 1(i)(1)-(3). The relevant provision defined family farm corporation as:

> (1) Founded for the purpose of farming and the ownership of agricultural land in which the majority of the voting stock is held by and the majority of the stockholders are persons related to each other, all of whom have a common ancestor within the third degree of relationship, by blood or by adoption, or the spouses or the step-children of any such persons, or persons acting in a fiduciary capacity for persons so related;
>
> (2) all of its stockholders are natural persons or persons acting in a fiduciary capacity for the benefit of natural persons; and
>
> (3) at least one of the stockholders is a person residing on the farm or actively engaged in the labor or management of the farming operation. A stockholder who is an officer of any corporation referred to in this

> subsection and who is one of the related stockholders holding a minority of the voting stock shall be deemed to be actively engaged in the management of the farming corporation. If only one stockholder is meeting the requirement of this provision and such stockholder dies, the requirement of this provision does not apply for the period of time that the stockholder's estate is being administered in any district court in Kansas.

Id.

70. *Id.* § 1(j). The relevant provision defined authorized farm corporation as:

> [A] Kansas corporation, other than a family farm corporation, all of the incorporators of which are Kansas residents and which is founded for the purpose of farming and the ownership of agricultural land in which:
>
> (1) Subject to provision (4), the stockholders do not exceed 15 in number;
>
> (2) the stockholders are all natural persons or persons acting in a fiduciary capacity for the benefit of natural persons or nonprofit corporations; and
>
> (3) at least 30% of the stockholders are persons residing on the farm or actively engaged in the day-to-day labor or management of the farming operation. If only one stockholder is meeting the requirement of this provision and such stockholder dies, the requirement of this provision does not apply for the period of time that the stockholder's estate is being administered in any district court in Kansas.
>
> (4) If more than one person receives stock by bequest from a deceased stockholder, all of such persons, collectively, shall be deemed to be one stockholder. A husband and wife, and their estates, collectively, shall be deemed to be one stockholder.

Id.

71. Raney Gilliand, Memorandum: Kansas Corporate Farming Law 4, (July 12, 1994)(on file with the Kansas Legislative Research Department).

72. *Id.*

73. *Id.*

74. Act of May 23, 1991, ch. 76, 1991 Kan. Sess. Laws 584.

75. *Id.*

76. *Id.* § 9(u)(1)-(3). This actual provision defined limited liability agriculture company as:

> 1. the members do not exceed ten in number;
>
> 2. the members are natural persons, persons acting in the fiduciary capacity for natural persons, or nonprofit corporations, or general partnerships; and
>
> 3. at least one member must reside on the farm or actively engage in the labor or management of the farm.

Id.

77. Kan. Stat. Ann. § 17-5903(s) (1995).

78. *Id.* § 17-5908(a).

79. *Id.* § 17-5908(b).

80. *Id.* § 17-5908(a)(2), (b)(2).

81. *Id.* § 79-250 (Supp. 1995).

82. Kan. Stat. Ann. § 12-1749b (Supp. 1995). In December of 1995, the state of Kansas, however, issued $9.6 million in tax-exempt bonds to Seaboard. Seaboard and the state took advantage of a "loophole" in K.S.A. § 12-1749b. Seaboard is the first corporate hog farm to attempt to locate in Kanas since the ban on corporate hog farming was lifted in 1994. Almost immediately after the bonds were issued, a bill was introduced in the Kansas legislature which would close the loophole. Mike Hendricks, *Bonds for hog farm defended; Kansas official says tax-exempt assistence was right under law*, KAN. CITY STAR, Jan. 18, 1996 (referring to H.B. 2951, Kansas 76th Legislature, 1996 Reg. Sess.(1996)).

83. *See supra* text accompanying notes 48-49.

84. Act of Apr. 7, 1994, ch. 130, § 8, 1994 Kan. Sess. Laws 468, 484-86. The law provides protection only when the production contract is between a contractor and producer as defined by the statute. The statute defines "contractor" as:

> any corporation, trust, limited liability company or limited partnership or corporate partnership other than a family farm corporation, authorized family farm corporation, limited liability agricultural company, limited agricultural partnership, family trust, authorized trust or testamentary trust . . . which established a swine production facility in this state or which contracts with a producer to grow or raise hogs in this state and in either case which in the ordinary course of business buys hogs in this state.

Id. § 8(a). The statute defines "producer" as:

> any individual, family farm corporation, authorized farm corporation, limited liability agricultural company, limited agricultural partnership, family trust, authorized trust or testamentary trust . . . which raises hogs in this state or provides the service of raising hogs in this state and which is able to transfer title in such hogs to another or who provides management, feed, labor, facilities, machinery or other production input for raising hogs in this state.

Id. § 8(b).
85. *Id.* § 8(d).
86. Kan. Stat. Ann. § 84-1-201(19) (Supp. 1995) defines "good faith" as honestly in fact in the conduct or transaction concerned.
87. Act of Apr. 7, 1994, ch. 130, § 8(e), 1994 Kan. Sess. Laws 468, 485.
88. *Id.* § 8(f).
89. *Id.* § 9(a).
90. *Id.* § 10.
91. *Id.* § 11(a)(3).
92. *Id.* § 12.
93. A point source is defined as:

> any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, *concentrated animal feeding operation*, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

33 U.S.C. § 1362(14) (1994) (emphasis added).
94. Although the Clean Water Act does not define "nonpoint" source, rainwater runoff is considered a "nonpoint" source. Noble, *supra* note 59, at 174-75.
95. 33 U.S.C. § 1342(a) (1994).
96. *Id.* § 1342(b).
97. *Id.* § 1342(c).
98. *Id.* § 1288(j).
99. 42 U.S.C. § 300g-1 (1994).
100. Noble, *supra* note 59, at 182.
101. Kan. Stat. Ann. § 69-171d(h) (1995).
102. *Id.* at (c)(4).
103. *Id.* at (c)(3).
104. *Id.* at (h).
105. *Id.*
106. *Id.*
107. *Id.* at (i).
108. *Id.* at (c)(5).
109. *Id.* at (j).
110. *Id.*
111. Kan. Admin. Regs. 28-18-3(b) (1993).
112. *Id.* at 28-18-4(c).
113. *Id.* 28-16-62(b).
114. *Id.* 28-18-3.
115. *Id.* 28-16-60(b) (1993).
116. KANSAS DEP'T OF HEALTH AND ENVIRONMENT, PAMPLET, CONFINED LIVESTOCK FEEDING FACILITIES GENERAL INFORMATION: PROGRAM EXPLANATION, FLOW CHART, ANNUAL PERMIT FEE SCHEDULE, CONSULTING ENGINEERS, IN-PLACE (STANDPIPE) PERMEABILITY TEST, at 7-8.
117. Kan. Admin. Regs. 28-16-62(e) (1993).
118. *Id.* 28-16-62(d) (1993).
119. Culwell v. Abbott Constr. Co., 211 Kan. 359, Syl. 1, (1973) (emphasis added).
120. Minn. Stat. Ann. § 500.24(3)(West 1995); S.D. Codified Laws Ann. § 47-9A-3(1995); N.D. Cent. Code § 10-06-01(1993); Iowa Code § 172C.4(1995); Neb. Const. art. XII, § 8(1); Wis. Stat. Ann. § 182.001(1)(West 1994).
121. *Murphy's Laws*, NEWS & OBSERVER, Feb. 22, 1995, at 1A.
122. Freese, *supra* note 35, at 30.
123. *Id.* at 28.
124. Hendricks, *supra* note 82.
125. *Boss Hog: North Carolina's pork revolution*, NEWS & OBSERVER, Feb. 19, 1995, at 1A.
126. *Today's Pork Producers Excel in Innovation and Benefit North Carolina*, NEWS & OBSERVER, March 25, 1995, at 17A.
127. Joby Warrick & Pat Stith, *Funds OK'd to Monitor Livestock Oerations*, NEWS & OBSERVER, July 28, 1995, at 3A.
128. Kan. Stat. Ann. § 79-250 (1995). *See supra* text accompanying note 81.
129. Kan. Stat. Ann. § 12-1749(b) (1995).
130. Obmascik, *supra* note 2.
131. *See supra* text accompanying notes 43-44.
132. *See supra* text accompanying note 6.
133. *See supra* text accompanying notes 48-49.
134. The only states to enact production contract laws are Kansas, Minnesota, and Wisconsin.
135. Minn. Stat. Ann. § 17.95 (West 1995).
136. Wis. Admin. Code § Ag 101.02(2) (1994).
137. *Id.* at (3).
138. H.B. 1296, 1993 La. Reg. Leg. Sess., § 4705.
139. *Id.*
140. *Id.* at § 4710.
141. H.F. 2529, 75th Iowa Leg., 1st Reg. Sess. (1990).
142. *Id.*
143. *See supra* text accompanying notes 50-66 for a discussion of these environmental problems.
144. *See supra* text accompanying notes 102-05.

145. Arkansas Dep't of Pollution Control & Ecology, Reg. No. 5: Liquid Waste Management Systems (1992)(hereinafter Arkansas Waste Management).
146. *Testimony on Senate Bill 800 Before the Kansas Senate Agriculture Comm.*, 1994 Legislative Sess. (Feb. 23, 1994)(testimony of Charles Jones, Director of Division of Environment, Kansas Department of Health and Environment).
147. MINNESOTA POLLUTION CONTROL AGENCY, GUIDELINES, EARTHEN MANURE STORAGE BASIN REQUIREMENTS (March 1993) [hereinafter MINNESOTA'S LAGOON GUIDELINES].
148. MISSOURI DEP'T OF NATURAL RESOURCES, MANUAL 121, DESIGN GUIDELINES FOR ANIMAL WASTE MANAGEMENT FOR CONCENTRATED ANIMAL FEEDING OPERATIONS, at 10-12 (July 1989).
149. KANSAS DEP'T OF HEALTH AND ENVIRONMENT, GUIDELINES, DESIGN STANDARDS FOR CONFINED FEEDING OPERATIONS, at 16 (1994)[hereinafter KDHE CONSTRUCTION GUIDELINES].
150. *See supra* text accompanying notes 60-62.
151. KDHE CONSTRUCTION GUIDELINES, *supra* note 149, at 16.
152. *Id.* at 2.
153. MINNESOTA'S LAGOON GUIDELINES, *supra* note 147, at 3.
154. *See supra* text accompanying notes 60-62.
155. KDHE CONSTRUCTION GUIDELINES, *supra* note 149, at 2.
156. Joby Warrick, *Bill Seeks More Control of Hog Farms*, NEWS & OBSERVER, March 23, 1995, at 1A.
157. KDHE CONSTRUCTION GUIDELINES, *supra* note 149, at 13.
158. MINNESOTA'S LAGOON GUIDELINES, *supra* note 147.
159. *What's coming up?*, NEWS & OBSERVER, Feb. 26, 1995, at 1A.
160. *See supra* text accompanying note 63.
161. *See supra* text accompanying notes 51-52.
162. Arkansas Waste Management, *supra* note 145.
163. Kan. Admin. Reg. § 28-14-4(c) (1993).
164. KDHE CONSTRUCTION GUIDELINES, *supra* note 149, at 12.
165. *See supra* text accompanying note 115.
166. Noble, *supra* note 59, at 189.
167. Kan. Stat. Ann. § 47-1201 (1995) *et seq.*
168. 1993 Ark. Acts 241.
169. Freese, *supra* note 35, at 24.
170. *Chippewa County approves largest hog confinement facility yet*, THE LAND STEWARDSHIP LETTER, Autumn 1993, at 3.