

*Viva!*



# When Pigs Cry

**A Report on the USA Pig Industry**

by lauren Ornelas, Campaigns Director, *Viva! USA*  
and Juliet Gellatley, BSc Zoology, *Viva! President*

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## The Size and Type of Pig Industry in the USA

The world's meat consumption is 41% pigs, 29% birds, and 25% bovines. Between 1980 and 2000, the volume of pork consumed worldwide rose 73%.<sup>1</sup> Pig flesh is used for hams, bacon, hot dogs, sausage, and other pig products.

In the U.S., 98.1 million pigs were killed in 2000.<sup>2</sup> 101.5 million pigs were killed in 1999 and 101 million in 1998. 99.2 million are projected to be killed in 2001.<sup>3</sup>

While the pig industry has been growing, the number of pig farms is decreasing, resulting in more pigs being raised on fewer farms. Today there are about 98,500 pig farms compared to 3 million in the 1950s.<sup>4</sup> From 1997-2000, small farms continued to be replaced by farms with 50,000 or more pigs; some with more than 500,000.<sup>5</sup>

By the close of 1999, 105 farms with over 50,000 pigs accounted for 40% of the U.S. inventory.<sup>6</sup> Over 50% of pigs are on farms with 5,000 or more pigs, 72% are on farms with 2,000 or more pigs<sup>2</sup> and over 80% of pigs are raised on farms that produce 1000 or more pigs a year.<sup>4</sup>

Sow producers intend to have a June through August 2001 farrowing of 2.92 million.<sup>7</sup>

Economists estimate that 50% of pigs slaughtered in 1999 were produced or sold under some form of contract<sup>6</sup> with a company. Farmers under contract must adopt the company's preferred production protocol, which most often means industrial facilities.

The states that kill the most pigs are Iowa and North Carolina. The top two counties are Duplin and Sampson, both in North Carolina<sup>4</sup> where some of the Viva! investigations took place. In 1998, Duplin County had 48 pigs for every resident.<sup>8</sup> In 10 years, as of 1995, the number of pig farmers in North Carolina had dropped from 23,000 to 8,000 while pig production tripled.<sup>9</sup> About 90% of North Carolina pig farmers are contract farmers, and of those, well over half raise pigs for Smithfield Foods.<sup>10</sup>

According to an article in TIME, from 1990 to 1998 the Oklahoma pig population soared 761%, from 230,000 to 1.98 million.<sup>11</sup>

Rankings of the largest pig farms, according to number of sows, in the country by "Pork Powerhouses 2001" lists the top three as:<sup>12</sup>

- Smithfield Foods with 710,000 sows (headquarters in Smithfield, VA)
- Premium Standard Farms 211,000 sows (headquarters Kansas City, MO)
- Seaboard Farms 185,000 (headquarters in Shawnee Mission, KS)

The largest four pig companies are Smithfield Foods, Inc., ContiGroup (Continental Grain and Premium Standard Farms), Seaboard Corporation, and Prestage Farms. They accounted for nearly 20% of production.<sup>6</sup>

The U.S. is tied with Denmark as the world's second largest exporter of pig products. U.S. production accounts for about 10% of total world supply.<sup>4</sup> Exports for 2001 are expected to increase 3%.<sup>13</sup>

In 2000, Canada exported 4.36 million pigs to the U.S. to be fed and slaughtered.<sup>14</sup>

## About Pigs

Pigs are fun loving, sociable animals full of life. They belong to the non-ruminant section of the Artiodactyls (distantly related to the hippopotamuses).<sup>15, 16</sup> Wild pigs live in the forest and eat a wide variety of plants, and occasionally small animals and insects. Wild pigs are not native to North America. They originated from wild stocks still found in European, Asian, and North African forests. They were brought to North America in the 1500s.<sup>15</sup>

*Sus scrofa*, the Eurasian wild pig, is the ancestor of most domesticated and feral (domestic pigs gone wild) pigs. They are found on all continents except Antarctica and on many islands.

Wild and feral pigs have a social structure comprising of sows and her young. Wild pigs give birth (farrow) once a year and have a litter of about four to five piglets. At weaning, which naturally occurs at three months, two or three sows and their piglets will join together. There is often a matriarchal hierarchy which lasts until the breeding seasons. Old boars, who often live alone, then join the group, driving away the young boars and mating with the sows. Young boars live together during this time. Breeding females and adolescents usually reform a group after breeding.

Piglets are very fond of play. They chase one another, play-fight, are affectionate, tumble around, and generally enjoy themselves. They do not grow into normal pigs when deprived of play.

In factory farms, piglets cannot play. They live in crowded concrete or on plastic grading with nothing to do.

Pigs travel one to 9 miles in a night and over 38 square miles in six months.

When the government in the Netherlands required that sows be allowed more room, they found that the sows were active for 15 – 20% of their time. They noted that when sows have different areas to sleep, wait, drink and defecate, they keep these areas separate. According to an industry journal, "pigs have a natural instinct to keep their sleeping and feeding places clean."<sup>17</sup>

Pigs have poor eyesight but acute touch, taste and smell. They can smell a human up to a quarter of a mile away. Their snout is sensitive, tactile, and vital for rooting. So strong is the need to root that intensively confined pigs persist in nosing their concrete floors. Factory farmed pigs are given concentrated feed and spend a short time eating. They have no opportunity to root around and this is a serious cause of frustration and acute boredom in these intelligent animals.

Pigs' sweat glands are relatively ineffective in lowering their body temperature, so they seek relief from the heat by wallowing in mud or shallow waterholes.<sup>18</sup> Pigs, like elephants, roll in the mud to keep cool because mud provides evaporative cooling over a much longer time than water. Mud also stops sunburn which is dangerous to pigs. Mud also protects them from flies and parasites. Contrary to popular myth, pigs do not like to roll in dung or urine. When provided with a clean environment sheltered from the sun, they are meticulous.<sup>18</sup> On farms, they are forced to endure filthy conditions where the urine burns their skin and feces attracts flies and spreads disease.

In the wild, piglets choose their playmates and friends, but in an intensive unit they are not allowed this freedom.

#### Bright Sparks

Pigs are sensitive, emotional, and bright creatures with long memories. In tests of intelligence, pigs have proved to be among the smartest of domestic animals – even more intelligent than dogs.<sup>18</sup>

Scientists in the U.S. have proved that pigs can recall events that happened to them several years ago. Dr. Sarah Boysden, a zoologist at Ohio State University says: "Pigs have tremendous memory for training and events they have experienced."

#### Terms

In this report, certain terms are used that do not reflect the attitudes of the authors. However, to make the reading and writing of this report easier they have been used.

Examples of this include the area where piglets are placed when they are taken from their mothers –they are certainly not what we consider nurseries, but this is the terms used by the industry. The term *feeder/finisher* is what the pigs are called before slaughter – while they are 'fattened up.' These terms are used to give the reader an idea of the pig's age and size.

*Culling* is a euphemism for killing the animal before he/she reaches slaughter weight or age.

*Gilts* are female pigs who have not given birth.

*Sows* are female pigs who have given birth or are 12 months old.

*Barrows* are male pigs who have been castrated.

*Boars* are male pigs of breeding age.

## A Typical Pig Farm

From the outside these farms often look like shacks, piles of junk, and dilapidated buildings. The larger farms look like warehouses.

### Types of Operations

1. Feeder pig production (also known as a *farrowing farm*) - A breeding herd that produces feeder pigs for sale at about 40 lbs.
2. Feeder pig finishing - Where feeder pigs are fed until they reach slaughter weight.
3. Farrow-to-finish operations - These farms represent about three-fourths of all pig farms.<sup>19</sup> Pigs are kept in these systems their entire lives. They are separated into groups by age and moved through the different stages. One building will have the sows in gestation crates, another will have sows in farrowing crates, and another area will have feeder pigs. The groups are kept together from weaning until slaughter.
4. Purebred or seedstock operations – A breeding farm that sells female and male pigs for breeding.<sup>20</sup>

One of the main goals of these farms is to reduce labor costs, and they have been successful. For example, one farrowing farm in Sampson, North Carolina has eight employees and one manager to look over 2,000 sows and their babies. Some finishing farms, where the pigs are raised for slaughter, don't have any workers other than someone to check the equipment and for cleaning in between herds.<sup>9</sup>



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## Legal Status

### Federal Laws

Pigs, like other animals raised for food, are excluded from the federal Animal Welfare Act. There are no standards set by the U.S. government in terms of how animals are housed, fed, or treated on farms.

The federal Twenty-Eight Hour Law of 1877, intended to protect farmed animals during transport, was repealed and reenacted in an amended form in 1994. This law states that animals cannot be transported across state lines for more than 28 hours by "rail carrier, express carrier, or common carrier (except by air or water)" without being unloaded for at least five hours of rest, watering, and feeding.<sup>21</sup> There is some uncertainty if this law applies to trucks (21),<sup>21</sup> the main method of transport for farmed animals.

The slaughter of pigs is covered under the Humane Slaughter Act which requires that livestock slaughter "be carried out only by humane methods" to prevent "needless suffering."<sup>21</sup> The reality of this situation will be discussed in our slaughter section.

The guidelines of the Humane Slaughter Act do not cover state inspected or small, custom slaughterhouses. It also has exemptions for religious slaughter.<sup>21</sup>

Because of the low maximum penalties and lack of enforcement, federal animal welfare laws offer very little protection for the animals. Most of these laws are difficult to enforce, and are under the jurisdiction of agencies that are not knowledgeable about them and do not have the people power or interest to enforce them.

In the U.S., there are about 2,000 plants that slaughter cows, pigs, and other livestock.<sup>22</sup>

In the fall of 2001 the government hired more veterinarians and said that they would be creating a database to track violations.<sup>22</sup> Referring to this move, Arthur Hughes, president of the Northeast Council of Food Inspectors, remarked that instead of hiring more inspectors to reduce violations, "What they did instead was to hire a bunch of bureaucrats."<sup>22</sup>

### Local Laws

Thirty states have anti-cruelty statutes that, once again, exempt customary farming practices.<sup>21</sup> This means that any practice, no matter how horrific, is allowed if it is common. This includes tail docking and castration without anesthetic. It allows gestation and farrowing crates to exist legally.

Anti-cruelty statutes in the states that do not exempt such practices are rarely enforced regarding farmed animals and contain minimal penalties.

At the time of this writing, there is a state ballot initiative in Florida to ban the gestation crate.<sup>23</sup> If enough signatures are obtained, the measure will be placed on the ballot for local residents to vote on in November 2002.

In 1999, an investigation done by People for the Ethical Treatment of Animals led to the first ever felony cruelty charges against pig farmers for animal abuse. The investigations were done at a pig breeding farm in North Carolina. Excessive beatings, systematic cruelty, confinement and mutilations were videotaped. The charges were brought under the state's anti-cruelty law. The only charges that held were those that showed no economic reason for the abuse. The confinement and other things that

were deemed customary practices were acceptable. Though the perpetrators were charged with felonies, they were allowed to plead guilty only to misdemeanors.<sup>24</sup>

State cruelty statutes vary state by state and also by which animals they cover. Of the 30 states that exempt customary agricultural practices, 18 have amended their statutes in the last 10 years to "put agribusiness beyond the statute's reach."<sup>24</sup>

### Data on Pig Farming

#### Breeding Sows

Age at puberty	28 weeks (7 months)
Age when first bred	31.5 weeks (7.9 months)
In estrus for	3 weeks
Ovulates for	53 hours
Ovulates after giving birth	5 days after weaning
Type of cycle	Polyestrus all year
Gestation length	16.3 weeks
Fecundity	Gilts avg. 9 live born and Sows avg. 11 live born
Breeding life	2 litter/sow/yr, but 2.5 in modern systems with longer day lengths
Sows killed at 3-5 years	

#### Boars

Age at puberty	28 weeks (7 months)
Age when first bred	35 weeks (8.7 months)
Breeding life	Usually killed at 3-4 years
Sow/boar ratio	25 sows per boar is a 'practical' ratio during mating

Table from Lean.<sup>25</sup>

Among sows and gilts, 60 to 70% are vaccinated for leptospirosis, parvovirus, and erysipelas; 50% for E. coli scours; 33% for atrophic rhinitis; and more than 20% for transmissible gastroenteritis, C. perfringens infections, and pseudorabies. Eighty-five percent of sows and gilts are wormed and 72% are treated for mange and lice.<sup>19</sup> Laxative feeds or additives may be used to minimize constipation during pregnancy.<sup>26</sup>

### Breeding Sows

#### Overview

According to the *Swine Care Handbook (SCH)*<sup>26</sup> there are 3 mating options:

- 1) pen mating - placing a boar with a group of sows without observation of matings; one boar to 30 or fewer females
- 2) hand mating - attended matings with one boar and one sow in pen
- 3) artificial insemination

One study showed that nearly 50% of U.S. sow herds were bred from artificial insemination, it is expected to increase.<sup>27</sup>

The breeding sows are basically moved back and forth between two areas: gestation crates and farrowing crates. She will spend approximately 3 to 4 years of her adult life in these areas.

Approximately 80% of sows are in confinement.<sup>19</sup>

In a sixth month period, about 18% of U.S. sows will be killed. Of those, about 42% are killed because they have reached the typical age at which sows are no longer considered productive, and about 22% are killed because of failure to reproduce.<sup>28</sup> After years of living in confinement, the breeding sow's legs become weak. Up to one-third of breeding sows are culled because of lameness, joint problems, strained tendons, or infections of the toe, foot and leg. Some of these are caused by abrasions, knocks and sprains from poor housing, slatted concrete floors and inadequate housing.<sup>29</sup> During one investigation in 1999, farm workers were videotaped dragging and beating animals who were unable to walk.<sup>24</sup>

A 2000 United State Department of Agriculture (USDA) survey of 94% of the U.S. pig inventory found that 83.4% of sows were farrowed in total confinement facilities (i.e., completely indoors with no open windows).<sup>28</sup>

### **Pregnancy**

Sows in unconfined conditions were found to be walking and foraging at over 50% of daylight observations.<sup>30</sup> Unfortunately, most sows are intensively confined where they are kept in gestation crates while pregnant. Here they are unable to walk or turn around. Some of the larger sows barely fit in the crates. The crates are 24 inches wide, 7 feet long, and 40 inches high.<sup>31</sup> Four bars are needed over the top of the crates to prevent the animals from climbing out.<sup>31</sup> They are forced to live on a cold, bare, cement floor in their own excrement during their 4 month pregnancy.

Animals who would spend most of their day rooting for food are instead left hungry.<sup>6</sup> According to one study, the primary reason for food restriction is the prevention of reproductive problems and reduction of feed costs. This results in the pigs being very hungry (known as "high levels of feeding motivation" by the researchers). This hunger causes stereotypical (fixed and repetitive sequences of motor acts that have no apparent function<sup>32</sup>) behavior such as biting or chewing the bars of the stall and chewing without having anything in their mouths. They also manipulate drinkers and "perform apparent drinking."<sup>33</sup>

One study reports that "Gestation stalls have been associated with some indicators of chronic stress such as elevated levels of cortisol compared to those in group housing and a high incidence of stereotypies."<sup>34</sup> It concluded "Gilts housed in turn-around stalls utilized the greater freedom of movement afforded to them by turning frequently."<sup>34</sup>

They may also be tethered.<sup>26</sup> The harsh, exercise-restrictive conditions cause sows who are producing to be culled from leg and physical deformities.<sup>35</sup>

According to the European Commission's Scientific Veterinary Committee (SVC)<sup>36</sup> stalled and tethered sows have:

- Weakened bones from lack of exercise. Stall-housed sows have leg bones which are only two-thirds of the strength of those of group-housed sows.
- Higher risk of leg injuries and lameness.
- A reduction in the mass of some muscles which affect the sows ability to lie down.
- Cardiovascular problems due to lack of exercise leading to death during transport.
- Urinary infections associated low levels of activity which seem to be associated with infrequent drinking and therefore less frequent urination. In addition, it is thought that closely confined sows are more prone to urinary infections as a result of having to lie in their feces.

One study reported that when given a choice, gilts chose short-term confinement over long-term confinement.<sup>30</sup> Another study found that pigs who were allowed to exercise were more able to prevent themselves from falling than pigs who were not allowed to exercise.<sup>37</sup>

The gestation crate system allows maximum production efficiency while allowing people who are not highly educated on the care of pigs to work in this type of facility.<sup>38</sup> Sow stalls have been banned in the UK and Sweden. Finland and the Netherlands have bans that will come into affect by 2008. The rest of the European Union has banned sow stalls; this will be implemented by 2013.<sup>39,40</sup>

A veterinarian with the National Pork Producers' Council was recently quoted as saying, "science tells us that she [a sow] doesn't even know she can't turn around."<sup>41</sup>

### **Birth and Nursing**

Gestation is 111 to 115 days. Around the 110th day, just before a mother pig is to give birth, she is moved to a farrowing crate.<sup>20</sup> A 2000 USDA survey of 94% of the U.S. pig inventory found that 81.8% of sows were farrowed in total confinement facilities (i.e., completely indoors with no open windows).<sup>28</sup> As in gestation crates, farrowing crates do not allow the sow enough room to turn around. The sows can stand up and lie down only with difficulty. No straw, bedding or other soft materials are there. The piglets are given space just outside of the bars that surround the mother so that they can suckle when she lies down.

Industry spokespeople estimate that as many as 20% of breeding sows die prematurely from exhaustion and stress due to the impacts of restrictive confinement and accelerated breeding schedule.<sup>6,42</sup> Other sources say that sow mortality rates vary from 7%<sup>43</sup> to 15%.<sup>44</sup> All sources agree that the rates are increasing. Sows are being pushed to their biological limits.

Farmers keep the sows in farrowing crates to prevent them from crushing their piglets.<sup>20</sup> The Swine Care Handbook states that the area where the sow stays measures about 2 X 7 feet. Bars are used to keep the sows from her piglets.<sup>26</sup> The manure is kept below the crate.

Pregnancy should be a time of restless activity, of collecting sticks and leaves, or nest building. According to the Eurogroup for Animal Welfare, scientific research shows that sows show strong nest building instincts in the 24 hours before giving birth. Without a strand of straw for comfort in a farrowing crate, the sow's natural instincts are utterly frustrated. Such restriction results in elevated levels of ACTH, a hormone associated with stress.<sup>45</sup> Sows may repeat the same futile gestures over and over again -

building an imaginary nest with imaginary materials for piglets she will never be allowed to mother properly.

On average there are 10 piglets farrowed each litter, but some have three to four more piglets per litter.<sup>20</sup> Eleven percent of piglets die before weaning.<sup>28</sup> In the U.S., half of all piglet deaths are from being crushed by their mothers.<sup>46</sup>

### **Continuous Cycle**

Sows are in the farrowing crate for about 3 weeks. Then they are bred for 3 weeks, and then placed in the gestation crate for 14 weeks. The cycle then starts over.<sup>31</sup>

After her babies are weaned, the mothers are sent back to the gestation crate where after a few days, they are re-impregnated. In sixteen weeks they will be put back into the farrowing crate to have more babies.

Sows usually have six litters before they are slaughtered.<sup>47</sup>

### **Boars**

Boars are usually purchased 60 days before the breeding season.<sup>20</sup> They are typically housed in individual crates or pens.<sup>48</sup> This is done to limit aggressive interaction.<sup>26</sup> The size of their stalls are recommended to be 2 X 7 feet and 3.8 feet high.<sup>26</sup> Since their tusks are considered dangerous they are removed.<sup>20</sup> These males are kept confined and typically only removed for breeding purposes.

### **Piglets**

Piglets are born naked, with little hair, no fat, little liver glycogen reserves and poor disease immunity. It is essential that they be born into a warm, dry, clean environment away from the cold and with easy access to their mother's teats for colostrum. Colostrum provides immune globulins, which are proteins that are directly absorbed from the digestive tract into the blood prior to gut closure. They are also a gut stimulant and rich energy source.

Under natural circumstances, they would wean at about 15 weeks. On factory farms, piglets are weaned<sup>26</sup> from their mothers at two to four weeks, even though their immune and digestive systems are not fully formed. They are weaned onto solid food which they cannot digest properly. Medication is administered to prevent diarrhea. This early weaning causes psychological and social stress.<sup>49</sup>

After weaning, the piglets are placed in a 'nursery' for about 5 weeks<sup>31</sup> when they weigh about 40 lbs.<sup>20</sup> Their environment is usually a windowless shed. They have no bedding. Instead, beneath their feet is metal or plastic grating through which their feces can fall. The pen has no environmental enrichment and leaves the piglets with nothing to do. Aggressive behavior results. To prevent tail biting, these little piglets have their teeth cut and the ends of their tails cut off without anesthetic (see "Mutilations" below).

Sows' milk is deficient in iron so supplemental iron is given. This can be done through shots or orally. However, it is noted that piglets who are able to ingest soil may not need supplemental iron.<sup>26</sup>

Recent numbers indicate some of causes of preweaning deaths: 52% from being laid on by the mother, 17% from starvation, and 9% from scours (severe diarrhea).<sup>28</sup>

## Mutilations

**Castration:** Ninety percent of male piglets are castrated before weaning without anesthetic.<sup>19</sup> Guidelines are to perform the procedure quickly and that no suturing is needed.<sup>26</sup> Some sources state that castrating the piglets at a young age results in less stress. However, according to a study reported in *Applied Animal Behavior Science*, castration increased squealing and other behavioral changes in piglets less than 18 days old.<sup>50</sup>

**Ear notching:** Between the ages of one and three days old, piglets' ears are cut for identification purposes.<sup>20</sup>

**Tail docking:** This has become a common practice for raising confined pigs, and occurs in 80%.<sup>19</sup> With nothing else to do in their pens, pigs will sometimes nibble at each other's tails.<sup>20</sup> If blood is drawn it can lead to cannibalism.<sup>26</sup> For this reason, the last one-fourth to one-half of the tail is removed.<sup>20,26</sup>

**Teeth clipping:** The piglet's eight sharp needle teeth are cut within 24 hours after birth. Side-cutting pliers or toenail clippers have been recommended for use.<sup>20</sup>

Producers vaccinate piglets for some or all of the following diseases or microbes: erysipelas, atrophic rhinitis, *Pasteurella pneumonia*, *Haemophilus pleurpneumonia*, *Streptococcus* infections, *E. coli* scours, and *C. perfringens* infections. Forty-eight percent are treated for worms, 40% are treated for mange and lice, and 33 % are given antibiotic injections.<sup>19</sup>

## Hormones

The growth-promoting drug, Carbadox, is used by the pig industry to promote animal growth and prevent dysentery. It has been banned in the European Union. Health Canada has halted, and is trying to ban, the hormone in Canada because it is a well-documented carcinogen. There are concerns that it can cause cancer in farm workers and through residues in meat. The United States permits use of Carbadox, but requires a 45-day withdrawal period before the pigs are slaughtered.<sup>51</sup>

Researchers are developing a new injection procedure for an anti-inflammatory corticoid hormone, dexamethasone, which can increase a piglet's growth if injected within hours after birth. It can cause the piglets to grow 12% faster in their first 18 days of life. This hormone injection would bring pigs to market 5 days earlier.<sup>52,53</sup>

Paylean, or *ractopamine hydrochloride*, stimulates hormone receptors that cause a pig's metabolism to shift nutrients from fat to muscle growth. It is not a steroid or antibiotic, but rather a beta-agonist. "Increased use of the feed additive, Paylean, is also contributing to higher average weights," said Ron Plain, agricultural economist at the University of Missouri. Researchers have yet to find bad effects from feeding Paylean to pigs. The European Union considers it a growth hormone and does not allow use of the drug in pork exported to EU countries.<sup>54</sup>

## Fattening and Finishing

At about 8 weeks,<sup>31</sup> pigs are placed in fattening/finishing areas. Here they are fattened from 50 to 220-260 lbs., and referred to as *feeder pigs*. They are normally kept in pens of 15 to 40 pigs.<sup>26</sup>

Once again they are in sheds with concrete or slatted flooring.<sup>26</sup> Their living space does not resemble a natural environment. They will live here until they are killed at around 5.5 to 6 months old.<sup>28</sup> Researchers at the Institute of Agricultural and Environmental Engineering have stated that a lack of space can lead to increased aggression.<sup>55</sup>

At this life stage, they are not closely monitored. The feed comes in automatically on timer systems. Dead or dying pigs are seen scattered throughout the pens and some are thrown in the middle aisles where they cannot access food or water (See *Viva! Investigations*, below).

Rapid growth, hard flooring, and lack of exercise are conditions that appear to cause the development of leg weakness in pigs.<sup>56</sup>

Thirty to 70% of finishing pigs in some herds suffer from porcine respiratory disease complex, and 4-6% can die from this disease.<sup>6</sup> Most of these deaths are worked into the economics of pig farming. In 1997, it was estimated that 48 pigs an hour (420,000 market pigs a year) were dying on the premises at Seaboard Corporations' pig factories.<sup>11</sup>

## Nutrition and Feeding

The pig has one stomach and is similar to humans in anatomy and physiology.

Newly weaned pigs are usually fed diets consisting of grain, plant proteins, milk products, and animal protein.<sup>4</sup> Older pigs are fed corn, barley, milo (grain sorghum), oats, and wheat.<sup>4</sup>

Because 60 to 70% of the cost of production is from feed, farmers are using today's nutritional knowledge to maximize feed efficiency.<sup>20</sup> In fact, researchers are investigating ways of putting chicken feathers into pig feed.<sup>57</sup>

The consumer desire to eat animals that have less fat has caused welfare problems for pigs. Pigs who are bred to be leaner have been shown to have numerous problems. One report stated:<sup>58</sup>

*High lean swine have been reported to experience more leg problems due to a decrease in leg strength. In addition to this, these animals suffer from cardiovascular inadequacy during period of high metabolism. Behaviorally, selection for high lean gain has resulted in pigs with more excitable temperaments. This increased level of fear and anxiety results in more handling problems for producers and processors. High lean swine are reported to balk more and be more difficult to drive through races at slaughterhouse plants. In addition, high lean swine demonstrate an increased response to the stress of transportation, leading to more deaths on arrival...*

## Catastrophes

Animals on farms are subject to catastrophes. In October of 1999, Hurricane Floyd killed 2 million farmed animals.<sup>8</sup> On July 29, 2001, a fire at Circle Four Farms (owned by Smithfield) in Utah killed 12,000 pigs. More than half of the animals were less than a month old.<sup>59</sup>

## Transportation and Slaughter

The transportation of pigs adds another element of trauma to their stressful lives and another place for disease to run its course. After this, they meet their deaths in the slaughterhouse.

### Length of transport

Because transport is so stressful, pigs can lose up to 5% of their body-weight during a 4 hour move.<sup>26</sup> Most recent numbers indicate that the distance pigs are transported from plant to slaughterhouse is one to 49 miles for 40%, 50 to 99 miles for 24%, 100 to 199 miles for 22%, and 200 to 499 miles for 11%.<sup>60</sup> Piglets are transported long distances such as from North Carolina to the Midwest.<sup>61</sup> Studies are being done to determine the stress on the animals.

Most pigs are transported in eighteen wheelers, travel for hours without being able to move about freely, and are forced to endure extreme temperatures. As stated earlier, it is unclear if the federal animal welfare act covers animals who are transported in trucks.<sup>21</sup> In addition to this, federal law only applies to the interstate transport of animals, not those shipped within the state.<sup>21</sup> One state allows the animals to be transported by railroad for two days without food, water, or rest.<sup>21</sup> Vermont has the shortest hours that animals can be transported without food, water, and rest which is 18 hours.<sup>21</sup>

Problems observed include overloading or excessive use of electric prodders. In one study, 12% of truck drivers showed a serious problem.<sup>62</sup> In this same study, about 16% of sows unloaded from the trucks were found to be severely lame.<sup>62</sup> Some trucks are left filthy with excrement from other animals when a new group of pigs is loaded.<sup>62</sup> According to the SCH, injuries and bruises can result when pigs are "improperly managed" during handling and transport.<sup>26</sup>

Some pigs end up freezing to the sides and bottoms of the trucks.<sup>62,63</sup> Workers' responses are sometimes to tie a chain around them and jerk them from the truck, leaving their flesh sticking to the sides.<sup>63</sup>

Porcine Stress Syndrome (PSS) is brought on by transport, handling, exercise, or excitement.<sup>64</sup> In PSS, pigs arriving at slaughterhouses have muscle tremors of the tail, back, and legs. The tremors progress to rigor and the pigs are unable to move.<sup>64</sup> Death with rigor mortis develops within minutes.<sup>64</sup>

The USDA's Food Safety and Inspection Service (FSIS) conducts inspections at federally approved slaughterhouses. The condemned flesh is recorded in the Animal Disposition Reporting System (ADRS). According to the latest information from these reports, 263,487 barrows and gilts, 3,798 stags and boars, and 9,678 sows arrived at the slaughterhouses dead, for a total of 276,963.<sup>65</sup> In addition to this, 1,493 pigs were dying.<sup>65,66</sup>

At one plant, a particular line of commercially available hybrid pigs constituted 10% of the pigs received each day. Of those, 90% were dead on arrival or died in the yards.<sup>67</sup>



## Slaughter

Video footage of pigs on the way into slaughterhouses shows them responding in fear to the screams of other pigs they hear. They often see others being killed right in front of them.

Pigs are first taken to the stunning chutes and areas where they will be electrically shocked with a "stunner." Stunning is intended to make the pigs unconscious. However, because stunning at high voltages may result in the bursting of capillaries which makes the flesh unappealing to consumers, the voltage is sometimes kept too low. Insufficient current can cause an animal to be paralyzed without losing sensibility.<sup>62</sup> If a pig is improperly stunned, he or she could be fully conscious during some of the stages of dismemberment.

In 1996, a USDA survey showed that the stunning procedures in 36% of pigs and sheep were rated as "unacceptable" or "a serious problem."<sup>68</sup>

A study was recently done to determine why some lamb and pig slaughterhouses have difficulty with electrical stunning. One of the main concerns was pigs who show signs of sensitivity such as blinking. One reason found is that the operators become fatigued after about two hours and have difficulty placing the electric wand on the animal correctly.<sup>69</sup> The Washington Post reported that at the Farmer's Livestock Cooperative processing plant in Hawaii, records from 1997 and 1998 described that after being stunned as many as four times, pigs were still walking and squealing.<sup>70</sup>

After the "stunning," the pigs are then *stuck*, a procedure in which a worker cuts the pig's throat and the blood is drained. The pig is then shackled by their hind leg with a chain and hung upside down. According to FSIS, on small farms the pigs are shackled before being stuck.<sup>71</sup>

According to FSIS, "Death is to occur by thorough bleeding of the animal. While there is no time requirement, animals usually remain on the bleeding rail-no less than 5 minutes to assure complete bleeding and death."<sup>71</sup> From here the pigs are taken to the scalding area to loosen the hair on the pigs.

Production lines move so quickly that many pigs are not given enough time to bleed-out and the animals remain alive. One ex-slaughterhouse worker stated, "When the hogs came through the stick pit, their whole heads might be hanging in the blood. If the line was running, the hogs didn't stay submerged for long, but if the chain stopped, they were stuck in the blood. I can remember conscious hogs blowing bubbles in the blood collection tank – it was just sickening."<sup>63</sup>

Secret videotape shows animals being boiled alive. One worker states, "These hogs get up to the scalding tank, hit the water, and just start screaming and kicking... There's a rotating arm that pushes them under, no chance for them to get out. I'm not sure if they burn to death before they drown, but it takes them a couple of minutes to stop thrashing."<sup>63</sup> He said that the water is 140 degrees.<sup>72</sup>

A USDA Swine Inspection Module addresses the issue of pigs being boiled alive. It says, "A hog that is scalded alive dies from asphyxia and will frequently have a scarlet red appearance and have organs that are engorged with blood."<sup>71</sup>

One recommended way to improve meat quality is not to feed the pigs 12 to 24 hours before they are slaughtered. It was also recommended to help the pigs go through the

slaughter process that the pigs be raised on concrete floors so they are used to it during slaughter and do not slip easily.<sup>67</sup> This is a no-win situation for the pig – slipping on slaughterhouse floors is frightening and being raised on concrete floors is inhumane.

### **Humane Slaughter Act Enforcement**

In the U.S., there are about 2,000 plants that slaughter cows, pigs, and other livestock.<sup>73</sup> The USDA has inspectors at slaughterhouses who are supposed to ensure the slaughterhouse is complying with the Humane Slaughter Act (HSA). According to the Washington Post, “under the new inspection system, the USDA has stopped tracking the number of violations and dropped all mentions of humane slaughter from its list of rotating task for inspectors.”<sup>70</sup>

Arthur Hughes, a spokesman for the National Joint Council of Food Inspection Locals, said that the Humane Slaughter Act is not a priority and that the training for new inspectors is so lax that many don't even know the law exists.<sup>74</sup> Hughes says that new federal regulations gives slaughterhouses more responsibility over plant operations and has left inspectors without the ability to enforce the law. He adds that, “drastic increases in production speeds, lack of support from supervisors in plants, new inspection policies which significantly reduce our enforcement authority, and little or no access to the areas of the plants where animals are killed, have significantly hampered our ability to ensure compliance with humane regulations.”<sup>75</sup>

A Washington Post computer analysis of government enforcement records “found 527 violations of humane-handling regulations from 1996 to 1997, the last years for which complete records were available. The offenses range from overcrowded stockyards to incidents in which animals were cut, skinned or scalded.”<sup>70</sup>

Gail Eisnitz, author of *Slaughterhouse*, described one slaughter plant in California:

It was a plant where squealing hogs were dangling by one leg when workers left the stick pit for their half-hour lunch breaks; where stunners were shocking three and four times; where inadequately stunned hogs were jumping from the shackling table into the blood pit below, smashing into metal pipes on the trip down and fracturing legs and backs; where, whether broken or not, thousands of squealing hogs were immersed in the plant's scaling tank alive.<sup>63</sup>

When you compare the antemortem inspection report to the postmortem there are only 145 injured pigs reported. However, at the postmortem inspection for the same year this number jumps to 6,731. This means that 6,614 were apparently injured during slaughter. When asked about this, the FSIS Freedom of Information Office referred Viva!'s investigator to their Public Affairs Office. They could only tell us that injuries, by definition, were bruises, blood and fractures.<sup>76</sup>

In the ADRS, pigs who are boiled alive are listed under *General Miscellaneous*. The 1998 report lists a total of 7,346 pigs in this category.<sup>65</sup> FSIS was unable to tell us how many pigs of those 7,346 pigs were boiled alive.<sup>76</sup>

The National Joint Council of Food Inspection Locals has joined animal rights groups in petitioning the USDA to make the Humane Slaughter Act a priority so that animals are no longer being butchered alive.<sup>77</sup>

**Size of Slaughterhouses**

The world's largest slaughterhouse is owned by Smithfield Foods in Tar Heel, North Carolina. It kills 32,000 pigs a day.<sup>78</sup> An IBP slaughterhouse in Columbus Junction Iowa, kills 12,000 pigs a day.<sup>78</sup> The Seaboard slaughterhouse in Guymon, Oklahoma kills 16,000 animal a day.<sup>78</sup>

**Slaughterhouse Workers**

Slaughterhouse workers are poor, often illiterate, and often unable to speak English. They are treated almost as callously as the animals who die in the plants. Slaughterhouses may be the worst workplace in America. The pay is poor, turnover is high, and injuries and illnesses are frequent and often severe.<sup>79</sup> Turnover rate at all processing plants runs close to 100% per year.<sup>11</sup>

For example, in 1995, a Carolina Food processing plant employed 2,000 people who were paid \$5.75 an hour.<sup>80</sup> Another plant in North Carolina reports that half the workers are immigrants from Latin American. Others are from a local jail where they bus inmates in to work at the plant because of the high turnover rate.<sup>9</sup>

Smithfield, the world's largest integrated producer and packer of pig flesh, was found to have "egregious and pervasive" federal labor law violations during two unionizing campaigns at the Tar heel slaughterhouse in NC in the 1990s.<sup>81</sup> On December 15, 2000, an administrative judge laid down a decision that Smithfield had conspired with the local sheriff's office to "physically intimidate and assault union supporters, held meetings to intimidate and threaten workers for supporting the union, and illegally fired workers during union organizing campaigns."<sup>81</sup>

## **Viva! Investigations**

### **February, 2001 Southern Georgia**

On two farms, Viva! found:

- Rows and rows of crates; most filled, some empty.
- Fly infestation with dozens of flies on the babies and flying around the mother pigs.
- Signs on the walls showing the numbers of pigs alive or dead in each litter.
- Sows only able to lie on their sides or sit up. There were bars over the heads of the sows. There were also bars in front of the sows preventing them from getting too close to their piglets.
- Plastic grading was underneath the piglets and it was metal under the sows. There was no straw or other bedding available.
- Piglets could run underneath their mothers and it appeared that if she could not see them, she would sit or lay on them.
- Sounds of urine pouring underneath the crates onto the floor below. Excrement was visible.
- Water for sows provided only from pipes.
- Constant banging.
- Notches in the sows' ears.
- Sows only able to lie down on their stomachs, sit down or stand up.
- Sows who stood with difficulty.
- Sows with manure caked on their faces and bodies.
- Slatted floors in which excrement could not easily slip through the cracks, resulting in the pigs being forced to lie on or next to the excrement.
- Marks on their faces, possibly from banging on the bars.
- Sows who appeared too large for the crates. Those who did not have a cellmate next to them tried to lie on their sides and their feet poked out into the empty cell next to them.
- Sows biting and licking the bars. Most looked bored and miserable.
- Sows with fluid coming out of their eyes.
- Sows pushing at the gates with force.
- Boars caked with manure and biting on the bars.
- Partially enclosed shed so the animals were exposed to the elements.
- Urine and excrement washed into a lagoon, not too far from the pigs.
- Overpowering smell.
- Pigs so large for the crates that their tails and backends were marked and most had an area where you could tell they were sitting in their own excrement.
- One mother pig seemed exhausted. She rested her leg on one of the bars while her piglets nursed.
- Feeder pigs living on concrete, left only to sleep and lay in their own excrement.
- The floors were covered in excrement, oozing out of the sides of the bars.
- The pigs had dirty faces and all. Most tried to nuzzle their way to the bars so they could bite on them.
- A pig who had a protrusion about the size of a grapefruit bulging underneath his stomach.
- A pig with an ear missing.
- A small pig lying dead while others licked his legs.
- Many of the pigs were coughing.
- Pigs with tails docked.

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**May, 2001 North Carolina**

Investigations in North Carolina took place in Bladen, Duplin and Sampson counties.

**Farm 1**

Twelve to 20 pigs housed in small sections inside sheds with slatted flooring. Tails were only stubs. Pigs bit on very large bars that enclosed them.

**Farm 2**

Pigs on part concrete and part slatted flooring. The floors were covered in both caked and wet manure. The pigs hopped around restlessly. Some of the pigs seemed to have a hard time getting up. Charts on the wall listed the numbers of pigs that had died each day. Their bodies were covered in manure. The manure caked on the pigs made it hard for them to move around. They slipped on the floor. The smell was intense. You could hear pigs wheezing.

- One pig with a large black growth on his stomach was standing, but would not move. Eventually he began to kneel down (a nearby pig pushed at his ear) eventually he fell over on his side, breathed heavily for a while and then died.
- In another area there was a dead and bloated pig. The nearby pigs licked him constantly.
- One pig who was lying near the watering area seemed only to be able to wiggle away when other pigs came near him.

**Farm 3**

This farm was not set up like the rest of the pig farms. You could hear the pigs inside but could not see them. The pigs did not seem to have access to outdoor light or air.

**Farm 4**

The next farm had 8 rows of sheds. Peering into one of the sheds from the outside a pig with a huge growth was visible. Manure literally oozed from the sides of the sheds. Again, the smell here was overpowering, even on the outside.

- In one of the alleyways between rows, you could see what looked like two dead pigs. One was the bloated, rotting corpse of a pig who had obviously been there quite a long time.
- The other pig (who at first looked like a plastic bag at the end of the alleyway) was still alive. He could not reach any food or water. He just laid there pushing his nose into the area where the rest of the pigs were.
- In one of the sectioned-off areas, the pigs were so strong and their seeming desire to get out so great that they literally were pushing an entire side of the bars together. The noise and force with which there were pushing the bars was jolting.
- Another pig had an injured foot. He limped as he walked. He struggled to lie down by carefully placing his weight on his front legs before lying fully down.
- There was an emaciated pig so thin that his ribs protruded. There was a large growth on his stomach.

## Nursery in North Carolina

The last farm visited was what the industry would term a nursery. This housed dozens of young piglets in small, enclosed areas, bars holding them in. The smell was incredible and flies were everywhere. It was difficult to stay inside. Dead piglets were in the alleys. Almost everywhere you looked you could see dead piglets - one with his paws reaching into one of the areas where the other piglets were kept. Flies crawled on the dead and living piglets, on the walls, - everywhere. The piglets were housed on grated flooring, with no straw and nothing to do. Sick piglets could be seen on the floors. Nudged by their companions they just grunted when pushed. Manure oozed from the building.

### **A Veterinarian's Perspective**

A veterinarian had the following to say about Viva!'s video footage.

July 25, 2001

I have reviewed your hog farm tape from winter and spring 2001 labeled "raw footage, and I will provide my comments forthwith. Please be aware that it is very difficult to accurately diagnose a disease or determine a cause of death without physically examining an animal; therefore, my comments may be inaccurate. I have done my best as both a mixed animal veterinarian and a doctor of animal behavior to interpret what I have observed on your videotape footage.

In the farrowing pens at the beginning of the tape, some stereotype behavior commonly seen in situations of extreme confinement can be observed, such as bar chewing. Most behavior experts, myself included, would consider this to be an exhibition of barrier frustration caused by the stress of confinement in quarters far too restrictive.

In the pens where hogs from weaning weight to market weight were confined, sanitation appeared to be a serious problem. Urine, feces, and flies were visible throughout the pens and on the hogs. Many hogs had visible abscesses on abdomens and limbs, which improved sanitation and separation from savaging pen-mates would prevent.

Some hogs were dead and decomposing; others were very weak, recumbent and appeared to be dying. A few were markedly underweight and some were coughing, which may be indicative of severe respiratory disease (i.e.: pneumonia). Seriously ill or dying animals should have been removed from the healthy population in a timely manner to help prevent the spread of disease among healthy animals as well as to facilitate their own recoveries.

Brenda Forsythe, MS, PhD, DVM

## Cesspools

Pig farms with 100,000 animals produce the waste of a city of a quarter-million people, but have no wastewater treatment system.<sup>82</sup> At a single site in Missouri, one pig factory produces fecal waste equivalent to that of a city of 360,000.<sup>6</sup>

There are wastes in addition to manure. According to one industry journal, "a 5000 sow farrow-to-finish farming system with a mortality of 7%, 10%, 5%, 1% and 1% in the sow, neonatal, nursery, growing, and finishing herd, respectively, will produce in one year over 200,000 pounds of dead pigs."<sup>83</sup>

In October of 1999, Hurricane Floyd swept through North Carolina. Spreading with the rain was feces and urine, mostly from giant pig farms.<sup>8</sup> The storm killed more than two million turkeys, chickens, pigs and other farmed animals.<sup>8</sup> Images of bloated pigs and turkey carcasses filled television screens. The storm destroyed more than \$1 billion in crops and compromised the drinking water of a portion of the state, with more than 50 lagoons flooding.<sup>82</sup>

With these images, there was no more hiding the huge environmental problem created by pig farms. According to some, Hurricane Floyd brought public attention to the problems of factory farming.

One of the main issues is the lagoons typically used by pig farms. Most are as big as football fields. The definition of *lagoon* is 'a vessel, usually open air and in the ground, that provides storage and limited treatment of animal by-product and associated water that has been flushed out of pig farms.'<sup>84</sup>

After Hurricane Floyd, one inspector reported that of the 310 private wells checked for contamination, 9%, three times the average across eastern North Carolina, had fecal coliform bacteria.<sup>8</sup>

In 1998, an Environmental Protection Agency (EPA) water quality report to Congress cited agriculture as the leading source of pollution in 70% of impaired river miles.<sup>82</sup> The Department of Environment and Natural Resources in North Carolina found 41 cases in which pollution from pig farms reached creeks, lakes, or rivers in 2000. They identified 285 cases in which pig lagoons were too full and in danger of spilling, and 338 cases in which pig farmers had sprayed too much pig waste onto crops as fertilizer.<sup>85</sup> Over a billion fish were killed due to a pig waste spill into the Neuse River in North Carolina in June of 1995.<sup>86</sup>

Anaerobic decomposition of liquefied pig manure in under-barn storage pits open outdoor lagoons produces nearby 400 volatile organic compounds; the most abundant being methane, hydrogen sulfide, ammonia and carbon dioxide.<sup>6</sup> According to the N.C. Division of Air Quality, pig farms discharge at least 186 tons of ammonia in to the air every day. Much of this returns to the ground by way of rain and wind.<sup>87</sup> A 2000 USDA survey of 94% of the U.S. pig inventory found that 62.1 facilities did not test groundwater for nitrates or bacteria, and 92.5% did not test air quality for pollutants such as ammonia or hydrogen sulfide.<sup>29</sup>

The Swine Farrowing Handbook (1992) suggests "As much as possible, isolate the dust, noise and odor of the operation from both the family living center and neighboring homes".<sup>88</sup> Tim Burcham of Mississippi State University says that raw pig manure scores a 6 or 7 on odor intensity, with 8 being unbearably strong.<sup>89</sup> Unfortunately for the pigs, they can't escape the dust, noise, and odor. Cases have occurred where all the pigs in a

building have suffocated when the ventilation systems failed.<sup>6</sup> Carbon monoxide has caused sows to abort and have stillbirths.<sup>6</sup>

### **The Smell of Greed**

A recent article in National Hog Farmer reported that in U.S., 44 of the 50 states have regulations that deal directly or indirectly with odors from factory farms. Only 15 states require that owners and operators of farms have training to apply manure.<sup>90</sup>

Smithfield Foods, the largest operation in the country, was fined \$12.6 million by the EPA for sewage discharges and other violations.<sup>91</sup> In 1999 gross profits for Smithfield were \$540 million.<sup>92</sup>

In the fall of 2001, IBP (the world's largest 'meat' packer) settled with the EPA for \$4.1 million in penalties for violating the nation's environmental laws including the Clean Air Act, Clean Water Act, Emergency Planning & Community Right-to-Know Act (EPCRA), and the Resource Conservation & Recovery Act.<sup>93,94</sup> Bush administration sources say the settlement between the EPA and IBP will set the standard for future enforcement efforts against agribusiness that maintain animal waste lagoons.<sup>94</sup> This was the first time the EPA had ever obtained civil penalties under the Clean Air Act or EPCRA for air emissions from the waste lagoons. (In September of 2001, IBP was purchased by Tyson Foods, Inc.<sup>95</sup> Tyson kills 45 million birds a week.<sup>96</sup>

The information below reflects the current situations in different states regarding different farms and slaughterhouses at the time of the writing of this report.

#### Arkansas

A farm owned by Tyson Foods in Benton County, Arkansas with 30,000 sows and young pigs was under investigation for three violations dealing with improper dumping of pig waste. A former employee, who quit because of his concern with what was going on, videotaped the dumping. According to a district field investigator, inspections are carried out once every three years unless there is a complaint.<sup>97</sup>

#### Colorado

In 1996, residents of Prowers County discovered dozens of dead pigs lying on the ground outside of Seaboard Farms facility.<sup>98</sup>

During the summer of 1998 more than 90,000 signatures of registered voters in Colorado were collected to put an initiative on the November ballot.<sup>99</sup> The initiative would:

- *Prevent hog farms from dumping more waste on the ground than could be absorbed naturally by crops.*
- *Require hog farms to monitor water wells and conduct soil testing to be sure no contamination is occurring.*
- *Require that the hog farms, instead of taxpayers, pay to clean up waste-spills.*
- *Require hog farms to cover lagoons to minimize the severe odors by these operations.*
- *Require that hog factories be set back from water wells, bodies of water, and adjoining property boundaries.<sup>100</sup>*

Colorado voters passed the initiative.



### Indiana

Pohlmann Hog Farms near Crawfordsville has a history of manure spills and state fines. Pohlmann continued to violate the law on July 2, 2001 by disposing animal waste into the Little Sugar Creek killing 5,700 fish.<sup>101</sup>

### Iowa

Excel Corporation (owned by Cargill) in Ottumwa, Iowa, has been in the news. According to a report by the Sierra Club, "Despite many documented permit violations for exceeding standards set forth in its operating permit, Excel's plant has received only two Notices of Violation from Iowa's regulators. The plant has experienced several spills, totaling more than a half-million gallons, involving either blood, grease, animal remains sludge or diesel fuel, as well as airborne discharge of caustic anhydrous ammonia which resulted in an evacuation. To date, Excel has apparently paid no fines for pollution at the Ottumwa slaughterhouse."<sup>78</sup>

An IBP slaughterhouse in Columbus Junction, Iowa has had several spills and has not received a notice of violation from Iowa regulators according to the Sierra Club. "Airborne discharges of caustic anhydrous ammonia and chlorine resulted in at least one evacuation and one worker injury. The plant owner was also fined for land-applying animal remains sludge too close to freshwater wells." To date, this plant has paid \$5,500 for environmental violations.<sup>78</sup>

An IBP pig slaughterhouse in Storm Lake, Iowa has had several spills with blood, grease, animal remains sludge, or slaughterhouse wastewater and have never paid any fines.<sup>78</sup>

A clogged pipe at a Lawler, Iowa pig farm resulted in a 5,000 gallon manure spill killing 33,000 fish.<sup>102</sup>

### Minnesota

In Renville County, a giant hog farming cooperative, ValAdCo, violated air quality rules 158 times in 2000 and 122 times in May of 2001.<sup>103</sup>

### New York

In Yates County, two farms with about 1,000 pigs each produce a million gallons of manure. Due to the small size of the farms, they are exempt from state and federal regulations.<sup>104</sup>

### North Carolina

Farms were fined for environmental violations. One of which included twice finding hog waste leaking from one of the barns into a tributary of the Northeast Cape Fear River.<sup>105</sup>

In its first year and a half of operations, the Carolina Food Processing Plant (a slaughterhouse) exceeded its discharge limits for fecal coliform bacteria, ammonia nitrogen, or some other contaminant virtually every month.<sup>80</sup>

Smithfield's slaughterhouse in Tar Heel, North Carolina, which kills 32,000 pigs a day, discharges 3 million gallons of treated wastewater per day to the Cape Fear River.<sup>78</sup> According to the Sierra Club, "between January 1993 and October 1997, state regulators documented at least 120 violations of pollution set forth in the plant's operating permit." Officials have issued at least 34 Notices of Violation for permit violations or for spills and discharges involving either animal waste, blood and grease, airborne blood, animal remains sludge, or caustic substances. "To date, Smithfield has paid approximately \$54,452 in fines for the environmental violations at this plant."<sup>78</sup>

Oklahoma

In 1998, legislation was passed to tighten regulations on industrial pig farms.<sup>84</sup>

Honor Roberts Ranch, one of the largest hog farms in Oklahoma was fined for violations of state regulations including having more pigs than the state allowed and several waste discharges. Some of the violations included a failure to report suspected leaks from hog waste lagoons, and unauthorized spreading of hog waste on the land. In November of 2001, they were fined \$380,000 by the state agricultural department.<sup>106,107</sup>

On March 13, 2001 a Seaboard pig slaughterhouse in Guymon, OK had a blood and grease spill of about 100,000 gallons due to a plugged wasteline.<sup>78</sup> To date, they have paid no fines for pollution, in which about 10,000 gallons left the plant property.<sup>78</sup>

In June of 2001, the EPA ordered Seaboard Farms to provide four families in Kingfisher County with 100 gallons of bottled drinking water because the nitrate levels in wells near the company's nearby hog farms tested high.<sup>108</sup>

South Dakota

John Morrell & Company (operators of a pig slaughterhouse in Sioux Falls) paid fines and penalties of \$3 million for criminal violations of the Clean Water Act. They admitted to violating the Act more than 130 times during a 17-month period between August 1991 and December 1992.<sup>78</sup>

Virginia

A small smokehouse that processed ham, was fined \$1,800 for allowing greasy water to overflow into a nearby creek, which is a tributary to a river.<sup>91</sup>

...And the stories keep coming across the newswire. On October 20, 2001, the Ottawa Citizen reported that manure equal to the sewage from more than 100 million people is pouring into the groundwater from Ontario and Quebec pig farms. Scientists from the U.S. and Canada have gathered there to try to fight this recurring problem that never seems to end.<sup>109</sup>

**Corporate Welfare**

While corporations are violating federal and state environmental and worker laws, the U.S. government continues to do business with them. See below how the government is paying to pollute our planet.

Excel Corporation earned \$19.25 million through the sale of 16.2 million pounds of pig flesh to the U.S. government between 1996 and 2000, including \$2.4 million and 3.2 million pounds in sales from its Ottumwa plant.<sup>78</sup>

IBP earned \$63.1 million through the sale of 60.6 million pounds of cow and pig flesh to the U.S. government between 1996 and 2000, including buying from some of the polluters listed above.<sup>110</sup>

Seaboard Farms earned \$3.1 million through the sale of 3.9 million pounds of pig flesh to the U.S. Government between 1996 and 2000 from the Guymon, Oklahoma plant.<sup>78</sup>

Smithfield Packing Company earned \$9.5 million through the sale of 12 million pounds of pig flesh to the U.S. government between 1996 and 2000 from the Tar Heel plant in North Carolina.<sup>78</sup>

In the Spring of 2001, the National Pork Producers' Council testified before the House Agricultural Committee to ask for \$10 billion in government aid for farmed animal producers to comply with environmental regulations to protect air and water quality.<sup>111</sup>

In June of 1999, the Secretary of Agriculture released \$125 million for direct assistance to pig farmers who were affected by low prices.<sup>112</sup>

Farms of 2,500 or fewer pigs qualify for government assistance for projects to manage waste. As of August 2001, legislation was pending in the Senate to provide subsidies for all pig farms, regardless of their size.<sup>10</sup>

Seaboard Corporation, with an annual revenue of \$1.8 billion in 1998, has received numerous handouts from the government.<sup>11</sup> They received a loan from city of Albert Lea, MN to buy an existing plant and reduce sewage charges with a value of \$3.3 million. The Federal Government contributed \$25.5 million.<sup>11</sup> Eventually, employees in Albert Lea unionized and Seaboard abandoned the plant. They went to Guyman, OK where they got revenue bonds for a pig processing operation and to construct sewage treatment facilities from the Oklahoma Development Finance Authority with a value of \$30 million. The City of Guyman, OK also gave them a grant to help build a pig processing plant with a value of \$8 million; Guyman increased the sales tax to pay for it.<sup>11</sup>

### **Lawsuits**

The Water Keeper Alliance filed suit against pig farms in the U.S. asserting that these farms routinely violate the federal and state environmental laws by discharging pig waste into the nation's waterways.<sup>112</sup> A statement by Robert F. Kennedy, Jr. of Water Keeper Alliance<sup>113</sup>:

*We are taking the unprecedented step of launching national litigation against the factory hog industry. These are not businessmen making a buck. They are outlaws and bullies who have destroyed thousands of miles of public waterways and aquifers, shattered the lives of tens of thousands of rural Americans and treated millions of animals with unspeakable and unnecessary cruelty. They have used hefty contributions and political clout to insulate themselves from prosecution for their crimes. Now they ought to know that the marshal has come to Dodge.*

There is concern the companies might move these farms to Mexico where there are weak environmental laws. Smithfield Farms is expanding to Mexico, and is considering Canada, Brazil, and Poland.<sup>114</sup>

However, if there is no demand, they will have no reason to do this!

### **Bans**

Minnesota has a ban against corporate pig farms.<sup>11</sup>

### **Moratoriums**

North Carolina has a moratorium on the creation of more pig farms. The moratorium in North Carolina which began on January 1, 1997 ends on September 1, 2003.<sup>115</sup>

Possibly in response to a proposal by Smithfield Farms (who already has 30 farms with 5,000 pigs each) to have 32,000 pigs on two farms, a moratorium on new permits was

imposed by South Carolina until their environmental regulators could consider the permits.<sup>116</sup> The ban ended on August 9 after new regulations were created.<sup>117</sup>

A county in Iowa is trying to pass an ordinance that would define air and water pollution limits and regulate worker safety at large pig farms.<sup>118</sup>

### **Loopholes**

A law passed in Illinois was designed to protect communities from large-scale pig farms. Pitchco Inc. has found a way around such laws by spacing its barns of 2,000 pigs each one-half mile from each other in order to avoid the regulations governing farms of more than 2,500 pigs.<sup>119</sup>

### **Environmental Racism**

In North Carolina, large pig farms are 7 times as likely to be in very poor areas versus higher income areas. The excess of pig farms is greatest in areas with both high poverty and a high percentage of non-whites. Farms run by corporations are more concentrated in poor and non-white areas than those run by independent farms.<sup>120</sup>

In addition to this, a study was also done on the health problems experienced by people living near these farms in North Carolina. The results showed that residents living near large pig farms had increased occurrences of headaches, runny nose, sore throat, excessive coughing, diarrhea, and burning eyes. People exposed to odors from intensive operations experience more tension, depression, anger, fatigue, and confusion than unexposed people.<sup>121</sup>

Over half of the people living near large pig farms reported that they were not able to open windows or go outside, even in nice weather, at least 12 times in the previous 6 months because of the fumes.<sup>121</sup>

### **Drugs**

As can be seen above, intensive farms make an ideal breeding ground for disease.

Antibiotics are used in farmed animals for three reasons: to promote growth (subtherapeutic; put in feed and water), to treat disease (therapeutic), and to prevent disease (prophylactic). Over 40% of the 50 million pounds of antibiotics in the U.S. are used in animals.<sup>122</sup> Of this more, than 80% by weight is used subtherapeutically for growth promotion.<sup>122</sup> In the U.S., 60 to 80% of all cows, sheep, pigs, chickens, and turkeys will be given antibiotics at some point.<sup>123</sup>

Twenty-one antibiotics are approved for use in the pig industry.<sup>124</sup> According to a report done by the National Academy of Sciences, approximately 90% of pigs will receive diets containing antibiotic drugs during some part of their lives.<sup>125</sup> Antibiotic drugs are used in about 90% of starter feeds, 75% of grower feeds, over 50% of finisher feeds, and at least 20% of sow feeds.<sup>19</sup>

About 30 antibiotics, such as tetracycline, penicillin, and streptomycin are approved by the FDA for use in both farmed animals and humans.<sup>123</sup>

Seven out of 11 antibiotic growth promoters that were banned in the European Union, such as tylosin phosphate and virginiamycin, are still used in the U.S.

### Antibiotic Resistance

In a World Health Organization press release,<sup>126</sup> David Heyman, Executive Director of the World Health Organization's communicable disease program, states:

The world may only have a decade or two to make optimal use of many of the medicines presently available to stop infectious diseases. We are literally in a race against time to bring levels of infectious disease down worldwide, before the disease wears the drugs down first.

The release went on to say:

Similarly, overuse of antimicrobials in food production in wealthy countries is also contributing to increased drug resistance. Currently, 50% of all antibiotic production is used to treat sick animals, promote livestock and poultry growth, or rid cultivated foods of destructive organisms.

For many years, there have been concerns that feeding farmed animals antibiotics could lead to the development of antibiotic resistant bacteria. This could be a major human health hazard if humans are infected with such bacteria through eating animal products. For example, about 1.4 million cases of salmonella infection occur each year in the U.S. Most salmonella infections are a result of contaminated poultry, beef, pork, eggs, and milk. Normally, the infection is localized in the digestive tract and resolves within five to seven days. However, in 3-10% percent of the cases reported, the infection spreads to the blood stream. Such cases can be deadly if not treated with effective antibiotics.<sup>127</sup>

In recent years, there have been numerous reports that have caused alarm:

- Antibiotic-resistant bacteria were detected in waste lagoons and groundwater near two pig farms.<sup>128</sup>
- *Salmonella typhimurium* DT104, an antibiotic-resistant bacteria, has been detected in a wide range of farmed animals. Stress and overcrowded conditions during transport and holding areas before slaughter<sup>129</sup> exacerbate the spreading of this bacteria.

Sweden and Denmark have banned the subtherapeutic use of antibiotics in feed.<sup>130</sup> The European Union is also phasing out its agricultural use.<sup>131</sup>

The American Medical Association approved a resolution in June of 2001 urging that the non-therapeutic use of antibiotics in animals, that are also used in humans, be phased out.<sup>132</sup>

Some pig meat sold in grocery stores has been shown to be carrying antibiotic-resistant salmonella. White, et al. collected 49 pork samples from three different grocery stores in the Washington, D.C. area. Seven (16%) samples contained salmonella. Of those seven, all showed antibiotic resistance to at least one type of antibiotic used in humans, with some being resistant to as many as five antibiotics.<sup>127</sup>

Bacteria can even become resistant to antibiotics that they are not exposed to if they are exposed to antibiotics that are similar.<sup>133</sup> So, even if antibiotic used by humans is discontinued in animals, there is still a threat if similar antibiotics continue to be used in farmed animals.

Although they admit that the use of antibiotics in farmed animals accounts for some antibiotic resistance in humans, the Coalition on Animal Health (a meat industry coalition) argues that reducing the use of antibiotics in animals will increase the amount of foodborne illness.<sup>134</sup>

This appears to create a lose-lose situation for public health. Perhaps the best alternative would be to phase out animal agriculture all together.

## Disease

Diseases are running rampant in pig factory farms. This means that animals are suffering sometimes excruciating pain and that powerful drugs are given through most of the pigs' lives. Filthy conditions, overcrowding, and stress all ensure that factory farms remain disease-ridden.

A survey of pork producers revealed that the top health problems they had concerns about were respiratory disease in growers and finishers, respiratory disease in "nursery" pigs, and reproductive problems. Pathogen concerns included porcine reproductive and respiratory syndrome (PRRS), ileitis, and *Mycoplasma*. There were three emerging diseases of concern: the new swine influenza, postweaning multisystemic wasting syndrome (PMWS), and E.coli strain F18. Their food safety fears were *Salmonella*, *Campylobacter*, and trichinosis.<sup>135</sup>

### Respiratory Diseases

Recent numbers show that of grower/finisher pigs who died before reaching slaughter age, 39.1% died from respiratory problems. Of nursery pigs who died, 28.9% died from respiratory problems.<sup>28</sup> Below are the types of respiratory diseases and the number of lives they take in herds around the U.S.

#### Pleuropneumonia

*Actinobacillus pleuropneumoniae* previously known as *Haemophilus pleuropneumoniae* is transmitted from animal to animal in dirty pens.<sup>136</sup>

Symptom range from none to sudden death. In a more acute form it can cause depression, anorexia, high fever, coughing or labored breathing, and death within 24-36 hours.<sup>135</sup> In chronic forms it includes coughing, poor appetite, and a decrease in weight gain.<sup>135</sup> Stress from crowding, chilling, and transport may trigger the disease.<sup>135</sup>

Recent figures show that 5.3% of breeding herds, 6.0% of nursery pigs, and 32.6% of larger herds are infected.<sup>60</sup>

#### Pneumonia

*Mycoplasma hyopneumoniae*, sometimes referred to as *enzootic pneumonia*, is the most common cause of chronic pneumonia in pigs.<sup>135</sup> It is transmitted through direct contact. It does not usually show until the animal is 3-6 months old. They experience a chronic, non-productive cough, and lowered growth rate. Mortality is low in uncomplicated cases.<sup>135</sup> 5.1% of farms with 10,000 or more pigs are infected.<sup>60</sup>

#### Streptococcus suis

First described in 1987, it is not well understood.<sup>135</sup> Symptoms are pneumonia; also associated with rhinitis, vaginitis, and abortions. It usually affects weaning pigs and growers and is more common in totally confined intensive production systems.<sup>135</sup>

*S. suis* is transmitted by direct contact<sup>135</sup> and can be transmitted to humans. It is sometimes resistant to penicillin.<sup>135</sup> *S. suis* can cause meningitis, deafness, dizziness, and recurring headaches in humans.<sup>135</sup> Meningitis is listed in the Animal Disposition Reporting System (ADRS)'s antemortem survey under "Central Nervous System".<sup>65</sup> Cases of meningitis are on the increase in the U.S..<sup>137</sup>

Most recent numbers indicate it was found in 5.1% of farms with 10,000 or more pigs<sup>60</sup> and of those who died, 2.1% of grower/finisher pigs died from it.<sup>60</sup>

#### Swine Influenza

Is transmitted from pig to pig and may be transmitted to humans. Symptoms include deep, dry non-productive coughs, and anorexia. Infected pregnant sows may have small piglets. Rapid and complete recovery of pigs can happen in 10-14 days if there are no complications. Sudden onset could mean a 100% morbidity if all animals become infected.<sup>135</sup> Recent data showed that about 2.8% of farms with 10,000 or more pigs were infected.<sup>60</sup>

#### Pasteurellosis

This bacterium invades already damaged lungs, causing fever, coughing, lethargy, breathing difficulties, and sometimes death. It is transmitted by contact and ingestion.<sup>135</sup>

### Polysystemic Diseases

#### Pseudorabies virus (PRV)

Aujeszky's Disease, more commonly called PRV, has been known to exist in the U.S. for over a hundred years. It is a herpes virus that is extremely contagious to many different species of animals.<sup>138</sup> It is only present in a few states.<sup>135</sup> At the time of this report, Indiana, Iowa, Minnesota, and Nebraska had some infected herds.<sup>139</sup>

Pigs are the only known reservoirs for the virus.<sup>140</sup> The pig is infected for life and may be contagious to other pigs at any time, but not necessarily all of the time, during their lifetime.<sup>137</sup> Transmission is more likely to happen during times of stress such as breeding, overcrowding, other illness, farrowing, and fighting.<sup>137</sup> It is mostly transmitted between pigs by nose to nose contact.<sup>139</sup>

The pigs with PRV may experience different reactions. Some seem unaffected, others die suddenly. It depends on the age and immune status of the pig at the time of infection, and well as other factors.<sup>139</sup> Baby piglets may be severely affected with 100% mortality in pigs under 2 weeks of age. Fever, loss of appetite, and convulsions may precede death.<sup>139</sup>

Symptoms for weaning and growing pigs include: pneumonia, dry non-productive cough, vomiting and constipation, tremors, incoordination, and convulsions. Mortality is up to 60% for nursery pigs and 15% in finishers for those who get PRV.<sup>135</sup>

Because pseudorabies is a viral infection, antibiotics do not cure the disease.<sup>139</sup>

Pseudorabies has been eradicated in a number of states, but is still a major concern. The government bailed out many infected herds.<sup>141</sup>

Approximately 11.1% of breeding herds, 2.8% nursery herds, and 11.6% of herds with 2,000 to 9,999 pig.<sup>60</sup>

In 1999, the USDA bought out the herds that were infected at that time. There was an emergency transfer of \$80 million in funds from the Commodity Credit Corp. for the voluntary USDA program.<sup>142</sup>

#### Porcine Reproductive and Respiratory Syndrome (PRRS)

This viral infection causes labored breathing, occasional fever, abortions, coughing, and increase in still births and mummies.<sup>135</sup> It is widespread in countries with industrial pig farms. It was first seen in the U.S. in 1987, Germany in 1990, and the Netherlands, Spain, Belgium, and the UK in 1991. Surveys suggest that 50% of herds in these countries are infected. The disease spreads within a unit by direct contact between pigs. Nasal secretions are the main source of infection, although contact with feces in dirty units can also spread the virus. Early weaned pigs are vulnerable to the disease.

The most recent data available shows that 16.7% of breeding herds, 9.7% of nursery pigs, and 70.7% of large pig farms are infected. This appears to be the most prevalent disease in herd.<sup>60</sup>

#### Salmonella

There has been huge media exposure of the effects of Salmonella poisoning in people - but rarely mentioned is the pain and suffering of the pigs.

Salmonella infections (caused by *Salmonella enterica*) can be serious in pigs - causing blood poisoning, acute or chronic enteritis, and wasting (mainly in pigs between weaning and 3 months). The septicemic (blood poisoning) form kills almost all of its victims. Other symptoms include diarrhea, fever, depression, weakness, and sometimes paralysis and tremor. Sometimes infections only cause mild enteritis or no symptoms at all.

Factory farms may help spread this disease as the bacterium infects young piglets via contaminated feces. Salmonella are also in slurry and dust within pig units. Some of the indoor farms visited by Viva! were thick with dust and slurry pits had not been cleaned.

About 4.6% of breeding herds, 8.6% of nursery pigs, and 33.7% of large pig farms are infected.<sup>60</sup>

### Digestive Diseases

#### Transmissible Gastroenteritis (TGE)

TGE is a virus that is usually transmitted by infected pigs and fecally contaminated equipment.<sup>135</sup> It can affect pigs of all ages, but baby pigs have acute reactions including: vomiting and diarrhea. It causes high morbidity and mortality in pigs less than 2 weeks old. Adult pigs suffer from anorexia, vomiting, diarrhea, and fever. Pregnant sows may have abortions. Older pigs can typically recover in 7 to 10 days.<sup>135</sup>

Most recent numbers indicate that about 5.2% of breeding herds, 3.8% of piglets, and 10.6% of larger pig farms are infected.<sup>60</sup>

#### Ileitis

Also known as *proliferative enteropathy* usually occurs in grower/finisher pigs and may be induced by stress or genetic predisposition.<sup>135</sup> It is unknown how it is spread, but symptoms include anorexia, depression, and weight loss, intermittent diarrhea, and anemia.<sup>135</sup> It may also present itself in an acute form with sudden death or bloody diarrhea due to massive hemorrhage.<sup>143</sup>



In a recent survey of 248 U.S. veterinarians, 58% said that they had seen ileitis in more than half the herds they treat.<sup>144</sup> However, scientific research has found the causative agent of ileitis in over 96% of tested herds in the U.S.<sup>145</sup> The veterinarians reported that it is complicated by large groups per pen.<sup>143</sup>

Veterinarians see it in two distinct forms: chronic ileitis porcine proliferative enteropathy (PPE); and acute ileitis or porcine hemorrhagic enteropathy (PHE). The PHE is most severe, striking suddenly and often causing mortality with little time, diagnosis, or treatment. Ironically, one of the farmers in this article stated, "I can live with PRRS but [ileitis] is killing me".<sup>143</sup> What about the pigs!

Recent numbers showed that about 18.5% of larger pig farms were infected and of those found dead, 7.5% of grower/finisher pigs died because of ileiti.<sup>60</sup>

#### Swine dysentery

Swine dysentery is also known as *bloody scours* or *hemorrhagic enteritis*. It affects pigs of all ages and has a mortality rate of 25%.<sup>135</sup> It is an infectious disease typified by mucus and blood-laden diarrhea. It also causes emaciation with pigs having sunken eyes and in which their ribs and backbones protrude.

Swine dysentery is caused by anaerobic bacteria and it is transmitted to healthy pigs through fecal contamination of feed, and water.<sup>135</sup>

#### Escherichia coli

*E. coli* infection causes blood poisoning (in newborns), diarrhea (in newborns and weaned piglets), edema (usually in weaned piglets), and cystitis and mastitis (in sows).

*E. coli* is in every pig. Disease occurs when disease-causing strains invade a pig herd or when the immune system of a pig is under stress. A piglet being taken from her mother too soon or placed on solid foods too young can allow disease-causing strains of *E. coli* to flourish in the small intestine and cause disease. White blood cells in the mother's milk reduce the effect of *E. coli* poisoning.

Professor D.J. Taylor points out that "Dirty accommodation increases the number of infecting bacteria and makes disease more likely". High protein feeds adds to the problem.<sup>145</sup>

There are many strains of *E. coli* and the different pathogenic strains may cause disease in young pigs by several ways. They produce a poison called enterotoxin. They can also infect the blood through the small intestine or respiratory tract.

Newly born piglets may die within 48 hours from *E. coli* septicemia and diarrhea. Outbreaks happen in farrowing sheds where litter after litter can be affected.

*E. coli* in newly born piglets is caused by factory farm conditions where mothers are moved into filthy farrowing crates to give birth and suckle their young. The crates are metal barred devices that stop the mother sow from being able to walk or even turn around - she therefore has no chance of escaping from the contaminated excrement.

Approximately 16.1% of breeding herds, 21.1% of nursery pigs, and 15.9% of large herds are infected.<sup>60</sup>

### Stomach Ulcers

Stomach ulcers are present in most herds and associated with stressful housing conditions; poor environment; poor management; overcrowding; excessive confinement; and/or the use of diets high in energy, low in fiber, finely-ground, pelleted feeds.<sup>29</sup>

### Rectal Prolapse

Is more prevalent where there is constipation, straining, coughing, and overcrowding.<sup>29</sup> Recent numbers show that of those who are killed, 14.2% of pigs are killed before market slaughter weight because of problems such as ruptures and prolapses.<sup>60</sup>

### Hernias

Inguinal and umbilical hernias have a wide variety of causes but sometimes can be linked with particular boars.<sup>29</sup>

### Constipation

Constipation is most commonly found in pregnant or newly farrowed sows, where it is usually associated with inadequate water supply, high environmental temperature, inadequate fiber, excess of certain fibers, or elevated body temperature.<sup>29</sup>

### Early Weaning Causes Disease

Weaning should be a gradual process at 12 weeks, however farms wean piglets abruptly at two to four weeks.<sup>26</sup> The digestive capacity of the pig does not fully develop until 8 weeks, so early weaning means that piglets have great difficulty coping with solid food. It is even becoming common for piglets to be weaned between five and 15 days old and sent to nurseries – this is called *segregated early weaning (SEW)*.<sup>6</sup>

Breaking the bond between mother and baby causes severe stress to the animals, making them both more susceptible to disease. The stress causes the stomach movements to slow down or stop. The blood flow to the gut increases and the gut lining can get small hemorrhages and ulcerations.<sup>6</sup> In addition to this, the change in diet from milk to solid feed upsets the piglets' stomach and can cause malabsorption syndrome.<sup>6</sup>

### Post-weaning Multisystemic Wasting Syndrome (PMWS)

Symptoms are lethargy, anorexia, weight loss, rough hair coat, and gaunt appearances. Though no treatments are known to be effective, a preventative suggestion is to minimize stress and overcrowding.<sup>135</sup> PMWS affects pigs from about 6-15 weeks of age. 70% of the pigs die.<sup>146</sup>

UN Scientist, Dr. Peter Roeder, an animal health officer specializing in virology at the Food and Agriculture Organization in Rome recently stated, "It's a disease that occurs mainly in intensive pig production systems."<sup>147</sup>

### Pig Injuries Cause Disease

As well as being susceptible to many diseases, pigs in confined, intensive systems face injury from each other. This is from so-called 'vices', including tail biting, and ear and flank chewing.

*Greasy pig disease* (or *exudative epidermitis*) is can be caused and exacerbated by injuries. It usually affects pigs late in pre-weaning to early post-weaning and is caused by a poor environment and/or inadequate nutrition.<sup>135</sup> A skin infection or wet eczema begins on the top of the tail or ears, often started by a combination of feed

contaminating the skin and splitting of the skin from fighting, lice bites, rough concrete flooring, etc. Newly weaned pigs are often put on flat decks which have a rough surface and no bedding. The injuries allow *Staphylococcus hyicus* to invade and cause infection. Other pigs are attracted to the lesion and eventually this leads to biting. Symptoms include shedding of the skin; excessive secretions; cracked, crusty skin covered with a brownish black exudate; listlessness; and anorexia.<sup>135</sup>

### Lameness

Lameness can be caused by foot rot (serious infection of the foot), overgrown claws (from keeping pigs on muddy ground without exercise), and laminitis (inflammation of the lamina; often where the hoof connects to the leg).

Foot rot is exacerbated by the urine soaked, unhygienic conditions in which many pigs live. Bacteria invade a lesion on the foot. The area is often ulcerated and very painful. Secondary abscesses may form in other areas, e.g., the brain, liver, and spine.

Of sows and gilts culled, 16% are culled because of lameness.<sup>28</sup> Of grower/finisher deaths, about 8% die from lameness.

### Osteochondrosis or Swine Arthritis

Osteochondrosis is an abnormal development of cartilage and bone. Clinical signs appear when the pigs are between 4 and 6 months old and are most severe and frequent in "fast-growing, well-muscled, lean pigs".<sup>148</sup> Clinical signs include unwillingness to move, a shortened stride, and if their elbows are affected, a desire to walk on their knees.<sup>149</sup>

### Scours

Scours (severe diarrhea) is extremely common in pigs. It is caused by many factors. Pig Farming magazine<sup>147</sup> states that the following factors cause scours:

- Poor hygiene (e.g. the common sight of pigs standing in excrement spreads disease)
- Lack of bedding (many indoor units provide no bedding and this leads to reduced temperature control and lack of benefit from roughage intake)
- Unclean bedding (if pens contain straw it is often filthy and this spreads infection)
- Large group size
- Overcrowding (common)
- Dirty water or lack of provision
- Poor feed bin hygiene (common)

The most common infectious cause of scours in growing pigs are: swine dysentery; PIA (porcine intestinal adenomatosis), or ileitis and colitis. Less common causes are salmonella, *E. coli*, and parasites. Severity is influenced by housing and diet.<sup>147</sup> In poor environments, scours can occur without the typical infectious agents present.

Scours causes about 9% of pre-weaning, 12% of nursery, and 5% of grower deaths.<sup>28</sup>

### Other Deaths

Trauma and heat stress account for 6.4% of the pigs who are found dead on the farm.<sup>60</sup>

**Porcine Dermatitis and Nephropathy Syndrome (PDNS)**

PDNS is a poorly understood syndrome which seems to occur with PMWS. Their relationship is unclear.<sup>150</sup> PDNS is hard to distinguish from classical swine fever.<sup>149</sup> It mainly affects pigs between 12 and 16 weeks old. Symptoms include fever, anorexia, and multiple hemorrhages under the skin (usually the tail, hindquarters and ears), as well as enlarged lymph nodes and glomerulonephritis (a kidney disease).<sup>149</sup>

This syndrome was first reported in the UK in 1993 and is being diagnosed with increased frequency in the U.S., Canada, the European Union, and Asia.<sup>149</sup>

**Trichinosis**

According to FSIS:<sup>151</sup>

Trichinosis is unique among the parasites encountered in meat inspection in that it cannot be diagnosed by gross examination of the carcass and, as yet, there is no test that will guarantee absolute freedom from the presence of the parasite in pork. We must therefore assume that all swine are infested and must be sufficiently treated to destroy trichinae by heating, freezing, curing, or use of irradiation. The consumer is expected to thoroughly cook these fresh pork cuts that have not been processed to destroy the trichinae. Since the trichina worm is microscopic in size, we assume that, having been rendered harmless in pork, it is no more obnoxious to consume than the bacteria in pasteurized milk.

**Classical Swine Fever (Hog Cholera)**

Classical swine fever (CSF) is a highly contagious viral disease, caused by an RNA type of Pestivirus. It is a notifiable disease in the EU and other areas. It was eradicated from the U.S. in 1978.<sup>152</sup> According to the USDA, only 16 other countries are free of CSF.<sup>151</sup> All animals who are infected and exposed are supposed to be killed.<sup>151</sup>

In the acute form, CSF causes persistent fevers. Other signs include convulsions and lack of appetite. The affected pigs will pile or huddle up together. Death usually occurs within 5 to 14 days.<sup>151</sup> Long term forms of CSF are similar, but less severe than the acute form. Discoloration of the abdominal skin and red splotches around the ears and extremities often occur.<sup>151</sup>

Some pigs have mild cases in which they suffer from short period of illness followed by periods of recovery, but they eventually die.<sup>151</sup>

CSF is transmitted by pigs eating contaminated feed, litter, or through broken skin. Contaminated vehicles and spreading pig manure can diffuse the disease. The virus is in feces and body secretion; in factory farms animals are often forced to lie in both.

**Foot and Mouth Disease**

Foot and mouth is a highly contagious viral disease - although it infects most animals in a herd, it rarely kills more than 5% (except piglets where it may kill up to half).

It is caused by an aphthovirus, which can survive in meats pickled for 1 to 2 months. It is not always killed by pasteurization and it may be in dried milk for years.

Foot and mouth's telltale symptom is sudden lameness with very painful feet. The pig's back may arch and he becomes unwilling to move. Blistering occurs on the nose, tongue, lips and feet - hence the name foot and mouth.

The high concentration of viruses produced in the early stages of the disease, before symptoms show, coupled with the large number of pigs crowded together and forced ventilation in factory farms, gives rise to large viral plumes which can travel by air for long distances. The virus may then infect other pigs and cloven-hoofed species such as cattle, sheep, goats and deer.

The virus is also spread by infected animals touching healthy animals, by manure in trucks, markets, or farms, or carried on clothing or shoes. It is also spread by infected meat in improperly cooked swill. Milk may also be a source of infection.

In February, 2001, the first outbreak of foot & mouth hit the UK since it was announced 20 years ago. By September, 2000, 2,000 cases were confirmed.<sup>153</sup> Pigs confirmed to have the disease are killed. Pigs do not remain carriers of the disease and are free from the virus 28 days after infection.<sup>144</sup> Why then are infected animals slaughtered? Because the UK government believes it is less expensive to subsidize a mass killing every 20 years than to change the way animals are treated or carry out vaccinations and admit that the disease is there permanently.

Although it has not hit the U.S., it could in the future.

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