

A SPECIAL REPORT BY THE IZAAK WALTON LEAGUE OF AMERICA

# GOING TO MARKET



The Cost of Industrialized Agriculture



## ACKNOWLEDGMENTS

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## ABOUT THE IZAAK WALTON LEAGUE OF AMERICA

The Izaak Walton League of America, founded in 1922, is a national conservation organization with 50,000 members and supporters. The League works to protect fish and wildlife, critical habitat and water resources. The League's national office is in Gaithersburg, Maryland, and its Midwest office is in St. Paul, Minnesota.

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## The Cost of Industrialized Agriculture

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# INTRODUCTION

*“The major concerns about agricultural industrialization involve competition between...industrialized firms and family farms, and the changes in farm structure that result from this competition (larger but fewer farms; loss of autonomy in decision making); the negative effects of industrialization on natural resources and the environment; undesirable community impacts, including changes in rural labor markets; and the creation of conflicts about the desirability of economic development and the way it occurs.”<sup>1</sup>*

One of the primary goals of the Izaak Walton League of America (IWLA), as a national conservation organization, is to prevent the further degradation of our water resources, whether it is from industrial point sources, increased navigation, personal watercraft use, or livestock feedlots. In the past seven years, IWLA has taken a decisive stance on the livestock feedlot issue. Our national policy calls for a moratorium on new feedlots until further environmental studies are completed. League policy also demands thorough environmental review of feedlots prior to permitting, stricter siting rules and stronger enforcement of environmental regulations. The League supports water quality monitoring and improved manure management practices at all livestock feedlots, local control and public participation in the permitting of facilities, and restricted antibiotic use in livestock production.

In 1999, IWLA launched the Fish Kill Alert Network (FKAN) in response to these policy concerns. The goal of FKAN has been to work towards the development of agriculture systems and practices which sustain our natural resources through policy improvements, improved enforcement measures and greater compliance with environmental regulations, increased farmland conservation efforts, land stewardship practices and water quality monitoring programs. FKAN set out to achieve these goals through a public education campaign and grassroots activism aimed primarily at strengthening the environmental regulation of livestock feedlots and compliance with and enforcement of those regulations. Public education has involved media releases and reports highlighting specific occurrences of pollution and noncompliance at individual feedlots across the Upper Mississippi River Basin states while emphasizing the need for stronger environmental standards. Although this approach has caught public attention, it has failed to address the larger issue at hand: How can the standard of environmental stewardship be infused into the livestock industry as a whole without disenfranchising the constituents of the industry – the thousands of individual farmers known as the traditional stewards of the land – and without alienating them further from the environmental and conservation communities?

Discovering a potential resolution to this dilemma requires a closer examination of the structure of the agriculture industry, the position of the livestock industry within the global food system, and the role of the farmer within the livestock industry. We need to appreciate the interconnectedness of the food system as a whole. The livestock industry does not exist in a vacuum, separate and disconnected from other industries involved in food production. When discussing the individual farmer, it is important to place him or her in the context of this rapidly changing food system.

Industrialization of agriculture within the production, processing, distribution and retail sectors has displaced the traditional farmer. The farmer is trapped in a web of corporate relationships, where market control and wealth lie in the hands of the largest corporations. In this system, it is difficult to imagine affecting change with the individual farmer if the farmer does not have the resources or the power to change within the system. Understanding these complex relationships within the livestock industry will help highlight the opportunities and limitations in achieving the League's goals for greater environmental stewardship in agriculture.

# EVOLUTION OF THE FOOD SYSTEM AND ITS IMPACTS ON THE LIVESTOCK INDUSTRY

Today, the percentage of the U.S. population involved in farming is only a fraction of what it was a century ago. In 1900, 42 percent of the population worked on 30 million farms; by 1990, only two percent of the population worked on the remaining two million farms.<sup>2</sup>

Historically, farms were diversified operations, producing a variety of foodstuffs, and were relatively autonomous and self-contained. Over the years, as the number of farms has decreased, the size of farming operations has increased – in number of crop acres farmed and number of livestock produced – and the method of food production on individual farms has become more specialized. Currently, only one percent of all livestock confinement feedlots in the U.S. are diversified, accounting for less than two percent of confined livestock.<sup>3</sup>

Many cite the technological developments of last century as the root of all socioeconomic and structural changes in agriculture. Technology allowed for changes in the production, processing and distribution of food. Within the livestock sector of agriculture in particular, the structural transformation of the industry is awesome.

The discovery of vitamins and antibiotics allowed for the mass production of livestock in confined areas. Vitamins A and D allowed animals to be confined indoors without sunlight and made possible the production of offspring year round. The subtherapeutic use of antibiotics in livestock allowed for the confinement of a greater number of animals in closer quarters and increased the growth rates of livestock, raising livestock production levels at each feedlot.<sup>4</sup>

Refrigeration and mass transportation allowed for the development of global markets. Social and cultural changes in how people value their food and their time instigated a shift in consumer preferences toward convenience over other food qualities. Changes in the packaging of meat products also impacted the industry as consumers began purchasing more pre-cut and packaged meat, such as boneless chicken breasts over whole chickens. A combination of these

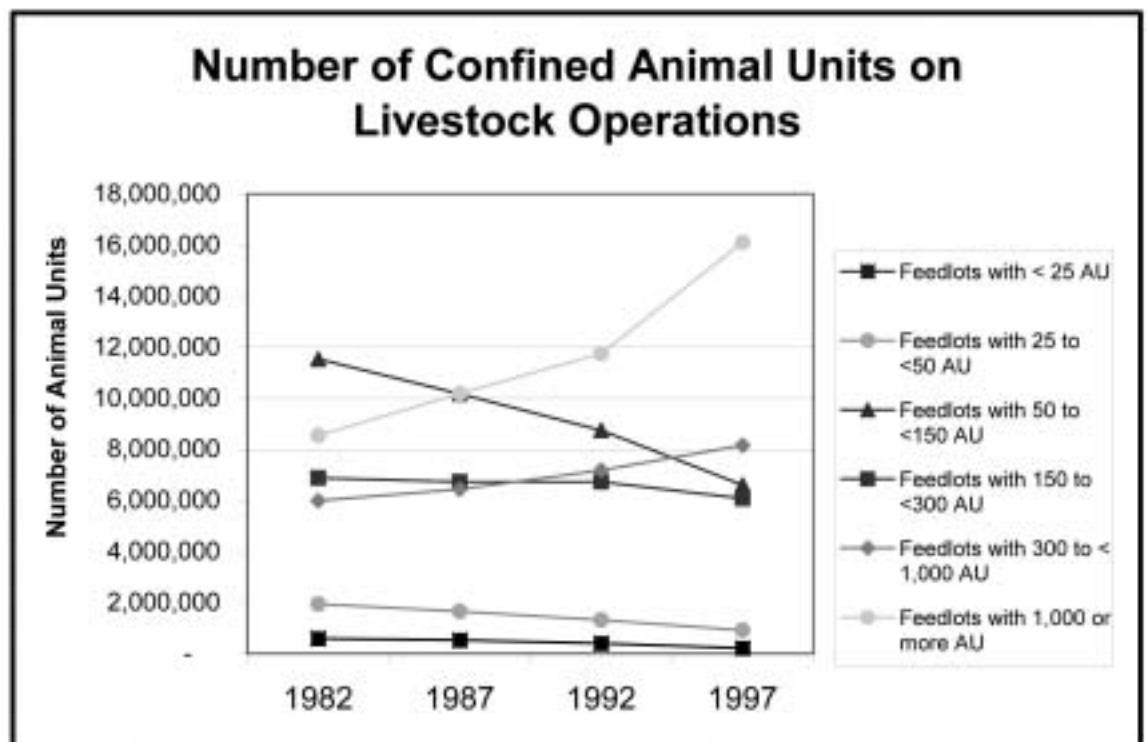
components has led to the industrialization of the livestock industry. The effects of this industrialization have been, and continue to be, detrimental to the environment, the family farmer and the consumer.

Four developments within the food system have fundamentally transformed the livestock industry – concentrated production, industry consolidation, decreased competition and increased contract production – none of which function or have evolved independent from the others.

## CONCENTRATION WITHIN THE LIVESTOCK INDUSTRY

The structure of the livestock industry is changing dramatically as production continues to shift from many small, diversified and independent livestock feedlots to fewer, larger, and more specialized operations.

Over the last two decades, the number of livestock feedlots has decreased 24 percent; the majority of feedlots lost have been small- and medium-sized operations. For instance, over 338,000 operations with less than 150 animal units<sup>5</sup> were lost between 1982 and 1997 – a 27 percent decrease in the number of small feedlots. Contrastingly, the number of large livestock feedlots increased. Feedlots with 300 to 1,000 animal units increased 17 percent while livestock feedlots with 1,000 or more animal units increased 47 percent.<sup>6</sup>





The large livestock feedlots – those containing 1,000 or more animal units – are commonly known as concentrated animal feeding operations, or CAFOs. Between 1978 and 1992, the average number of animal units per livestock feedlot increased 93 percent for dairy, 134 percent for hogs, 148 percent for poultry broilers and 176 percent for poultry layers. As the concentration of livestock per feedlot increased, the concentration of CAFOs within geographic areas also increased: swine CAFOs are concentrated in the Corn Belt and Appalachian regions, dairy CAFOs in the Pacific region, beef CAFOs in the Northern Plains and poultry broilers in Southeast.<sup>7</sup>

To many, CAFOs represent the environmental and socioeconomic decay of rural agricultural areas.

CAFOs present serious environmental and human health threats due to the massive amount of waste generated and stored in confined geographic areas. Risk of environmental degradation comes from the handling, storage and application of animal waste. The greater amount of waste, the greater the risk of environmental contamination occurring from manure runoff, collapsing lagoons and storage structures, equipment failures, mis-application and over-application of manure to the land, manure leaching and seepage through the soil and release of noxious gases and other pollutants into the air.

The rise and expansion of CAFOs in livestock production displaces traditional systems of the rural agricultural economy. As CAFOs grow in size and number, they account for a greater percent-

age of livestock sales.<sup>9</sup> Traditional farming states, such as Wisconsin, are losing three to four small farms a day, while large dairy feedlots in non-traditional farming states, such as California, continue to grow in size and number.<sup>10</sup> By 1995, California surpassed Wisconsin as the number one dairy-producing state, selling \$162 million more in dairy products that year than Wisconsin.<sup>11</sup>

## INDUSTRY CONSOLIDATION AND CORPORATE GROWTH

Consolidation has occurred throughout the agriculture industry – through acquisitions, mergers, joint ventures, partnerships, contracts and agreements – and has allowed for the development of global firms that are invested in every aspect of the food system from biotechnology to the production, processing and marketing of food.<sup>12</sup> In the chicken and egg scenario, consolidation has allowed for the development of global corporations, and the development of global corporations and their greater market power has led to an increasing consolidation of agri-corporations.

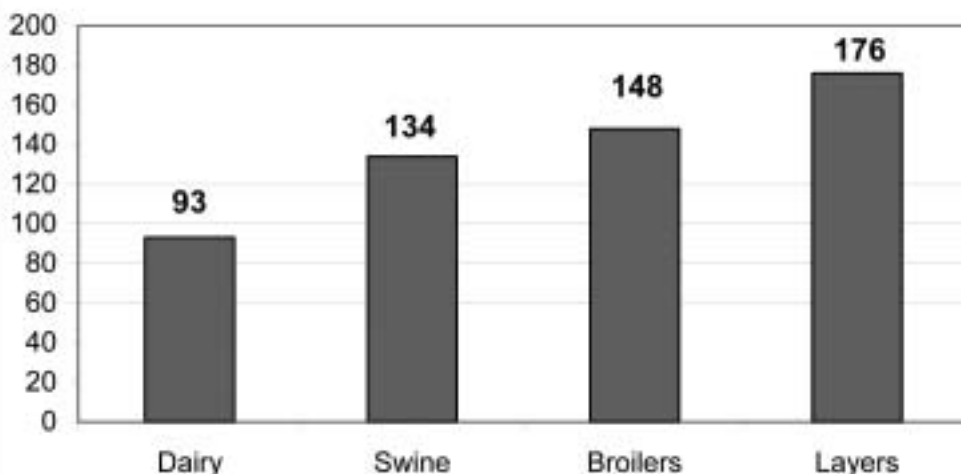
Consolidation increases the market power of fewer and larger corporations. Because corporations are moneymaking and money-generating entities, their ultimate goal is to increase profits.<sup>13</sup> In other words, agri-corporations consolidate to grow their share of the market. The agri-corporations continue to consolidate, growing larger and expanding their market share as they seek an ever-greater piece of the pie through mergers with, and acquisitions of, their competitors.

Consolidation occurs through horizontal integration, vertical integration or both. Horizontal integration allows a corporation to increase its size and market share at a particular stage in food production or marketing.<sup>14</sup> In 1999, for example, Cargill controlled more than 40 percent of all U.S. corn exports.<sup>15</sup>

Vertical integration allows a corporation to control many different stages of a sector of the livestock industry, from growing to marketing. In 1999, Heffernan et al. reported that “Cargill rank[ed] in the top four firms producing animal feed, feeding cattle and processing cattle.”<sup>16</sup> Another example of vertical integration given by Heffernan involves a joint venture that was established between Cargill and Monsanto – market leaders in the seed

**FEEDLOTS COVER A WIDE RANGE OF SIZES, BUT SALES TO PACKERS ARE INCREASINGLY DOMINATED BY LARGE COMMERCIAL FEEDLOTS IN WHICH ALMOST ALL FEED IS PURCHASED (RATHER THAN GROWN ONSITE), ALMOST ALL LABOR IS HIRED, AND THE ANIMALS ARE CONFINED TO A RELATIVELY SMALL AREA.<sup>8</sup>**

**Percent Increase in Average Number of Animal Units per Operation, 1978-1992**



sector and the biotechnology sector, respectively. Cargill, through additional acquisitions and mergers, is also a leader in the livestock production and processing sectors. A joint venture between these two corporations creates an ownership monopoly, and therefore market control, of a food product through the many different stages of production and processing: the genetically modified seed that is used in livestock feed, the processing and distribution of livestock feed, livestock production and livestock processing.<sup>17</sup>

Some agriculture corporations are market leaders in several different industry sectors – integrated both horizontally and vertically. For example, ConAgra is the second leading food processor in the U.S., produces its own livestock feed, ranks second in cattle slaughtering, third in cattle feeding, fifth in broiler production and processing and is in the top four processing firms for beef, pork, turkeys, sheep, and seafood.<sup>18</sup>

**FIRMS WITH MARKET POWER CAN INFLUENCE PRICES TO THEIR BENEFIT, SO THAT PRICES AND RESOURCE ALLOCATIONS ARE NO LONGER REPRESENTATIVE OF A COMPETITIVE EQUILIBRIUM BECAUSE THEY ARE BASED ON FEWER PURCHASES AND SALES. FIRMS MAY VERTICALLY INTEGRATE TO ENHANCE MARKET POWER BY LIMITING ENTRY INTO EXISTING MARKETS OR BY EXPANDING THEIR INFLUENCE.<sup>20</sup>**

concentration percentages vary by academic as to the magical number of what makes an industry no longer competitive. Some purport that over 80 percent of the market must be controlled by the four largest firms before it becomes non-competitive (Ollinger et al.); others claim that if 40 percent of the market is controlled by four firms, it can no longer be considered competitive (Heffernan and Rogers). Regardless, the growing concentration of market power and control by fewer global corporations has eliminated fair competition within the industry.

Consolidation has eliminated competition within the agriculture industry and has shifted market power from the farmer to the corporation. Consolidation allows agri-corporations to dominate a market and “out-compete” smaller agriculture firms. A competitive market needs a large number of independent producers or companies operating in the industry to prevent one or a few entities from controlling market prices and supplies. Once one or a few corporations gain sufficient market power to influence the price and supply of goods in an industry, the system begins to spin out of control.

**CORPORATE COMPETITION AND THE “FOUR-FIRM RATIO”**

*“The dominant trend is unmistakably toward fewer larger firms that rely less on traditional markets and more on negotiated relationships among input suppliers, farmers, processors, distributors, and retailers. The nature of competition in agriculture changes under this process of industrialization. Where once the dominant form of competition was among producers at one level of the industry, we now observe vertically integrated systems of production, processing, distribution, and retailing that compete with other linked systems.”<sup>19</sup>*

Agriculture academics often use a “four-firm ratio” to convey the level of corporate concentration in any given livestock industry. The

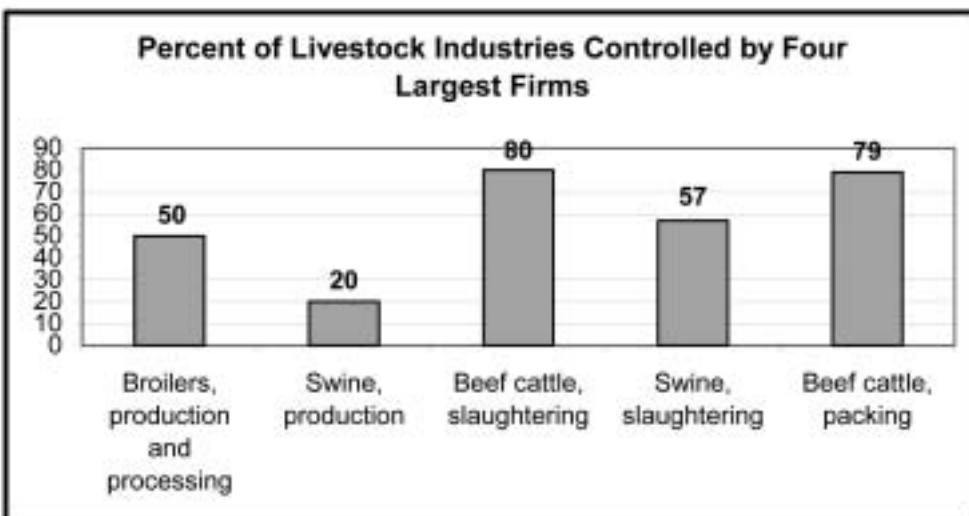
ence the price and supply of goods in an industry, the system begins to spin out of control.

**THE RISE OF CONTRACT PRODUCTION IN THE LIVESTOCK INDUSTRY**

While horizontally or vertically integrated agri-corporations gain market power and wealth, they also expose themselves to greater economic risks due to price fluctuations in the market and due to a dependency on other corporations or entities to supply the inputs and market the products. If the inputs are deficient in number or quality, the corporation could suffer a huge economic loss. Due to this market vulnerability, agri-corporations have turned to contract arrangements, affording the corporation greater economic stability.

As agri-corporations dominate the industry, greater pressure is placed on farmers to enter into contract arrangements. Contract production is quickly replacing independent farming as the primary production method in the livestock industry.<sup>21</sup>

In contract arrangements, the agri-corporation owns the livestock and controls management of the feedlot to varying degrees throughout the production process.<sup>22</sup> The corporation

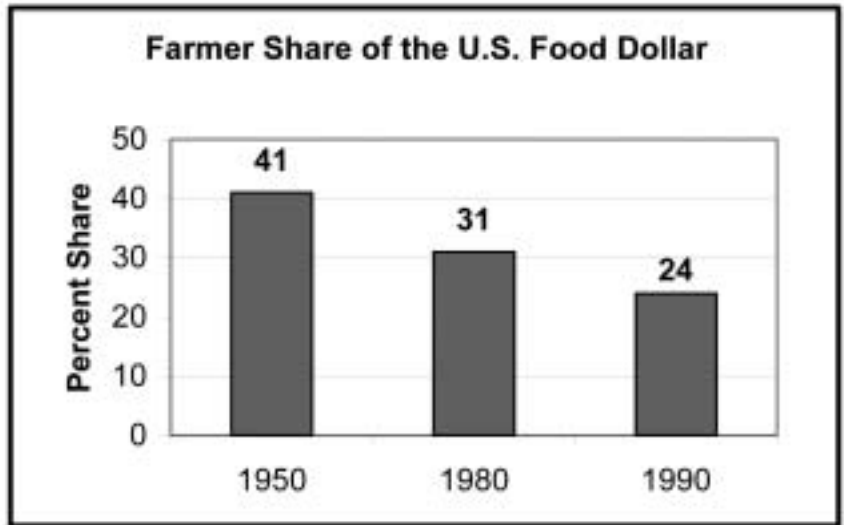


may also supply the livestock feed and veterinary supplies, among other inputs. When the farmer enters into a contract arrangement – becoming a “grower” – s/he loses not only management control of the farm, but also the ability to set a fair price for the livestock produced. Simply put, in contract arrangements, farmers own the facility, the debts incurred in the construction of the facility and storage structures, the waste generated by the livestock raised at the facility, and liability for any environmental violations occurring at the facility.

Farmers are often offered contracts under extremely poor terms, while incurring massive debt fulfilling contract requirements. Upon entering into contract arrangements, farmers must make significant, upfront investments in technological inputs — such as building new livestock housing facilities and buying new equipment — for the operation because farmers oftentimes lack the capacity for mass production that contract arrangements require. Mass production requires the specialization in production of one livestock type at an operation. Corporations may provide part or all of the financial and other resources needed for these operational expenditures, thereby committing farmers to contract production until the debt is repaid.<sup>23</sup>

Some farmers enter into contract arrangements to avoid the economic uncertainty of price fluctuations in livestock markets. In contract arrangements, the farmer is paid a set price for the livestock determined by the agri-corporation in the contract.<sup>25</sup> However, many farmers enter into contract arrangements because they feel they have no other option. For instance, after the purchase of Murphy Family Farms by Smithfield Foods, Inc. in January 2000, Smithfield owned over 60 percent of the hogs it slaughtered. In regions where Smithfield operated, it monopolized the hog market. Because Smithfield operated solely through contract arrangements, the independent hog producers were left with no alternative outlet for their hogs. This placed farmers in the position of either having to leave the business or enter into a contract arrangement with the company.<sup>26</sup>

A major concern with contract arrangements is whether the farmer receives a fair price for his/her product. Production contracts tend to limit the entry of new competitors into the industry, restricting a farmer's selling options. When there is no competition, independent producers have little power to negotiate prices. And because a corporation owns the livestock throughout the production and processing stages, live-



stock are not sold on the open market and the market value of the product is rarely known. As industry competition continues to decrease, farmers receive a decreasing share of the food dollar. The farmer share of the food dollar has dropped from 41 percent in 1950 to 31 percent in 1980 and then to 24 percent in 1990.<sup>27</sup>

*“The issue is not who can produce the hogs the most efficiently. The issue is who has the deepest pockets and market share. Even now, the issue of market access for producers who do not have special relationships with feed or slaughtering firms has become obvious. Twenty feedlots feed about half of the cattle in the U.S. and these are either owned by the slaughtering firms or have contracts with the processing firms. Operators of “independent lots” tell us that they seldom see buyers from more than one firm.”<sup>28</sup>*

**THE EXPERTS, EVEN THE LEADERS OF COOPERATIVES, ARE TELLING FARMERS THEY MUST GIVE UP THEIR INDEPENDENCE AND JOIN AN ALLIANCE. THIS IS ANOTHER WAY OF SAYING ‘GIVE UP YOUR DECISION-MAKING PREROGATIVES TO THE FOOD CHAIN CLUSTER IF YOU WANT TO MAINTAIN AN ECONOMICALLY-VIABLE FARMING OPERATION.’<sup>24</sup>**

#### POULTRY INDUSTRY

The poultry sector of the livestock industry was the first to industrialize. Pre- World War II, poultry production levels were restricted by disease, which made concentrated production nearly impossible. The introduction of antibiotic use in livestock production, together with other technological developments, led to the increased capacity of producers to grow more birds. Paired with a growing consumer demand for poultry products, the industry experienced a rapid and fundamental transformation after World War II.<sup>29</sup>

The large feed companies, interested in increasing their sales, initiated production contracts with farmers, stimulating the replacement of independent producers and open markets with vertically-integrated corporations within the poultry industry and contract arrangements. The feed companies consolidated different stages



of production between feed, chicks and broilers, eventually integrating with the processing stage as well. The ongoing consolidation within the poultry industry gave independent producers and processors fewer market outlets, leaving them with the option of either signing a contract or getting out of the business.<sup>30</sup>

As discussed previously, contract production shifts control of the farming operation from the farmer to the corporation. The corporation owns the poultry, makes the major management decisions and provides the production inputs, while the farmer provides the labor and the facility for a fee laid out in the contract arrangement.<sup>31</sup>

In 1950, ninety-five percent of the poultry farmers were independent. By 1955, only ten percent of the poultry produced came from independent farmers, while 90 percent was produced under contract arrangements or by corporate-owned facilities. By 1994, ninety-nine percent of all poultry was produced through contracts or corporate-owned facilities.<sup>32</sup>

Environmental threats of poultry production come from the concentration of production within confined geographic areas. The number of animal units per poultry confinement operation increased 52 percent between 1982 and 1997, while the number of confined animal units on small operations (less than 50 animal units) decreased more than 50 percent.<sup>33</sup> Contract poultry operations locate geographically near slaughter plants – typically within 20 miles – creating real environmental hazards where massive amounts of poultry waste are generated within small geographic areas.<sup>34</sup>

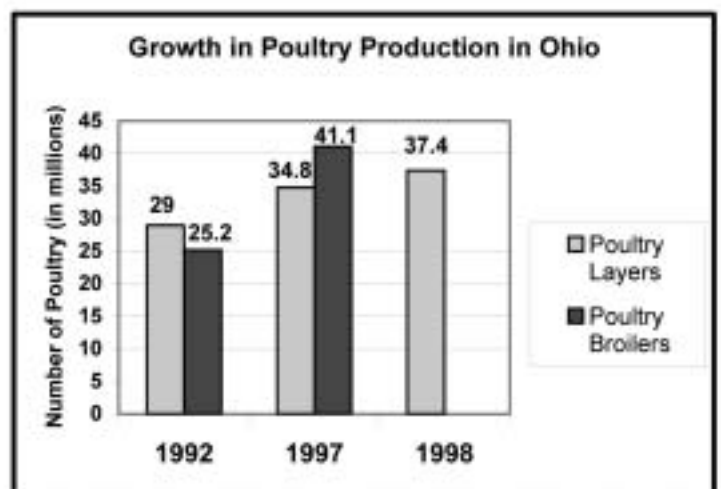
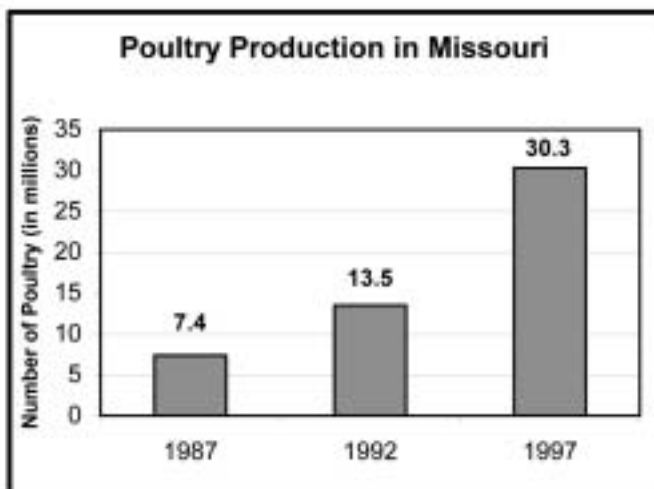
Missouri and Ohio are two of the leading poultry-producing states in the U.S. In Missouri, poultry production increased from 7.4 million in 1987 to 13.5 million in 1992 to 30.3 million in 1997. Increased poultry production was concentrated in specific areas and occurred where major processing plants had opened operations in the state.<sup>35</sup>

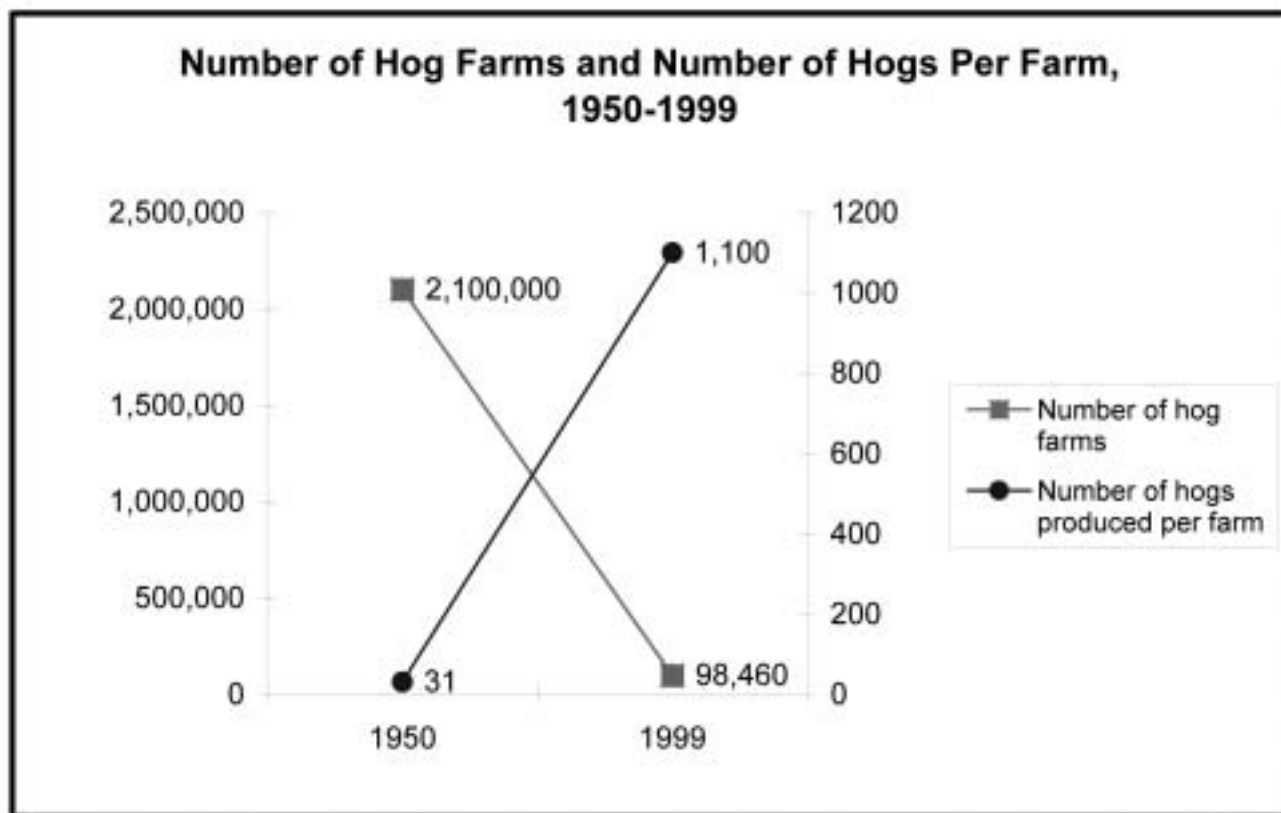
Ohio is the number one egg-producing state in the country. Between 1992 and 1997, Ohio lost 714 egg layer facilities but added 5.8 million birds.<sup>36</sup> Between 1997 and December 1998, Ohio gained another 2.6 million laying birds for a total of 37.4 million.<sup>37</sup> Similarly, between 1992 and 1997, Ohio lost 36 broiler facilities but added more than 15.9 million broilers – going from 25.2 million birds in 1992 to 41.1 million birds in 1997.

In poultry production areas, environmental pollution is of great concern because poultry litter contains two to four times as many manure nutrients per ton of manure as other livestock types. In 1997, 73 counties had excess nitrogen and 160 counties had excess phosphorus from the production of manure in these counties. In the 73 counties that had excess nitrogen, 82 percent of the operations producing nitrogen in excess of land capacity were poultry operations, while 64 percent of the operations in the 160 counties with excess phosphorus were poultry operations.<sup>38</sup> Addressing the concentration issue would be one key to reducing the poultry industry's degradation of the environment.

## SWINE INDUSTRY

Over the past several decades, the swine industry has undergone





a dramatic shift from a traditional farming system operating in an open market to an industry dominated by corporate-led production. The swine industry has become an industrialized production system that fosters the greater concentration of swine per operation and within geographic regions, the specialization of production and the increased use of contracts.

In 1950, there were 2.1 million hog farms, selling an average of 31 hogs per farm. The majority of these farms were small, diversified, independently owned and operated, raised hogs from birth to market weight, and sold them on the open market. Hogs were also allowed to socialize and “were raised outdoors with access to bedded shelters or indoors in pens bedded with straw or hay.”<sup>39</sup>

During the 1970s, the makeup of the hog industry began changing – the size of hog feedlots grew and the operations became more specialized. Part of this rapid growth was encouraged through government subsidies for the hog industry, such as tax credits.<sup>40</sup>

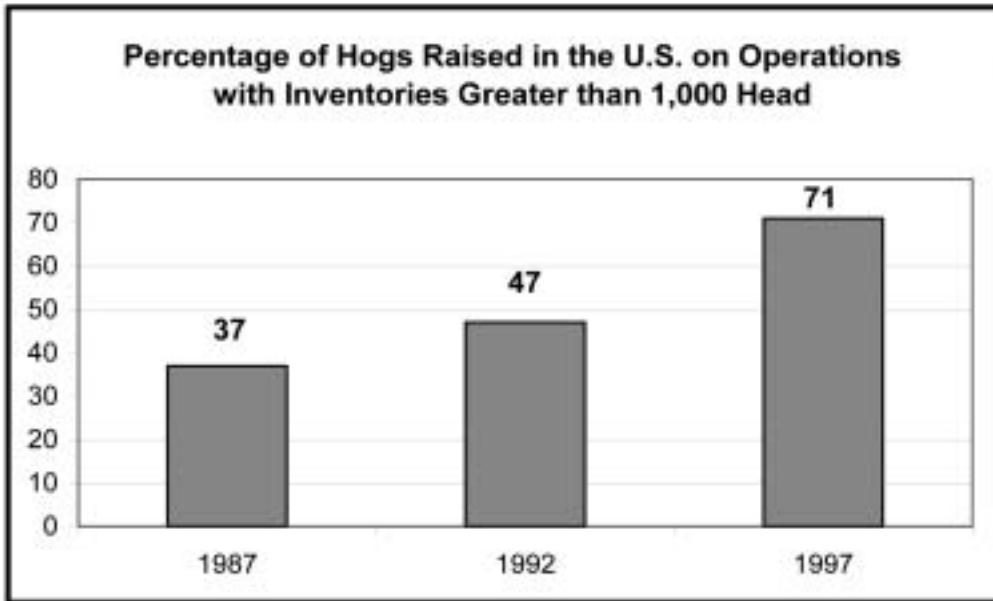
Today, the swine industry has undergone a dramatic shift toward larger, more specialized operations and contract production. In the past decade, hog CAFOs began to dominate the industry. Since 1992, only operations with greater than 2,000 hogs have grown in number. By 1999, the remaining 98,460 hog operations sold an average 1,100 hogs per operation.<sup>41</sup>

*“The percentage of hogs raised on operations with inventories greater than 1,000 head increased from 37 percent of the U.S. swine population in 1987 to 47 percent in 1992 to 71 percent in 1997.”<sup>42</sup>*

Industrial hog production is similar to assembly line production, in which hogs are moved through a series of large, industrial operations specialized in production at one stage of the hogs’ development. The first facility is used for breeding, gestation, and farrowing. At the second facility, or the nursery facility, the piglets are put on special diets. At the third facility, or the finishing facility, the pigs are fed and fattened until slaughter.<sup>43</sup>

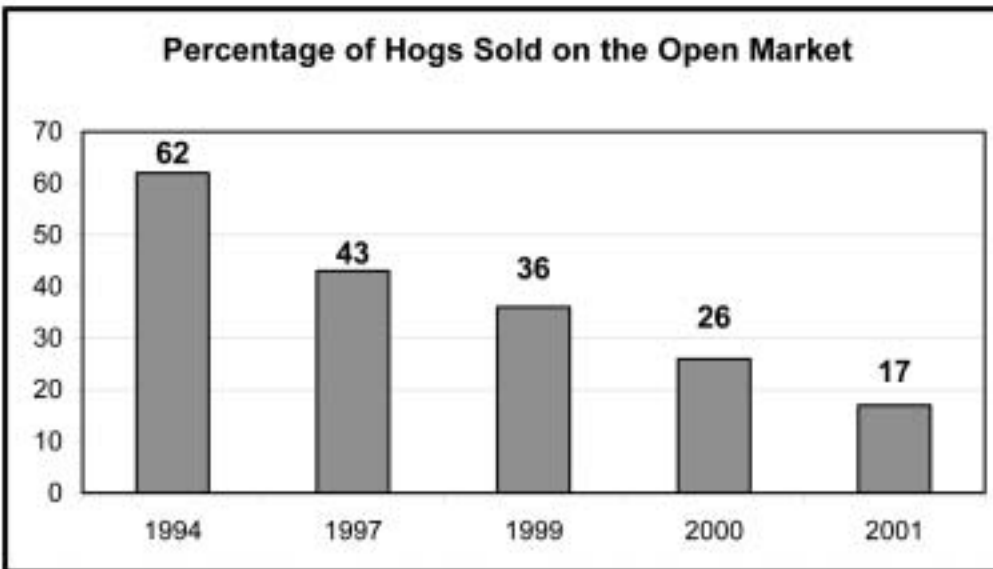
The shift towards concentrated hog production corresponds to an increased use of production contracts in the swine industry. Previously, hog production consisted of many independent swine growers selling hogs on the open market to local processors. Today, hog producers commonly operate under a contract arrangement with a specific processor. It is estimated that nearly two-thirds of all hogs are either owned directly by the packing company or are sold under a contract arrangement with hog growers.<sup>44</sup> The percent of hogs sold under contract increased from only 3 percent in 1980 to 11 percent in 1993 to 40 percent in 1998.<sup>45</sup>

*“The number of hogs sold by contract has steadily increased over the years, while the number of hogs sold on the market fell from 62 percent in 1994, to 43 percent in 1997, to 36 percent in 1999, to 26 percent in 2000, to 17 percent in January [2001].”<sup>46</sup>*

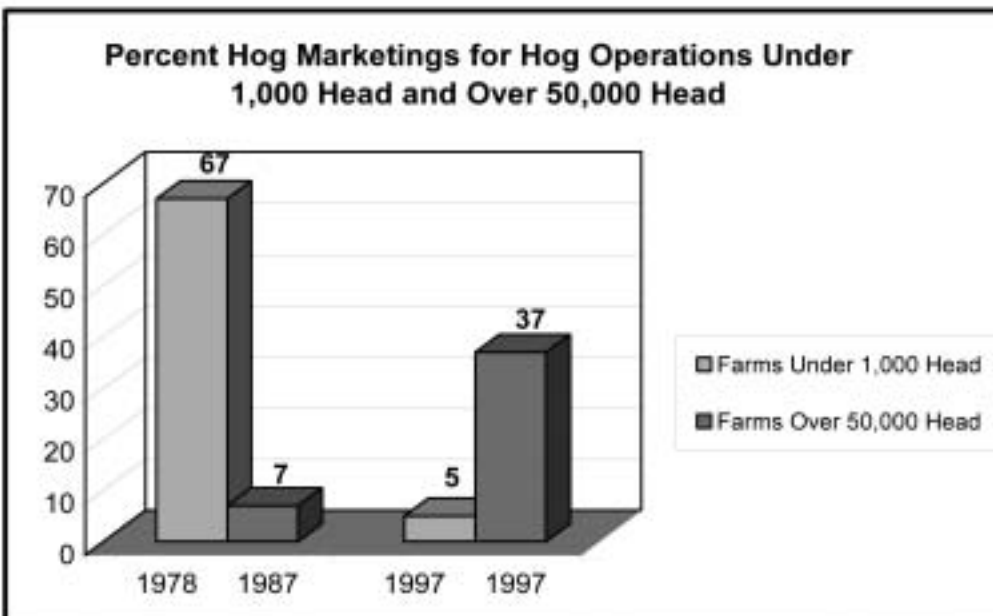


Smaller hog farms – farms with less than 1,000 hogs – have lost the majority of the market share over the last 20 years. In 1978, small hog farms held nearly 70 percent of the market; by 1997, small farms accounted for only 5 percent of marketings. In contrast, the market share for facilities with greater than 50,000 hogs increased from only 7 percent in 1987 to 37 percent in 1997.<sup>47</sup>

*“Smaller independent hog producers complain they cannot compete when large packers contract only with large producers and do not make public the premiums they pay.”<sup>48</sup>*



Independent producers continue to struggle under low prices and in a system in which hog production is dominated by contract arrangements. Producers who have entered into contract arrangements often cite the lack of other markets or buyers to whom to sell their product. And many of the remaining independent producers complain of a “get big or get out” attitude among other farmers, industry and even agriculture academics and government officials. A growing market for sustainably grown and locally produced food is one of the more promising alternatives for independent hog farmers, offering greater economic opportunities than conventional markets.



*“The pork industry is faced with several obstacles to a continuation of recent trends in organization. Unlike the broiler industry, the pork industry has a large core of independent hog producers selling on the open market. These producers will likely resist further moves toward contracting and integration in the hog industry, despite the competitive pressures placed on them to find a market for their hogs. As consumers have become more concerned about the effects of their food choices on the environment, potential air and water pollution associated with manure from large hog operations may also create obstacles to further expansion.”<sup>49</sup>*

## DAIRY INDUSTRY

Until recently, the dairy industry had remained relatively unaltered by the industrialization of agriculture, and had not experienced the extent of concentration and consolidation seen in the other livestock sectors. Today, however, traditional dairy states such as Wisconsin are losing 3 to 4 family farms per day, while large dairy operations in California continue to grow in size and number.

*“New processing technologies, shifts in consumers’ preferences, and changes in economic conditions have changed the way dairy companies process fluid milk, manufacture dairy products, and market their beverages and products.”*<sup>50</sup>

The dairy industry is controlled by large dairy cooperatives and large agri-corporations. Both the cooperatives and the agri-corporations specialize in specific areas of the dairy industry. Cooperatives specialize in the butter, natural cheese and nonfat dry milk sectors of the industry, while the agri-corporations specialize in the cheese, yogurt, milk and ice cream sectors.<sup>51</sup>

Like other livestock industries, however, the growing number of mergers, acquisitions and corporate-level deals are blurring the lines that previously distinguished farmer-owned and operated from corporate-owned and operated.

In the dairy industry, farmers originally formed cooperatives to market and sell their milk, while maintaining control of their product. Following the same trend in corporate agriculture, however, dairy cooperatives are consolidating to form fewer, larger business entities. For instance, four cooperatives – Milk Marketing, Inc., Mid-America Dairyman, Inc., the southern division of Associated Milk Producers, Inc., and Western Dairyman – merged in 1998 to create Dairy Farmers of America. In 1999, three California cooperatives merged to form California Dairies, Inc., rivaling Land O’ Lakes as the second largest cooperative in the U.S.<sup>52</sup>

In an effort to maintain competitiveness with the agri-corporations, many cooperatives have entered into joint ventures with major dairy companies. In 2000, for instance, Dean Foods – a major dairy corporation – purchased four Land O’ Lakes dairy plants and a facility that produces “extended shelf life” dairy products and yogurt. The Dean Foods/Land O’ Lakes alliance placed it in the top three firms in the dairy industry, along with the Suiza Foods/Dairy Farmers of America alliance (another corporate-cooperative alliance) and Kraft.<sup>53</sup>

Howard Dean, chairman and chief executive officer of Dean Foods, said in a news release that the Land O’ Lakes acquisition was “another key step in Dean’s long-term strategy of integrating strong regional

dairies into a cost-efficient national dairy company.”<sup>54</sup> This was also a significant acquisition because it placed the corporation between the dairy farmer and the consumer, taking management control over the dairy processing stage from the farmers. In corporate-cooperative alliances, the power does not rest in the hands of the farmer-owned cooperatives, leaving farmers with no control over the pricing of milk. It is the largest dairy processors that control milk prices, and they purchase raw milk at the cheapest prices available.<sup>55</sup>

This raises serious concerns for consumers who wish to support alternatives to corporate-owned products, because the food products continue to be marketed under the Land O’ Lakes brand name. This type of marketing is not uncommon throughout the livestock industry, where the food product is marketed and sold under a different name than the parent company, oftentimes leaving the consumer ignorant of which companies own which products.

Further consolidation within the dairy industry has raised some legitimate antitrust concerns. In April 2001, Suiza Foods announced the acquisition of Dean Foods Co. for \$1.5 billion, pending federal government approval. The merger of two of the largest dairy processors increases the companies’ market domination and also expands their presence into new geographic areas.

*“The structure of the dairy industry is often the subject of debate and has become more so as the firms involved have grown larger. The questions concerning the dairy industry are an outgrowth of the growing concerns about industrialization and concentration in agriculture. Farmers, consumers, and policymakers are asking questions about the prices agricultural product processors pay to farmers, the continuing viability of small family farms, and impacts on rural communities, farm families, and food costs for consumers.”*<sup>56</sup>



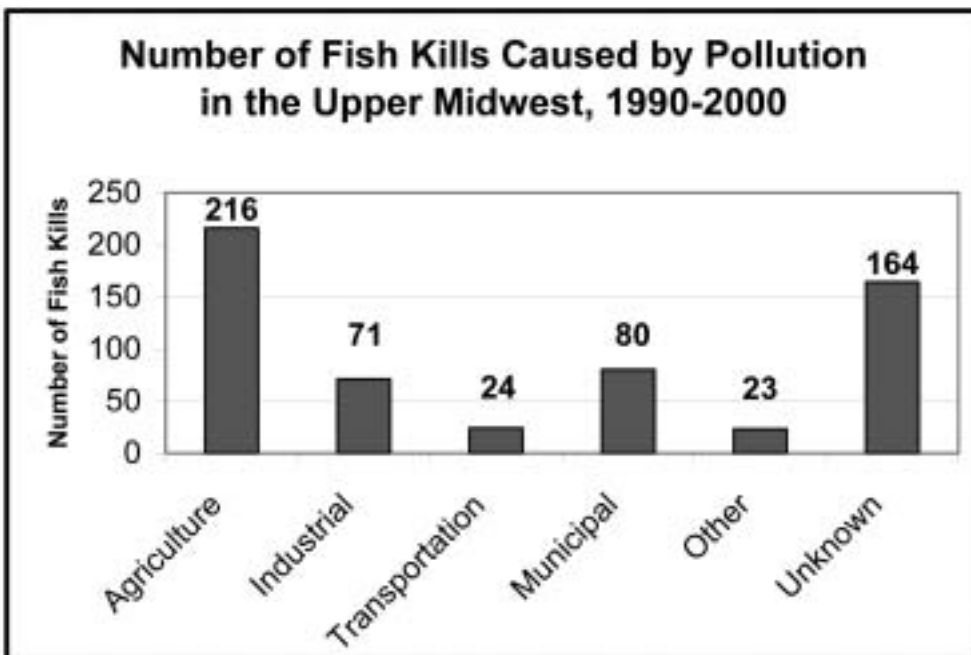
# COSTS OF LIVESTOCK POLLUTION

## ENVIRONMENTAL COSTS OF LIVESTOCK PRODUCTION

Thirty years after enactment of the Clean Water Act, 40 percent of our rivers, lakes and coastal waters remain unfit for fishing, swimming, drinking or aquatic life. During the past three decades, the Clean Water Act has focused on reducing water pollution primarily from industrial and municipal pollution sources, while livestock pollution and other agricultural sources of pollution have largely been ignored. Today, agricultural pollution is identified by the U.S. Environmental Protection Agency (U.S. EPA) as the primary cause of pollution in the nation's impaired rivers, streams, lakes, ponds and reservoirs.

livestock waste threaten water and air quality, human health and impact recreational opportunities when these contaminants are released into the environment.

Environmental contamination occurs during the land application, collection and storage of waste. When feedlots lack adequate land on which to spread livestock waste, land application becomes a means of waste disposal rather than as fertilizer for growing crops. Equipment failures and spills occur during the collection of livestock waste. Storage of livestock waste in large lagoons also creates a pollution threat, due to the potential for lagoon breaks and failures, seepage of pollutants to groundwater and release of noxious gases into the air.



Although both large and small livestock feedlots are known to have pollution problems, it is the larger operations that have gained widespread public opposition. Opposition stems from public concern over odor problems, degraded water and air quality, and decaying rural communities.

Nutrients – primarily nitrogen and phosphorus – are significant contributors to the environmental degradation of rivers and lakes. As livestock production continues to concentrate on fewer, larger operations, the quantity of manure produced in limited geographic areas becomes ever greater and the nutrients present in manure present a growing water quality threat. The U.S. Department of Agriculture (USDA)

In the Upper Midwest,<sup>57</sup> agricultural pollution led to the greatest number of pollution-caused fish kills between 1990 and 2000. Specifically, feedlot pollution was responsible for 74 percent of the 216 fish kills caused by agriculture, and led to more fish kills than were caused by municipal and industrial sources of pollution combined. While feedlots are not the sole cause of water pollution, they do significantly impair water quality. From 1995 through 2000, 433 livestock waste spills in the five-state region led to 134 fish kills, killing nearly 3 million fish.<sup>58</sup>

The U.S. Environmental Protection Agency (U.S. EPA) estimates 376,000 livestock feedlots confine animals in the U.S., generating approximately 128 billion pounds of waste annually,<sup>59</sup> or 130 times more waste than the entire human population in the United States.

The nutrients, pathogens, hormones and antibiotics present in

estimates that areas with concentrated livestock production often contain large nutrient surpluses, and that more manure is produced than can be assimilated by crops in 266 counties for nitrogen and 485 counties for phosphorus.<sup>60</sup> Similarly, another USDA study on manure production levels at livestock feedlots reported over 89,000 livestock feedlots in 1997 produced more manure than the land could assimilate based on phosphorus content, while 65,000 feedlots produced excess manure based on nitrogen content.<sup>61</sup>

Nutrients are one of the leading causes of water quality degradation in rivers, lakes and estuaries. When manure enters a waterway, the nitrogen and phosphorus present in manure stimulate excessive algae growth. The Minnesota Pollution Control Agency (MPCA) reported that only one pound of phosphorus can produce 500 pounds of weeds and algae growth in a lake.<sup>62</sup> The algae eventually die, and bacteria decompose the organic material. In this decomposition



process, bacteria consume much of the available oxygen, depriving other aquatic life of the oxygen needed for survival, eventually leading to kills of fish, aquatic organisms and plants.

The Committee on Environment and Natural Resources (CENR) of the White House Office of Science and Technology Policy concluded that nitrogen is the nutrient most severely impacting the Mississippi River and Gulf systems. Nitrate loads in the Mississippi River have increased 300 percent in the last 30 years, to nearly one million tons per year. The CENR report stated about 90 percent of the nitrogen deposited in the Gulf of Mexico comes from nonpoint sources. Most of the nitrogen comes from farmland in southern Minnesota, Iowa, Illinois, Indiana and Ohio where large amounts of nitrogen from fertilizer and manure are applied to agricultural lands. According to the report, animal manure alone contributes 15 percent of the nitrogen to the Gulf, while municipal and industrial point sources together contribute only 11 percent of the nitrogen to the Gulf system.<sup>63</sup>

Each year, a vast area in the Gulf of Mexico becomes a “dead zone” devoid of aquatic life as nutrients from the Mississippi River enter the Gulf and deplete the area of oxygen. Last year, the Dead Zone spanned 8,000 square miles – an area the size of Massachusetts.

## HUMAN HEALTH THREATS FROM LIVESTOCK POLLUTION

Until recently, little was known about the impacts of livestock pollution on human health. Federal, state and academic studies have revealed, however, that concentrated livestock production contaminates drinking water supplies, leads to odor and air quality problems, and the meat sold on local grocery store shelves is tainted with pathogens and antibiotic-resistant bacteria. There are more than 40 diseases that can be transmitted to humans from livestock waste.<sup>64</sup>

Groundwater contamination is a major public health concern since groundwater constitutes about 40 percent of the water used for public water supplies and provides drinking water for more than 97 percent of the rural U.S population.<sup>65</sup> Drinking water supplies can become contaminated with nitrates and pathogens from livestock waste, and is most likely to occur in areas with concentrated livestock production and in regions with coarse-textured soils and shallow ground water.<sup>66</sup>

Nitrates have long been known to affect human health. Excess levels of nitrates readily leach through the soil to groundwater and drinking water supplies. Seepage from storage basins and lagoons, manure spills and over-application of manure to the land can lead to the presence of high levels of nitrates in water supplies. Drinking water contaminated with nitrates causes blue-baby syndrome (methemoglobinemia) in infants, which can lead to death.<sup>67</sup>

Although more research is needed regarding the transmission of pathogens, hormones and antibiotics from livestock waste to water resources, a recent study showed that in areas of concentrated livestock production, livestock waste was responsible for the contamination of groundwater with the carcinogen 17 $\beta$ -estradiol (E2), fecal coliform and *Escherichia coli* (*E. coli*). E2, which has been linked to breast cancer, is a hormone used as a growth promoter in livestock production.<sup>68</sup>

The release of gases from livestock production presents a significant threat to the environment and human health. The decomposition of livestock waste releases methane, carbon dioxide, ammonia, hydrogen sulfide and odors into the air. Many of the gases emitted from livestock feedlots are considered odorants, emitting strong and offensive odors that disrupt daily life for many residents near large-scale feedlots. Both methane and carbon dioxide are greenhouse gases. U.S. EPA estimates that nearly 10 percent of all U.S. methane emissions comes from livestock waste. Ammonia can lead to eye and respiratory irritation, and at high concentrations can even lead to death. Hydrogen sulfide emissions can negatively impact human health at relatively low concentrations. At the lowest concentrations, hydrogen sulfide emits a strong, disturbing odor. As concentrations increase, hydrogen sulfide emissions are reported to cause nausea, discomfort, loss of appetite, serious eye injury, olfactory paralysis, pulmonary edema, respiratory paralysis, nervous system paralysis and death.<sup>69</sup>

A growing health concern across the U.S. and internationally is the increased occurrence of bacterial resistance to antibiotics. Recent evidence shows that the widespread sub-therapeutic use of antibiotics in livestock production plays a major role in increased bacterial resistance to antibiotics, and increases opportunities for bacteria to develop resistance to the drugs used to treat diseases, such as tuberculosis, pneumonia, staph infections and other infectious diseases.

Of the 50 million pounds of antibiotics produced in the United States every year, 40 percent is used in livestock production, 80 percent of which is used solely to promote animal growth.<sup>70</sup> Antibiotics are administered to livestock primarily through the feed, making it difficult to determine the extent of antibiotic use in livestock production. More recent statistics given by the Union of Concerned Scientists estimate that 70 percent of all antibiotics in the U.S. are used in healthy livestock.<sup>71</sup>

Antibiotic resistant bacteria are transmitted from animals to humans via animal waste and animal meat. A large proportion of antibiotics used in livestock production passes un-metabolized through the animals and is present in their urine and excrement. As noted by the Ecological Exposure Research Division of EPA's National Exposure Research Laboratory, “[i]n some cases as much as 80 percent of

antibiotics administered orally pass through the animal unchanged into bacteria rich waste lagoons and is then spread on croplands as fertilizer leaving the antibiotics available for entry into ground water and runoff into surface waters carrying both the drugs and resistant bacteria or genetic material (R-plasmids) to other bacteria in soils and waterways.<sup>72</sup> Because nearly two trillion pounds of waste is produced annually by livestock production in the U.S., the potential for antibiotic resistant bacteria commonly present in livestock waste to spread throughout the environment presents a major health risk.

The Centers for Disease Control and Prevention (CDC) reports a dramatic rise in antibiotic resistance since monitoring began in 1970. Resistance to fluoroquinolones, the class of drugs used to treat severe food-borne illnesses, was non-existent before widespread use of the drug in poultry production began six years ago. Today, one out of six cases of *Campylobacter* infection, the most common cause of food-borne illness, is resistant to the drug. Cases of fluoroquinolone resistance in *Salmonella* are emerging as well.<sup>73</sup>

CDC also reports food contaminated with the bacteria *Salmonella* causes 1 million infections and 8,000 to 18,000 hospitalizations every year. People who become extremely ill or die from food contaminated with bacteria are usually infected with strains of *Salmonella*, *Campylobacter* and *E. coli* that resist all or many antibiotics.<sup>74</sup>

Antibiotic resistance can also be transmitted to humans through the handling or consumption of raw or improperly cooked meat; contact with or consumption of water contaminated with the bacteria; and the handling or consumption of fruits and vegetables that were in contact with contaminated meat, meat by-products or water. The Food and Drug Administration (FDA) has found that *Campylobacter* bacteria infect 31.5 percent of swine and 88 percent of chicken carcasses tested.<sup>75</sup>

Over two decades ago, FDA proposed a ban on the feeding of two antibiotics to livestock. Amid industry opposition, however, the proposal was withdrawn, and until recently, little else was done to control the widespread use of antibiotics in livestock production. Currently, six of the 19 classes of antibiotics approved for agricultural use in livestock growth promotion are important antibiotics for the treatment of human illness. Because of this, national and international medical associations, such as the World Health Organization and the American Medical Association, have called for the restricted use of antibiotics in livestock production.<sup>76</sup>

## IMPACTS OF LIVESTOCK POLLUTION ON WILDLIFE POPULATIONS AND OUTDOOR RECREATION

The Upper Midwest, a region heavily dependent on agriculture,

thrives on its natural resources. Together, the five states - Illinois, Iowa, Minnesota, Missouri and Wisconsin - boast over 200,000 miles of streams and rivers and approximately 100,000 lakes and ponds. The benefits gained from healthy water resources is immeasurable.

Good water quality encourages biodiversity and provides a basis for a healthy habitat for fish and other aquatic life, while providing food and shelter for a variety of species of birds, mammals, reptiles and amphibians.

The benefit of healthy waters on outdoor recreation and human enjoyment is probably the easiest to know and to measure. Humans value healthy waters as both a non-consumptive and a consumptive resource. Non-consumptive values include the importance and worth of nature and the environment to people. Non-consumptive human values, like the values associated with wildlife and aquatic populations, are non-market benefits that are difficult to measure in a quantitative manner. Consumptive values include hunting, fishing and wildlife viewing.<sup>77</sup> Together, the 14 million hunters, 50 million anglers and 76 million wildlife viewers generate \$54 billion annually in economic revenue.<sup>78</sup>

Outdoor recreation, specifically recreational fishing, generates significant revenue, benefiting state and local economies throughout the Upper Midwest. The American Sportfishing Association reported that recreational fishing in the Upper Midwest generated \$11.4 billion in overall economic impact, \$428 million in state sales and income taxes, supported 145,900 jobs and drew 6.1 million anglers in 1996 alone.<sup>79</sup> Water pollution signifies a direct threat to these resources.

Many fish populations are declining or at low levels due in part to habitat degradation and poor land management practices. Common causes of habitat degradation include contamination and nutrient enrichment. The negative impacts of nutrients and other pollutants reach far beyond fish populations, however.

Degraded water quality harms aquatic biodiversity, wildlife populations, and avian species. Degraded water quality impairs the survivability of populations of aquatic plants, bacteria, algae, macroinvertebrates and microinvertebrates. Reptiles, amphibians, deer, moose, otter, beaver and other mammals also depend on healthy water resources for survival. Waterfowl, waterbirds, shorebirds and migratory birds all rely on healthy waters for feeding, breeding or protection against predators.<sup>80</sup>

Poor water quality creates costs for the public through degraded ecosystems, reduced recreational opportunities, decreased commercial fishing productivity, increased water treatment costs, and greater threats to human health. It is these costs that have led the government to develop regulations aimed at reducing water quality problems across the country.<sup>81</sup>

# INADEQUACIES IN REGULATORY ENFORCEMENT

Federal and state governments use both regulatory and voluntary approaches to address water quality problems. Pollution from point sources, such as factories and sewage treatment plants, is controlled through regulations and enforcement, while agricultural pollution is primarily addressed through voluntary incentive-based programs. Traditionally, the agriculture industry has not fallen under government regulation. CAFOs, however, have been considered a point source of pollution under the Clean Water Act for 30 years, and so are included in the regulatory system like other industrial operations.<sup>82</sup>

Enforcement has been a serious problem in the regulation of CAFOs, and most of these facilities lack permits. U.S. EPA currently estimates only 2,600 of the 13,000 CAFOs that should have a National Pollutant Discharge Elimination System (NPDES) permit actually have a permit.

Several impediments have prevented a successful, national NPDES program for CAFOs from being implemented. Both the regulatory authorities and the livestock producers find the federal regulations confusing and difficult to implement. Discrepancies in the administration and enforcement of the NPDES program between states has led to an unlevel playing field, where the livestock industry can shift their operations to states with reputations of weak regulatory enforcement. In addition to this, many states have adopted laws or rules that interfere with the administration and enforcement of the Federal NPDES program.

There is concern that enforcement programs will collapse under the Bush Administration, which has reduced funding of many water quality enforcement programs, proposed transferring federal enforcement funds to the states, encourages self-monitoring for industries, and may weaken the proposed regulations. Weak regulations and lax enforcement will not correct current pollution problems.

Although the League has been actively promoting stronger regulations for feedlots to better protect water quality, we also realize the need for stronger state and federal enforcement of current regulations. Few of the feedlot pollution incidents are adequately enforced, and rarely is the full penalty or fine collected after an illegal discharge. Lack of enforcement creates a disincentive to conform to regulations because it is less expensive for operators to risk paying a sporadically issued fine or penalty than it is to bring the operation into compliance.

A review of the Upper Midwest region's state enforcement programs for livestock facilities reveals: 1) inadequate staff and funding

resources to provide a minimum of environmental protection, 2) state agencies permissive of environmental and water quality violations, and 3) a lack of data collection or coordination to make a definitive estimation of environmental protection.

Every state program in the Upper Midwest is under-staffed and under-funded to provide the adequate oversight needed for livestock feedlots. In Illinois, the Environmental Protection Agency (IEPA) has only four or five staff to conduct inspections of the 34,000-37,000 feedlots in the state. Under current federal regulation, feedlots are not required to obtain a NPDES permit if they claim to have no discharge. However, due to staffing shortages, IEPA staff does not regularly conduct feedlot inspections to ensure this rule is not being abused. Due to a lack of resources, The Minnesota Pollution Control Agency (MPCA) admits it cannot meet a new state rule in which the agency must issue or deny feedlot permits within 60 days of receiving the application. In Wisconsin, the Department of Natural Resources (WDNR), which does not employ enough staff to review the growing number of permit applications it receives, had to mass issue over 60 feedlot permits after an extended time-lapse between submittal and issuance or denial of applications in 2001.

WDNR administers the National Pollutant Discharge Elimination System (NPDES) program, which serves as the primary enforcement tool for livestock feedlots in the state. The NPDES program, however, relies on voluntary compliance as the primary mechanism to enforce feedlot water quality violations. If a feedlot discharge occurs, WDNR issues a notice of discharge (NOD) to the violator, allowing 60 days to two years for correction of the problem. If the violation continues, a compliance conference is called to attempt to rectify the ongoing pollution problem. If the compliance conference call fails to correct the problem, a NPDES permit is issued, disqualifying a facility from receiving further cost-share funding and setting a date for compliance. If the producer fails to comply at this stage, a notice of violation (NOV) is issued, and the case can be brought to the Wisconsin Department of Justice. The permit process in Wisconsin is used by WDNR primarily as an educational tool to gain voluntary compliance with federal pollution control laws.

In Iowa, the Iowa Department of Natural Resources (IDNR) runs the feedlot permit program and admits its under-staffed program fails to adequately enforce the law. IDNR acknowledged only a fraction of the open feedlots in the state are permitted and in compliance with existing state and federal regulations that have been in place for over two decades. In the past, open feedlots received less scrutiny from

IDNR than confinement operations because they were thought to pose less of an environmental risk. However, a review of state agency data on feedlot discharges and fish kills revealed that a large percentage of recent manure spills and fish kills were caused by open feedlot operations. Of the 56 reported feedlot discharges in Iowa during 1997 and 1998, 26 of these were from open feedlot operations. IDNR acknowledged the necessity of improving its enforcement of open feedlots in the state and last year initiated a registration program. The incentive given by IDNR to encourage open feedlot operators to register included amnesty from U.S. EPA inspections and minor water quality violations.

In Minnesota, MPCA admits that very few environmental, construction or permitting violations result in formal enforcement actions. Of the 71 completed actions taken by MPCA against feedlots from September 1995 through 1999, only 14 were treated as criminal cases. The majority of enforcement actions were administrative penalty orders or notices of violation, which often forgive any monetary or other penalties issued against the operator if s/he implements the basic management conditions already required in the permit.<sup>83</sup> In 1999, the Office of the Legislative Auditor completed a program audit of the regulation of feedlots by MPCA. The audit revealed MPCA's failure to conduct inspections of facilities, identify feedlots in need of permits and maintain information on the agency's response to water quality complaints.<sup>84</sup>

Lack of funding is one major contributor to MPCA's problems. Another great hindrance to MPCA is the recent rule changes for feedlots that effectively limit the ability of the agency to enforce pollution control laws and to properly permit livestock facilities. One of these rule changes includes a 60-day deadline for issuing permits. If a permit is not issued within this time period, the permit is automatically issued to the permittee, regardless of the environmental risk of the proposed facility or the past environmental record of the permittee. Another provision prohibits MPCA from including site-specific conditions in permits. MPCA also cannot require noncompliant facilities – as part of an enforcement action or in permits – to comply with environmental regulations if the cost exceeds a set amount, unless the public subsidizes 75 percent of the upgrade. It is evident MPCA no longer has the power to adequately regulate the livestock industry in Minnesota.

Many state authorities in the Upper Midwest do not collect or maintain information regarding either complaints, notices of violation, or the percentage of cases which result in actual enforcement actions. Most environmental violations are settled informally, or are settled when a facility adopts pollution prevention measures. The effectiveness of this method of enforcement is questionable, since many states have records of repeated violations at a

facility. For many states, records of feedlot discharges do not correspond to records of feedlot enforcement actions. Frequently, only those cases involving extreme pollution events result in enforcement actions. In Illinois, for instance, enforcement actions were brought against Heartland Pork, Inc. after two of its facilities discharged a total of 35,000 gallons of manure into local streams within two years. Another enforcement case in Illinois involved a facility, Metro East Pork Producers, which the IEPA had investigated three times for discharging wastewater from its facility through a field tile to a nearby stream. The original investigation was conducted in 1981, but it wasn't until the facility was cited for discharging in both 1990 and 1991 that any enforcement actions were taken. The case was settled in 1993, resulting in a \$12,500 penalty for a facility allowed to discharge wastewater to state waters for over a decade.

In contrast to the performance of state agencies in the Upper Midwest, some states have adopted creative regulations to address feedlot pollution. Florida, for instance, is using a performance standard to address phosphorus runoff problems threatening the Everglades. A maximum allowable phosphorus runoff standard was placed on all dairy operations within an agricultural area impacting the Everglades. The producers are given discretion to develop the management practices needed to reduce phosphorus runoff, allowing the producers some flexibility in conforming to the new requirement. Enforcement of the rule is through inspection. This regulation would not differ greatly from other state and federal rules in the administration or success of the program, except for the added incentive. A per-acre tax is applied to all cropland in the Everglades Agricultural Area, starting at \$24.89 per acre per year and increasing every 4 years to a maximum of \$35.00 per acre unless area-wide phosphorus levels are reduced by at least 25 percent. The tax creates an incentive for the producer to adopt better management practices, as well as forming a "neighborhood watch" in which producers – not desiring added taxes – will keep tabs on the compliance of their neighbors.<sup>85</sup>

One key to building a successful permitting and enforcement program for livestock operations is to create adequate incentives to pull these facilities into the regulatory system. U.S. EPA hopes to solve many of the past problems in the NPDES program with new regulations currently under development, which aim to dispel regulatory ambiguities. By simplifying aspects of the regulations, U.S. EPA hopes to allow state permitting authorities the time and resources needed to permit facilities, conduct field inspections and enforce the rules. While regulation of feedlots in the past has not been adequate, it is too early to dismiss the regulatory approach altogether, as U.S. EPA updates and streamlines current regulations.



# VOLUNTARY INCENTIVE PROGRAMS

In addition to regulation, livestock pollution is addressed through voluntary incentive-based programs. While U.S. EPA or a delegated state authority regulates CAFOs through the NPDES program under authority of the Clean Water Act, the majority of feedlot pollution problems are handled through voluntary programs and other incentive-based measures. Voluntary programs are most effective in addressing nonpoint source pollution, where the pollution source may not be easily identified. In these instances, regulatory action is difficult and pollution prevention measures become an effective tool in reducing the amount of pollutants entering waterbodies. Federal funding for agriculture programs aimed at reducing nonpoint source pollution is allocated primarily through USDA.<sup>86</sup>

USDA administers several programs providing farmers financial, technical and education assistance to bring small- to medium-sized feedlots into environmental compliance. These programs include the Environmental Quality Incentives Program, Conservation Technical Assistance, Wetland Reserve Program, and Conservation Reserve Program. Some goals of these programs are to help farmers improve their manure management practices, make structural upgrades to their facility, raise awareness of how farm practices impact water quality and educate farmers on the financial and environmental benefits of alternative farming practices and land uses.<sup>87</sup>

Agriculture conservation programs are an invaluable benefit to both agriculture and our natural resources. Extensive efforts at the county and watershed level have led to some great environmental success stories. However, improvement efforts often require a significant commitment of time and resources and the cooperation of multiple partners to achieve success. Administration of these programs can be slow and labor-intensive.

*“Voluntary programs are likely to be most successful in areas where farmers recognize that agriculture contributes to severe local pollution problems such as groundwater impairment. Voluntary programs are likely to be successful when recommended practices generate higher returns...Previous experience with USDA voluntary programs has indicated that financial assistance is often critical in getting farmers to try new practices; education and technical assistance alone are not enough.”<sup>88</sup>*

The ability of voluntary programs alone to correct the nation's water quality problems from agriculture pollution falls short of what is needed. Current and projected funding of agriculture conservation programs under the federal Farm Bill is inadequate to provide the necessary resources to significantly reduce the impact of agricultural

runoff on waterbodies. Many agriculture conservation programs currently cannot fulfill the growing number of program applications, and these requests for assistance will continue to go unfulfilled unless federal funding of conservation programs is significantly increased.

Voluntary programs also lack the regulatory teeth to dissuade water quality violations from occurring. Inspections are necessary to ensure farmers are fulfilling program requirements, but inspections are rarely conducted. While we cannot achieve our goals for greater environmental stewardship through a regulatory stranglehold, reliance on voluntary compliance measures alone will not produce the needed results in any reasonable timeframe. This is primarily because the incentives available are not adequate to compel most producers to voluntarily comply with better management practices.

Due to the economic crisis in agriculture, many farmers wishing to become better stewards of the land cannot afford the cost to do this. If the push for environmental improvements comes from stronger regulations, livestock producers may blame the regulatory, environmental and conservation communities for the financial burden of compliance. The growing antagonism between farmers and the environmental and conservation communities hurts current widespread efforts to fight nonpoint source pollution through cooperative ventures and individual stewardship. However, if the push for improvements comes from voluntary programs, there would be no mechanism available to require bad actors to be better environmental stewards, nor would there be adequate incentives available to draw in a significant number of livestock producers.

Neither a regulatory nor a voluntary approach alone will successfully bring feedlots into environmental compliance while continuing to support the independent, family farms. However, the carrot and stick approach has been often and successfully used in order to achieve desired goals – added twists to the traditional approach may afford new possibilities in the effort to control livestock pollution. Whether this proves to be a viable alternative, it is clear that the expansion and specialization of the livestock industry cannot continue to occur unabated without addressing the environmental, public health and rural socioeconomic impacts caused by industrialization.



# CORPORATE RESPONSIBILITY

The structure of the livestock industry creates a lack of accountability. Under contract arrangements, the farmer denies responsibility since s/he functions merely as an operator of the facility. The agri-corporation evades liability, since the corporation usually does not own the feedlot directly and, unlike the operator, is not held legally responsible for the livestock waste or for poor management of the feedlot.

Current programs and policies are directed at the farmer, falsely assuming s/he has the money or power to change the environmental performance of the livestock industry. The farmer is held responsible for the costs of environmental compliance because it is the farmer who is directly tied to the feedlot and who owns the animal waste generated by the livestock. What current programs fail to take into account is the relationship formed between the agri-corporation and the farmer within the contract production system. In contract arrangements, the agri-corporation owns the livestock and controls management of the feedlot throughout the production process, setting the standards of performance and even determining the size of the operation and how it is built.<sup>89</sup> The farmer, on the other hand, loses management control of the feedlot and becomes a grower. As a grower, the farmer never owns the livestock, only the facility and the waste generated by the livestock.<sup>90</sup> Therefore, current policies are not directed at the entity responsible for poor management practices or with the power to direct improvements in the day-to-day operation of the feedlot.<sup>91</sup>

*“To realize positive environmental management outcomes, the party with the ability to invest in pollution control technologies and make critical management decisions should be the party responsible for developing and successfully implementing adequate pollution controls. In the case of operations carried out under production contracts, the responsible party should be the integrator, not the owner/operator. When operations are independent, or operating under less restrictive contract arrangements, the responsible party should be the owner/operator. The guiding principle should be to hold responsible the party that has the greater level of control over critical aspects of the production operation.”<sup>92</sup>*

Leveraging sufficient incentives for corporate-wide compliance would require either a regulatory approach, or a public relations campaign aimed at influencing consumer choices. A regulatory approach would establish the company as a responsible party for pollution problems and would require the agri-corporation to make the financial investments necessary to comply with federal and state standards. This approach would accomplish our goals for environmental improvements while releasing the farmer from financial liability for pollution problems. The corporate responsibility requirement is currently being proposed in U.S. EPA's proposed regulations for concentrated animal feeding operations.



# FORGING NEW RELATIONSHIPS

## THE IMPOSSIBILITY OF A CORPORATE-LED COMPLIANCE PROGRAM

Other industries have established partnerships between corporations and environmental or public interest organizations, developing corporate-led voluntary compliance programs. The public relations campaign promotes a positive image of the company under agreement that the corporation institutes higher standards of environmental stewardship and compliance with environmental regulations. To coax a corporation into a voluntary compliance program, sufficient incentives are offered to offset the cost of an expensive improvement plan. Every company is vulnerable to market changes – greater economic stability and increased sales are every corporation's greatest priorities. Given general public support for environmental stewardship in business, national "greening" campaigns can improve a company's image in the eyes of consumers, thereby increasing company sales.

Realistically, a corporate-environmental partnership in agriculture would present many challenges. The complexity of relationships in the livestock industry – between agri-corporations and farmers and among competing and partnering corporations – hinders negotiations for a corporate-led voluntary compliance program. The structure of the agriculture industry, as previously discussed, creates a lack of accountability. Negotiating an environmental compliance program with an agri-corporation that does not hold itself accountable for the environmental performance of the feedlots it manages would be impossible.

Also, there is a growing disconnect between the farmer – operating at the ground level – and the corporation, existing at the "top of the food chain." Guaranteed cooperation would be difficult to promise; a corporate-led agreement of improved environmental performance may remain at the corporate level, never trickling down to the farmer or improving on-the-ground conditions. Monitoring the performance of a corporate compliance program would be impossible when the number, location and environmental record of a corporation's contract facilities are not publicly known – even state and federal authorities are unable to monitor these feedlots or conduct field inspections.

In addition, due to the innumerable mergers, acquisitions and partnerships among agriculture corporations, complications arise in advertising a corporation's "green" image. Brand names under which the company's products are sold often differ from the name of the parent company – the agri-corporation may even own competing brands of one food product. Few consumers know the parent company of any brand of food they purchase at the grocery store.<sup>93</sup>

Therefore, consumer purchases may not change. Philip Morris' recent public relations campaign advertised the corporation's philanthropic efforts, most likely in an effort to improve its image with consumers. While Kraft is acknowledged as one of its subsidiaries, the hundreds of additional brand names with which consumers are familiar were not mentioned. Therefore, it is highly possible consumers did not alter their purchasing choices in response to the Philip Morris campaign. Given the complexity of relationships within the agriculture industry and the global power and wealth of agri-corporations, it is necessary to recognize the difficulties in gaining sufficient leverage to affect change through a corporate-led voluntary compliance program.

## ADDRESSING ENVIRONMENTAL CONCERNS IN THE CONTEXT OF CURRENT SOCIOECONOMIC CONDITIONS

*"In the general commodity market, there is little opportunity for individual farmers to add value to their products and get a higher price for doing so. The price that farmers receive for their hogs is the base minimum price that can be received for a raw product...[N]o "extra credit" is given for the way in which hogs are produced (for example, whether the farmer is a good steward of the land or maintains his animals in a high state of welfare). The buyer (packer) decides how much the hog is worth. The packer, processor, further processors, and retailers or exporters reap the benefits of adding value to the farmers' raw product."<sup>94</sup>*

The statement that farmers cannot add value to their product because they lack sufficient market access and control assumes farmers cannot operate outside the traditional agro-economic system. While this statement is valid, it fails to acknowledge the comparably small, yet fastest growing sector of the industry – sustainable agriculture. The exponential growth of this sector clearly illustrates the growing trend of consumer preference for more sustainably- and responsibly-raised foods. Recognizing this potential, environmental and conservation groups must establish relationships with new partners to expand the growing number of farmers practicing environmentally sustainable production methods.

The recently completed Generic Environmental Impact Statement on Animal Agriculture in Minnesota (GEIS), a \$3-million, 3-year study on livestock issues mandated by the state legislature, produced a wealth of information on various topics, including the economics and external costs of livestock production. In the final technical working paper on *Economic Structures, Profitability & External Costs*, the authors conclude that four predominant forces are responsible for

structural change in the livestock industry in Minnesota: “1) *information technologies...making larger farms and other businesses feasible...*, 2) *globalization...*, 3) *evolution of the food system into more tightly coordinated supply chains...*, and 4) *public skepticism about science, technology and globalization, which may act as a counterweight that slows the industrialization of the food system, and at the same time may present market opportunities to astute producers who can tailor their production and marketing to their demands.*”<sup>95</sup>

The impact of the first three forces on the socioeconomic structure of the agriculture industry, the farmer and the environment already has been discussed at length. The fourth force of change, involving public sentiment and consumer preference, leads to an important idea – the critical need to search for new opportunities and engage new partners in the effort to affect positive change within the agriculture industry.

Consumers are becoming more aware of how their food is produced and the impacts of food production on the environment and human health. Greater public understanding of how and where our food is produced has begun to influence consumer choices due to widespread media coverage of mad cow disease, foot and mouth disease, *E. coli* and other bacterial outbreaks. When a food product is associated with human health threats, consumer demand often responds negatively. Given recent food-related outbreaks, some consumers have made significant dietary changes, including consumption of alternative meat products such as buffalo and ostrich, or consumption of meat products produced in an alternative manner and perceived by the public to have beneficial health, social, economic and/or environmental effects, such as organic or free-range meat.

*“There will be increasing opportunities to pursue a focused strategy to meet the demand of particular market segments for products that embody specific attributes...Competition will either be on the basis of price, quality differentiation, or product attribute specialization.”*<sup>96</sup>

The consumer plays a greater role in shaping the agriculture industry than one might realize. Consumers buy products based on specific qualities they value, such as nutritional content, safety, convenience, taste, how the product was produced and the environmental impact of production.<sup>97</sup> If one brand of product offers a quality characteristic that another brand doesn't, the consumer will likely purchase the product containing the desired characteristic. In today's competitive food market, where countless varieties of a product are available to consumers, food corporations look for and advertise product qualities that differentiate it from the others.<sup>98</sup> Consumer education is key to influencing purchasing power.

FOOD RETAILING IS  
INCREASINGLY MORE  
CUSTOMER-RESPONSIVE,  
SERVICE-FOCUSED,  
AND GLOBAL IN  
OWNERSHIP.<sup>99</sup>

The retail sector of the industry, such as restaurants, grocery stores and fast food chains, is the most susceptible to consumer choice, trends and demands, and could be powerful partners in the effort to improve industry performance. During the 1990s, total spending on food in restaurants increased from 45 to 47 percent.<sup>100</sup> Consumers associate their food and its quality with retail corporations, not livestock growers or food distributors; retailers serve as the direct link in the food industry chain between the product and the consumer.

Forming partnerships with influential corporations such as McDonald's, which has both the market power to provide financial incentives for livestock producers and has the need for a positive public perception of its products, would be one option for affecting change within the industry. McDonald's exercises significant control over processors and/or producers from whom it buys meat. McDonald's, like many restaurants and fast food chains, enter into long-term contracts with processors and producers to ensure stable supplies and prices of meat.<sup>101</sup>

*“Today, fast food restaurants sell huge quantities of chicken in many forms, including breaded chicken parts, nuggets, patties, breast filets, tenders, and popcorn chicken. Many of these products are also available in the frozen food section at grocery stores...Company records indicate that McDonald's introduced Chicken McNuggets throughout the United States in 1983 and that, by 1984, McDonald's had become the second-largest purveyor of chicken in the world.”*<sup>102</sup>

McDonald's recently succumbed to international public pressure demanding higher standards for the humane production and processing of livestock. New equipment is being installed in packing plants to conform to McDonald's new requirements. Operations that supply McDonald's with eggs are now required to give laying hens more cage room and can no longer practice “forced molting,” an industry practice where hens are denied food and water so they will lay more eggs. McDonald's is also considering requiring better confinement conditions for the hogs it buys. To ensure implementation of the new animal-handling standards, McDonald's audited packing plants and suspended purchases from those slaughtering plants that failed their inspections. These changes came out of long international public relations campaigns led by several well-known organizations pushing for more humane standards in livestock production.<sup>103</sup>

*“Premium Standard's vice president of food safety and technical services said the restaurant chain's monitoring has made her job easier in getting approval from company executives for further improvements in the plant... 'It's not just me asking for it. It's McDonald's asking for it, and your children's Happy Meals...’”*<sup>104</sup>



Another food sector sensitive to market pressure is grocery store chains. There are 126,000 grocery stores in the United States; 24 percent of these are supermarkets, which earn 76.6 percent of grocery store sales.<sup>105</sup> Grocery stores evolved in the early 1900s when specialty stores moved from selling only one product to a large variety of products. In the 1920s, grocery store chains evolved as companies built and acquired more and more stores. In the 1930s, the supermarket evolved, and through mergers and acquisitions, came to dominate the retail sector of the food industry. By the 1950s, supermarket chains were fully established. Retailers cite “potential lower costs and efficiency gains as primary benefits of consolidation.” Food retailers offer exclusive agreements and make alliances with suppliers and distributors in order to lower their cost of goods in hopes of gaining a competitive edge over other retail chains.<sup>106</sup> Alliances such as these offer potential partnering opportunities in the promotion of meat products with positive environmental attributes.

Lastly, another potential food sector on which to focus pressure would be the food service sector, such as schools, hospitals and prisons (representing 15 percent of total value of processed products).<sup>107</sup>

## KNOWING THE AUDIENCE

A recent study (Mojduszka et al.) looked at consumer preferences of prepared frozen meals. They found that product prices and advertising play a greater role in consumer choices than nutritional content of the product. This led them to conclude that the “increased quantity and improved quality of information available to consumers after implementation of mandatory nutrition labeling did not lead to changes in consumer preferences and purchasing patterns....Ultimately, the labeling policy was meant to encourage consumers to demand foods with better nutritional profiles. Based on our results, it appears that to date the mandatory nutritional labeling policy has been ineffective in influencing consumer demand for prepared frozen meals. The investment already made in nutrition labeling might generate a larger payoff with a more active educational campaign.”<sup>108</sup>

However, what this study failed to take into account was that the consumers who purchase frozen meals are most likely to be consumers who value food convenience over food quality or nutrition. Given this, one would expect there to be no changes in frozen meal consumption after nutritional labeling, for the intent of these consumers was more likely to purchase a convenient and pre-packaged meal rather than select a meal higher in nutritional content.

Clearly, consumer preference is a leading instigator of change within the food industry. Multi-national corporations cater to the fickle American public, who hold great purchasing power. Tapping into this

consumer elite requires partnering with international organizations or large corporations who can afford the sustained effort of influencing consumer choice. Reaching the entire public is impossible; targeting sections of the population would generate the greatest rewards – those with a greater disposable income, those concerned for the environment and/or interested in sustainability, those supportive of small farmers and sustainable agriculture, parents, young adults and the public health and medical communities.

*“At higher income levels, many consumers become concerned about whether production is environmentally benign...and sustainable. Naturalness may also be an important attribute for some. They want food that is a product of “Mother Nature,” not technology.”<sup>109</sup>*

Targeting colleges, school kids and their parents with advertisements and public education campaigns could produce positive responses. A campaign recently began at Lawrence University to educate college students on the social, economic and environmental benefits of supporting locally raised and sustainable farm products. After the education effort, a petition was sent around to the students and alumni of the university requesting the food service company to make these products available on the school menu.

Antibiotic use in animal agriculture has caused widespread alarm within the medical and public health communities. Antibiotics depended on for the treatment of common human ailments are being rendered ineffective due in part to the misuse of drugs in livestock production. This public health disaster creates opportunities to form new partnerships — with health professionals, organizations and agencies — and engage new audiences in the animal agriculture issue.

# CONCLUSION

*“The people who believe that the industrialization of agriculture is an inevitable and largely positive process see efficiency gains, increases in choice, consistency of product quality and a more profitable farm economy for all actors who can remain in it as the consequences of a move toward industrialization. Critics believe that the benefits of industrialization are largely illusory; or that proponents are not employing a broad enough calculus to account for all the costs associated with an industrialized system. Critics ultimately see price increases for consumers, unsafe food, lower prices and less flexibility on the part of farmers, rural community deterioration and environmental degradation as the consequences of industrialization.”<sup>110</sup>*

In a discussion such as this – examining the potential areas in which we can manipulate the food market to achieve a desired result – we must remember the Goliath with whom we wish to fight. When fighting change within a global industry, we must clearly understand the limits of any campaign or negotiation or public education effort that we begin.

One of the most fundamental changes in the industrialization of agriculture is the shift of control and management of farming from individual farmers to corporations. As the food firms become globalized and cover greater geographic areas, they leave behind a growing number of smaller markets not profitable enough for the large firms to pursue.<sup>111</sup> Creation of new and/or alternative markets for independent farmers creates new economic opportunities. Farmers’ markets, organic farming and community-supported agriculture offer direct marketing opportunities between farmers and consumers. Direct marketing operations tend to be smaller, diversified and independently owned farms practicing sustainable farming. Direct marketing cuts out the middlemen, shifting the economic profits of farming directly to the farmer. Programs that educate producers on direct marketing allow farmers to adapt to industry changes and to circumvent the lose-lose outcome.

To appropriately address the agriculture pollution problem, we need to approach the issue from several different angles. A combination of strong regulatory standards, consistent enforcement efforts, financial incentives for stewardship, nourishment of market alternatives and corporate policing clearly affords the greatest opportunity of success. The question now becomes whether the environmental, sustainable agriculture and consumer interest groups will make a coordinated effort to achieve these goals.





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