

OPTING OUT OF INDUSTRIAL MEAT

HOW TO STAND AGAINST CRUELTY, SECRECY, AND
CHEMICAL DEPENDENCY IN FOOD ANIMAL PRODUCTION



CENTER FOR
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INTRODUCTION: CRUELTY, SECRECY, & CHEMICAL DEPENDENCY

What came first—the chicken or the egg? It's difficult to know whether increasing consumer demand for meat and poultry products has driven drastic increases in production levels, or vice versa. What we do know with certainty, though, is that demand for and production of meat and poultry products has increased dramatically in the U.S. and globally in the last 70 years.

Today, the majority of meat produced in the U.S. comes from animals raised in intensive confinement, or “animal factories,” characterized by extreme crowding, poor sanitation, and abuse. These factories, also called CAFOs (Concentrated Animal Feeding Operations), generate massive amounts of waste and pollution, taking an incred-

ible toll on our climate, water, soils, wildlife, and health. What's more, massive production of animals in these conditions requires intensive production of grains for feed, which contributes to high pesticide use and threatens wildlife.¹

Nevertheless, demand for meat and poultry continues to rise. In many countries, including the U.S., the average person already consumes too much meat according to health experts.²

To address the environmental, social, human health, and economic consequences of intensive animal production, we must end the overconsumption of meat and poultry and eat more balanced proteins.



U.S. MEAT AND POULTRY TRENDS

According to the Food and Agriculture Organization of the United Nations (FAO), total meat consumption in the U.S. increased steadily after 1961. Today, meat comprises more than 15 percent of daily calorie intake, 40 percent of daily protein intake, and 20 percent of daily fat intake for the average person in the U.S. In 2016, the U.S. consumed 25.7 billion pounds of beef—roughly 79.4 pounds per person.³ This increase in meat intake has coincided with a decrease in consumption of grains and other plant-based foods.⁴ **That is to say, our increased meat consumption is not a result of eating more food overall, but that our meat intake is replacing plant food consumption.**

Current projections estimate that we will produce over 26 billion pounds of beef and pork respectively, 41.5 billion pounds of chicken, and 6 billion pounds of turkey.⁵

Demand for organic food products, including organic meat, has increased substantially over the past decade. Although organic sales account for just 4% of total U.S. food sales, the demand is growing each year⁶ and at a faster rate than the rest of the food industry.⁷ In 2012, organic sales reached \$28.4 billion⁸ and by 2015, sales nearly doubled to over \$43 billion.⁹ However, organic meat and poultry only accounted for 3% of all organic sales in the U.S. in 2012. Rising demand for meat in the U.S. is not coinciding with similar increases in organic

meat demand despite evidence that organic meat and poultry may have health benefits that exceed industrially-raised products.

GLOBAL MEAT AND POULTRY TRENDS

From 1950 to 2010, global meat production increased five-fold from less than 50 million tons to over 275 million tons, with the U.S., Spain, and Brazil producing more than 220 pounds of meat per person.¹⁰ As with the U.S., this increase in production is particularly prominent for pork and poultry, which increased by 20 percent and 75 percent, respectively, from 1990 to 2009.¹¹

Increasing demand is often attributed to the increasing population growth worldwide. **However, from 1990 to 2009, the amount of meat consumed per person globally grew by roughly 25 percent.** Not only is the number of people on the planet increasing, but the amount of meat consumed by each person on the planet is increasing as well.¹² Global meat consumption is expected to increase by 1.7 percent each year through 2020—the second largest projected growth rate of all major agricultural commodities.¹³

As global demand for meat increases, U.S. producers are also hoping to capture new markets, requiring further production increases. Pork exports in January 2017, for example, were 20 percent higher than in January 2016.¹⁴ **This illustrates that reducing overconsumption and shifting the market for protein must be a global endeavor as American dietary preferences are exported across the world.**

THE BURDEN OF HIGH DEMAND FOR MEAT

Rising demand for meat and poultry has led to both an overall expansion of animal farming worldwide, and a substantial increase in the intensification and scale of food animal production. In particular, it has contributed to the dominance of

CAFOs in many parts of the world.¹⁵ The expansion and intensification of animal factories has also created a mass-scale animal feed industry, based primarily on intensive, monoculture production of corn and soybeans. Moreover, animal factories have succeeded only with increasing reliance on pharmaceuticals designed to promote rapid growth and prevent disease in horrid conditions, and are characterized by egregious abuses of animal welfare.

There are five recognized, undeniable burdens created by modern mass-scale, concentrated meat production:¹⁶

- **The shifting of agricultural production away from food crops toward monocultures of animal feed crops, which are linked to increases in soil erosion and disruptions of water and nutrient cycles.**
- **Inefficient conversion of plant-based calories to animal-based calories.**
- **Generation of enormous amounts of waste that cannot be sustainably recycled back into the environment.**
- **Emission of greenhouse gases through both the cultivation of feed crops, which use large amounts of synthetic fertilizers and fossil**

fuels, and emissions from the large populations of animals themselves.

- **Poor treatment of animals in confinement.**

The food animal industry has sought many quick fixes to ease, address, or hide these burdens, banking on technological innovations to improve efficiencies, reduce waste, and stem pollution. **The only way to successfully reduce the environmental, social, and health burdens of animal production is to reduce the number of animals raised for food.**¹⁷ This will allow for safer stocking densities and more holistic management practices.

To opt out of industrial meat production, we must simultaneously reverse the trend of over-consuming animal proteins and increase our intake of plant-based foods.¹⁸ Without reducing overconsumption, demand for meat will continue to incentivize the consolidation and intensification of food animal production that abuses animals, inhibits public access to information, and depends on large volumes of drugs to maintain such unsustainable levels of productivity. This trio of **cruelty, secrecy, and chemical dependency** is propping up a system that is destroying our planet while producing meat that is less healthy and less safe.

THE TRIO OF CRUELTY, SECRECY, & CHEMICAL DEPENDENCY

CRUELTY

Animal factories could not be further from the iconic pastoral scenes of animals roaming and grazing that we still often picture when thinking of farms. Did you know that farm animals are exempt from federal laws on animal welfare that protect all other animals in the U.S.? This exemption has allowed horrendous practices in food animal production to emerge and persist.

In animal factories, animals are packed into barns or feedlots with little freedom to move, which causes stress, anxiety, and aggressive behavior. Animals often bite or peck one another as a result, causing sores and wounds that are prone to infection. In an attempt to prevent this without reducing herd numbers, producers resort to painful physical alterations to decrease the severity of an animal's bite or peck, like tooth clipping, beak trimming, or removing body parts that are likely targets of aggressive

THE TRIO OF CRUELTY, SECRECY, & CHEMICAL DEPENDENCY

behavior, such as tail docking. These surgical procedures may even be performed without any anesthesia. The crowded conditions also increase the risk of disease and infection and promote the development of more virulent strains, putting animals at greater likelihood of respiratory illness, parasites, fungal infections, and bacterial infections.

There are “Five Freedoms” developed by the United Kingdom Farm Animal Welfare Council in 1979 that outline the basic tenets of providing for the welfare of animals:

- **Freedom from hunger and thirst** by ready access to fresh water and diet to maintain health and vigor.
- **Freedom from discomfort** by providing an appropriate environment including shelter and a comfortable resting area.
- **Freedom from pain, injury, or disease** by prevention or rapid diagnosis and treatment.
- **Freedom to express normal behavior** by providing sufficient space, proper facilities, and company of the animal’s own kind.
- **Freedom from fear and distress** by ensuring conditions and treatment that avoid mental suffering.

Animal factories in the U.S. are a far cry from even these most basic standards.

SECRECY

AG-GAG LAWS Large meat companies have fought against the public’s right to know about the practices and conditions of animal factories. Some companies have pushed states to pass legislation known as “ag gag” laws that forbids any undercover filming, photography, or documentation at animal factories and punishes anyone who comes forward with evidence of animal welfare violations in animal factories and slaughterhouses.

In 2007, an investigator for the Humane Society of the United States documented animal welfare violations in a large slaughtering plant, releasing a video of sick cows being pushed with heavy

This trio of cruelty, secrecy, and chemical dependency is propping up a system that is destroying our planet while producing meat that is less healthy and less safe.

machinery, electrically shocked, and dragged to slaughter. In 2009, a hidden camera taken into a veal slaughtering plant documented a U.S. Department of Agriculture (USDA) inspector’s failure to shut down the plant after witnessing a worker attempt to skin a live calf that had unintentionally ended up with the slaughtered calves.

Since these events, industry actors have attempted to prevent such whistle-blowing from continuing by making the capture or public release of such documentation punishable by large fines or jail time.

CFS and a number of other advocacy groups have spent considerable legal and grassroots effort to prevent these “ag-gag” laws from passing and challenging them in court if they do. Ag-gag laws are a threat to animal welfare and food safety. By criminalizing investigative activities that could keep contaminated food off the market, ag-gag laws prevent the public and the government from learning about practices that increase the risk of food safety outbreaks. **Beef and poultry are two of the top five offenders in terms of food-related illnesses.** Information about the conditions in which the animals are kept and processed before reaching consumers is critical to ensuring a healthy and safe food supply. Federal inspections and oversight can fail, and private investigations play a key role in stopping cruel treatment of animals and preventing contaminated meat from harming consumers.

ANIMAL DRUG DATA The manufacturers of animal drugs also hinder transparency and access to critical information. In order for the U.S. Food and Drug Administration (FDA) to approve an animal drug product for use, companies must submit a packet of application materials, including scientific investigations demonstrating whether the drug is

THE TRIO OF CRUELTY, SECRECY, & CHEMICAL DEPENDENCY

safe and effective for use in animals, and the potential impacts of the drug on human and animal health. The danger in this is that the drug companies themselves, *not the FDA*, have the discretion to decide what studies or information they submit. CFS's own research shows that in many cases there are few substantial studies available that have fully investigated the effects of animal drugs on animal, human, and environmental health. FDA routinely violates the Freedom of Information Act (FOIA) by ignoring our requests to access the research submitted to FDA by drug companies in support of a drug's approval. Industry continues to be secretive about the evidence it has regarding the safety of drugs or their potential negative impacts. As a result, and **contrary to the clear mandates of federal law, the burden of proving that these harmful drugs are unsafe falls on the public.**

LABELS Secrecy also exists within misleading food labels. Federal law requires processed food labels to include every ingredient, but meat labels are not required to indicate the numerous drugs and additives that were given to the animals. This keeps consumers in the dark, which is particularly dangerous considering that residues of certain drugs and chemicals may be present in or on the meat that reaches your table with little science available that investigates their impacts on human health. Requiring meat packaging to be clearly labeled with all inputs that may directly impact the consumer would allow consumers to make truly informed decisions in the market.

CHEMICAL DEPENDENCY

Animal factories pack hundreds, thousands, and sometimes millions of animals into unsanitary, inhumane, and unsafe conditions. These conditions have led to the rampant use of animal drugs, drug combinations, pharmaceuticals, and other additives to promote animal growth and suppress the negative effects that heavily-concentrated confinement has on animals. Many animal drugs are approved for use to treat animals when diagnosed with an illness, and

may be necessary at times even in the most humane and sustainable husbandry systems. However, animal drugs are often also approved for non-treatment purposes, including promoting rapid growth rates and suppressing diseases in unsanitary conditions. Below are just a few examples of drugs and pharmaceuticals routinely used to prop up CAFOs.

BETA-AGONISTS

What they are used for: Beta-agonist drugs are approved for use in cows, pigs, and turkeys to boost weight gain.

Why they are dangerous: They have been linked to egregious animal welfare issues, including heart stress, increased aggression, skeletal tremors, immobility, foot sloughing (literally the feet of cows falling off), nerve paralysis, increased risk of broken limbs, and spine fractures, stomach ulcers, brain lesions, blindness, respiratory problems, and higher rates of death. A beta-agonist approved for human use as an asthma treatment is linked to rapid weight gain and difficulty losing weight, demonstrating that these drugs may affect human health in similar ways. Despite these terrifying impacts on animal health, there is little independent research on their human health impacts. Beta-agonist residues have been detected on meat samples, and may pose significant risk to people with heart conditions.

Specific Drugs: ractopamine, zilpaterol.

HORMONES

What they are used for: Natural and synthetic hormones are used in beef production to stimulate rapid growth of muscle tissue.

Why they are dangerous: Meats from treated animals have higher levels of hormones than meat from untreated animals. The hormones may also be carried into the environment from animal waste. The impacts from their use have not been sufficiently studied, but exposure to external hormone compounds has been linked to higher risks of cancer, developmental disorders, and endocrine disruption.

Specific Drugs: estradiol, trenbolone acetate,

THE TRIO OF CRUELTY, SECRECY, & CHEMICAL DEPENDENCY



melengestrol acetate, progesterone, testosterone, zeranol.

ANTIMICROBIALS

What they are used for: A wide range of antimicrobial drugs are approved for use in cows, pigs, turkeys, and chickens to promote rapid growth and keep mortality rates lower in conditions that spread bacteria, parasites, or fungal infections. Some measures have been taken to eliminate the use of medically important antibiotics (those that are the same or similar to drugs used to treat infections in humans) for growth promotion. In animal factories, it is still acceptable to overuse these drugs to prevent disease in confinement conditions.

Why they are dangerous: Concerns about using medically important antibiotics arose due to the public health crisis of antibiotic resistant bacteria that cause infections in humans. However, the use of any antimicrobial agent can make bacteria or other organisms resistant, and their overuse can still potentially lead to resistance to human medicine.

Specific Drugs: Medically important antibiotics (still allowed for routine disease prevention): penicillin, ampicillin, tetracycline, chlortetracycline, doxycycline, vancomycin, ceftriaxone, gentamicin, kanamycin, streptomycin, neomycin, erythromycin.

Other antimicrobials (allowed for all purposes): tiamulin¹, bacitracin, clopidol, amprolium, nizarbazin, monensin, ethopabate, zoalene, lasalocid.

FEED ADDITIVES

What they are used: Chemicals and metals may be used as feed additives for a range of purposes, including promoting rapid weight gain, increasing feed efficiency, preventing disease in healthy animals, improving digestibility of grain-heavy feeds, or keeping low-quality feeds from rotting.

Specific Additives:

Arsenic, a heavy metal, was previously allowed as a feed additive to promote weight gain and kill microorganisms. Arsenic residues were widely present on chicken products reaching consumers in the U.S. in the early 2000s. CFS and other groups launched an extensive legal and public education campaign to have it prohibited by FDA. Arsenic not only has negative impacts on animals¹⁹, but is connected to endocrine disruption, damage to reproductive organs, vessel disease, high blood pressure, heart disease, and diabetes²⁰, as well as skin cancer, respiratory cancers, and bladder cancer in humans.²¹

Zinc and copper, also heavy metals, are commonly used for growth promotion and disease prevention. When ingested, zinc and copper are present at high levels in animal wastes and on meat products and have been linked to an increased risk of antibiotic resistance to important medicines.²²

Ethoxyquin, a preservative, helps extend the shelf life of animal feeds by preventing the fats from becoming rancid too quickly. FDA acknowledges the “deleterious and poisonous” effects of ethoxyquin. It was nominated for carcinogenicity testing in 1990 on the basis that it appeared to have modifying effects on the carcinogenicity of other chemicals, and yet FDA still allows its use.

¹ Tiamulin and bacitracin are considered important human medicines by the World Health Organization, but not by FDA. They are not subject to the current agency efforts to eliminate growth promotion uses of medically important antibiotics.



WHAT IS “INDUSTRIAL MEAT”?

Industrial meat is a broad term that attempts to capture a large and complex segment of food animal production. However, there are some basic commonalities that help to define “industrial” meat production.

CONFINEMENT

One of the primary characteristics of industrial meat production is the confinement of animals in enclosed spaces such as barns or feedlots. As the number of animals raised per year in the U.S. increases, the space per animal becomes more limited. Confinement settings often have poor sanitation, ventilation, and lighting, and house animals on hard flooring. To date, it is common practice in the industry to confine animals in small cages, crates, or pens. Even certain cage-free operations house thousands of animals in crowded conditions and inhibit the animals from accessing outdoor space.

Here are just a few impacts of confining animals in barns, houses, or on feedlots:

- Slatted floors in pig facilities cause hoof lesions, and concrete floors cause bone injury.²³
- Overcrowding increases aggression, injuries, and stress responses in pregnant pigs.²⁴
- Indoor poultry facilities often have high levels of ammonia and dust, which put the health of the animals at risk.²⁵
- In pig facilities, ammonia and other gases from manure can irritate the respiratory tract.²⁶
- Risk of bovine respiratory disease is influenced by airborne dust particles, humidity, and poor ventilation.²⁷

OWNERSHIP

For each major food animal species, the specific characteristics of the industry vary in certain ways.

However, in all cases, the industry has trended toward just a few companies controlling all aspects of the supply chain. While there are still thousands of farms that raise livestock all over the U.S., the number of farms is on a downward trend. There are fewer farms raising animals in the U.S. than there ever have been before, despite the fact that we are raising more animals than ever.²⁸

Furthermore, many of these farms don't own the animals or own them for only the first portion of their lives. Instead, "contract growers" raise animals under contract for large companies that oversee and control either the entirety or a significant portion of the animal's life.

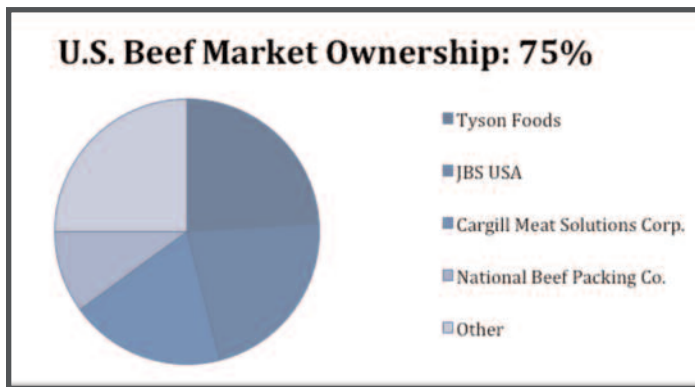
In the past, producers raised their own animals until they were ready to be slaughtered, at which point they were sold on the market to processing companies (called "packers") that would compete for the available supply. Today, it is more common

for the *packers* to either directly own livestock or to contract with large producers, ensuring that the animals will only be raised for that packer. This is referred to as vertical integration, and can lead to what economists call "captive supply,"²⁹ a phenomenon wherein companies maximize profits at the expense of farmers and producers.²⁹

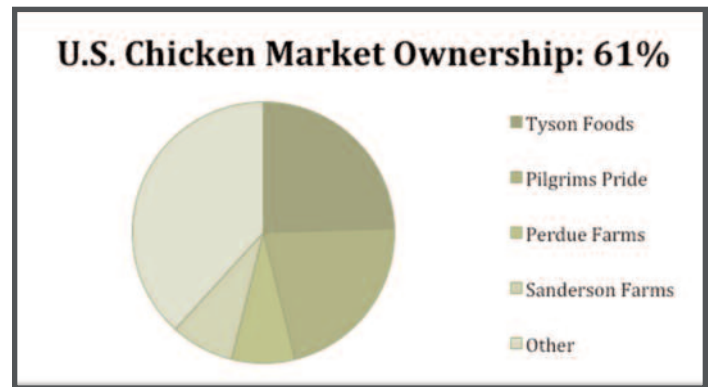
For example, although roughly 26 billion pounds of beef is processed annually in the U.S. by 60 operators, four companies control 75 percent of all beef slaughtered: Tyson Foods, Cargill, JBS USA, and National Beef Packing.³⁰ See the following Breakout Boxes to learn how consolidated different industries have become.

²⁹"Captive supply" is an economic term for a part of commodity supply that is not owned by a company but is used by that company to maximize its own profits at the expense of the owners. Contract growing systems, for example, often result in greater profits for the companies that enter into unfair contracts with the farmers that own the animals.

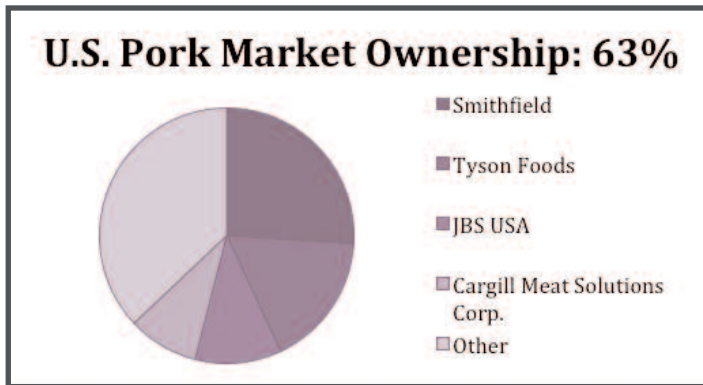
SHARE OF LIVESTOCK MARKETS CONTROLLED BY THE TOP 4 PROCESSORS



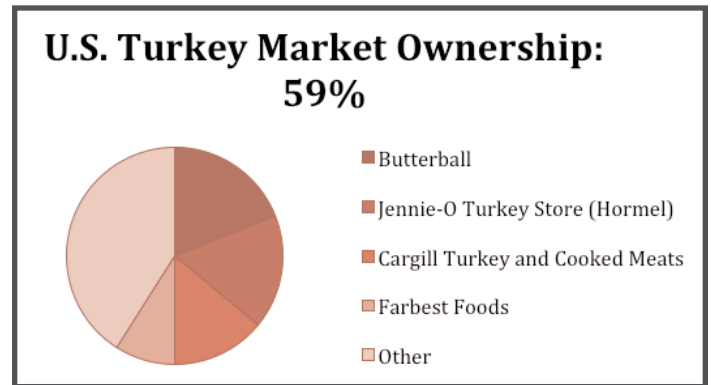
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PERCENTAGE OF ANIMALS RAISED IN LARGE-SCALE PRODUCTIONS

Animal Species: Production Size

	2002	2012
Chickens: 500,000+ birds	53%	68%
Turkeys: 100,000+ birds	65%	72%
Pigs: 1,000+ pigs	87%	96%
Cows: 500+ cows	14%	17%

SCALE

With corporate ownership comes a larger scale of production. From 2002 to 2012 the percentage of beef operations raising 1-199 cows decreased, while the percentage of operations raising 200-499, 500-999, or 1000+ cows all increased. This trend has occurred in the market of each major food animal species. The implications of this are huge: more concentrated confinement, increased reliance on animal drugs, more corporate control of our food supply, and fewer animals raised on family farms under humane conditions.

BREEDS

Industrial meat production is characterized by the use of the animal breeds industry can use to its advantage. Breeds used today in industrial settings have been selected for extreme productivity or efficient physical traits that benefit the producer, rather than increasing the health or vitality of the animal. This has severe animal welfare and health implications.

- Selection for “double-muscling” in beef cattle breeds, such as the Belgian Blue, has led to greater chance of difficult and risky birth because fetal size is too large for the pelvis of the cow.³⁵
- Osteoporosis is widespread in laying hens because of selection for high rates of egg laying, increasing the risk of fractured bones.³⁶

- Industrial breeding of birds for fast growth has led to increased appetite, to the point where birds need to be feed-restricted to prevent obesity. When feed-restricted, the birds show signs of chronic hunger, including severe pecking of one another.³⁷
- Selecting pigs for rapid growth and lean meat has increased leg weakness and risk of abnormal bone growth.³⁸
- Selection of pigs for rapid muscle development is also linked to tail-biting, the act of pigs injuring each other by chewing or biting the tails of others.³⁹
- Modern hybrid turkeys are so large they can no longer naturally breed. Artificial insemination is the only means of reproduction, and further allows for selective breeding.⁴⁰

The good news is that independent farmers are showing industrial companies that raising food animals using sustainable and humane methods can be done. Across the country, independent farmers at a variety of scales are successfully raising diverse breeds of animals in systems that are organic, humane, ecologically beneficial, and socially just. These farmers are more likely to own the animals over their entire lives, and the money they earn provides a personal livelihood, rather than support for a large corporation. **The numbers of animal producers of this ilk are decreasing. In order to reverse this trend, they need consumers to support them and purchase their products.**

PHARMACEUTICALS

Industrial meat relies on the rampant use of pharmaceuticals to continue production at the same rate and scale that would be unachievable without these props. The cocktail of drugs used today in industrial meat production serves the purpose of upholding the current status quo of production and has severe animal welfare consequences. Below are the types of pharmaceuticals most frequently used in industrial meat production.



HORMONES Hormones are used in animal production to increase growth rates and decrease the time it takes for an animal to go from birth to slaughter. These drugs allow for the mass scale of industrial meat to be sustained.

BETA-AGONISTS Beta-agonists aid in rapid weight gain to shorten an animal's lifetime, which reduces the cost of raising the animal.

ANTIMICROBIALS Antimicrobials slow the rampant spread of bacteria, a direct result of too many animals kept in close, unsanitary quarters. These drugs keep mortality rates low and enable the cramped conditions of industrial meat production.

FEED ADDITIVES Feed additives include things like growth promoters, drugs that prevent disease, preservatives, and nutrients as a routine way to continue animal production at the current scale with the current conditions.

INHUMANE TREATMENT

Another typical characteristic used in industrial meat production are inhumane production practices of that are designed to prevent animals kept in cramped, unsanitary, stressful, and overwhelming conditions from acting out. Below are some of the various methods of animal torture used in industrial animal production.

TOOTH CLIPPING Tooth clipping is used on newborn piglets to prevent lacerations from aggressive animals in close proximity to one another.⁴¹

GRINDING Male chicks, often deemed “useless,” are ground up alive after hatching.⁴²

FORCE MOLTING Force molting is the process of starving hens for up to two weeks to induce another egg-laying cycle.⁴³

DOCKING Docking involves removing of tails to prohibit biting by other animals.⁴⁴

DEBEAKING Also known as “trimming,” debeaking includes cutting off beaks of chickens and turkeys to reduce pecking when animals become aggressive.⁴⁵

CASTRATION Often conducted without any painkillers and ending in botched results, castration is done to supposedly improve the quality of meat.⁴⁶

GE ANIMALS

There is also increased interest in genetically engineering (GE) food animals to better withstand industrial production systems, including:

- GE cows that are resistant to contracting tuberculosis, a common illness in intensive production.⁴⁷
- GE cows that are resistant to specific strains of *E. coli*.⁴⁸
- GE pigs that are resistant to swine flu.⁴⁹
- The GE Enviro-Pig™, engineered to reduce the amount of phosphorous in pig waste to reduce nutrient pollution associated with hog CAFOs.⁵⁰

Various research projects have looked at engineering animals to grow faster, including engineering pigs to produce more growth hormone.⁵¹

These genetic manipulations are only beneficial as a means of continuing to raise animals in unsustainable confinement conditions that put food safety, human health, animal welfare, and the environment in jeopardy.



TEN REASONS TO OPT OUT OF INDUSTRIAL MEAT

Animal factories, such as CAFOs and other intensive confinement facilities, have significant consequences for individual health, natural resources, wildlife, animals, farmers and food workers, climate, community health and safety, and the economy. To change this system and promote safe, healthy meat products, we must reduce the amount of meat we consume and change the *type* of meat we consume. If demand shifts away from consuming large portions of industrial meat and eating it frequently and toward eating smaller portions of humanely-raised meat with larger portions of plant proteins, the market will respond.

FOR OUR HEALTH

Animal factories pack in animals tightly, put them in horrid conditions, and pump them full of chem-

icals to promote growth and prevent disease. The stress of rapid weight gain and poor living quarters makes the animals sick. Industrial animals yield meat that may pose significant risks to the personal health of consumers through harmful residues and poor nutrition.

Overconsumption of meats, generally, has been linked to numerous negative health impacts, including: Increased risk of heart disease⁵², obesity⁵³, stroke⁵⁴, increased risk of certain cancers⁵⁵, type 2 diabetes⁵⁶, and a shorter life span.⁵⁷

Studies have also shown that excessive consumption of meats means excessive consumption of cholesterol and saturated fatty acids, both of which are associated with risk of coronary heart disease.⁵⁸ Excessive intake of the iron found in animal prod-

ucts, heme iron, has similarly been linked to certain cancers, particularly colon cancer.⁵⁹

Studies show that countries with higher per person beef consumption also have higher prevalence of diabetes. High meat intake is associated with chronically elevated levels of certain hormones that are linked to diabetes, and meat protein has been implicated in diabetic kidney disease.⁶⁰ In contrast, when people with diabetic nerve damage switch to a vegan diet, evidence shows improvements in kidney function and glucose tolerance.⁶¹

In a study of over 8,000 people, subjects who ate all types of meat once or more per week were 29% more likely to develop diabetes.⁶² The healthcare costs attributed to chronic diseases that are associated with overconsumption of meat are incredible.⁶³

Further, residues of animal drugs and other feed additives may be present on meat that reaches consumers, and their impacts on human health are not well studied.

Pork producers use **ractopamine** to promote last-minute boosts in growth. Ractopamine has been detected on retail pork products, but the human health risks have not been sufficiently studied. It likely poses particular risk to people with heart conditions. A similar drug, used in asthma medicine, is linked to rapid weight gain and difficulty losing weight in humans.

Beef producers use **synthetic hormones** to promote rapid weight gain and increase feed efficiency. Research shows that hormone levels are higher in meat from treated animals. Impacts of hormone exposure via meat are poorly understood, but any exposure to external hormones may interfere with a person's hormone functioning.⁶⁴

Many **antimicrobials** are approved for beef, pork, turkey, and chicken to promote growth and suppress diseases. Overusing any antimicrobials can

Medically important antimicrobials can be fed to animals for disease prevention, increasing the risk of antibiotic-resistant bacteria on meat products.

In 2016, harmful bacteria that were resistant to two last-line-of-defense antibiotics was discovered in the U.S. for the first time, both connected to the use of antibiotic drugs in pig production.

drive resistance among harmful bacteria. Overexposure to antimicrobials during early development is linked to higher risk of obesity later in life.⁶⁵

Heavy metals are fed to animals due to their antimicrobial properties. CFS worked for years to force the withdrawal of arsenic due to health concerns from residues on meats. Zinc and copper are still commonly used and may be present on meat. They can be toxic in excessive quantities.

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic and/or pasture-raised meats, and increasing portions of plant-based proteins in your diet can reduce risks of several diseases, provide more beneficial nutrients, and reduce exposure to harmful chemical residues.

Whole plant proteins, like beans, peas, lentils, nuts, seeds, and leafy greens, are nutrient-dense and health-promoting and can help:

- Lower the risk of heart disease.⁶⁶
- Lower cholesterol.⁶⁷
- Lower systolic blood pressure.⁶⁸
- Reduce risk of obesity in children.⁶⁹
- Lower mortality.⁷⁰
- Reduce risk for certain cancers.⁷¹
- Lower rates of hypertension and type 2 diabetes.⁷²

Humane, organic, and pasture-raised meats are more nutritious and beneficial than meat produced in industrial facilities, including:

- Higher omega-3 content.⁷³ Omega-3 rich diets reduce blood pressure and risk of heart attack, and promote enhanced mental health.⁷⁴
- Higher vitamin E⁷⁵, vitamin A⁷⁶, and vitamin C⁷⁷ levels.
- Lower total fat and caloric content.⁷⁸
- Healthier overall fat content.⁷⁹
- Prohibition of unnecessary uses of veterinary pharmaceuticals.
- Transitioning to a limited meat diet has a positive effect on consumer healthcare costs. Studies have shown that it could decrease medical expenses by \$735 billion per year in 2050.⁸⁰

The amount of protein your body needs varies depending on your personal attributes, health, and lifestyle. Generally, the Centers for Disease Control and Prevention (CDC) recommends that 10–35 percent of your daily calories come from protein—roughly 46 grams of protein per day for adult women and 56 grams per day for adult men.⁸¹ Eating extra protein from meats in particular can lead to poor health outcomes, like elevated LDL, or “bad,” cholesterol.⁸² Only two servings of pork, for example, would exactly meet the recommended protein consumption for adult women for an entire day.⁸³

FOR FOOD WORKERS

Animal factories endanger workers, who are subjected to horrible work conditions and hazardous chemicals. **Due to large scale production practices, animal factories have become places with dangerous working conditions for handlers and factory workers.**

No other industry suffers as many trauma related injuries as the meat processing industry.⁸⁴ Trauma-related injuries at animal factories occur at 6.5 times more than the rate at all other manufacturing jobs.⁸⁵ In pork processing plants, workers who harvested pork brains, a grueling process,

suffered from severe neurological diseases.⁸⁶ High demand for meat products has led to an increase in the speed in which workers produce it, which creates hazardous working conditions and leads to limb loss.⁸⁷

Proximity to manure pits and irritants released from large quantities of animal carcasses expose animal factory workers to toxic chemicals and fumes. Manure pits produce lethal gases like ammonia, carbon dioxide, methane, and hydrogen sulfide to which workers are routinely exposed.⁸⁸ Chronic exposure to these gases can lead to serious health problems within the respiratory, cardiologic, and neurological systems.⁸⁹ Compared to small livestock production systems, animal factories produce significantly greater toxic gases and particulate matter emissions that collectively endanger workers.^{90,91}

The excessive and routine use of antibiotics in animal factories has led to higher rates of antibiotic resistant bacteria in food workers than any other industry.⁹² Due to this increased exposure to antibiotic resistant bacteria, studies have shown that workers at animal factories are more prone to catching methicillin-resistant staphylococcus aureus (MRSA).⁹³

Many employees at animal factories are undocumented, and a lack of U.S. citizenship status and accompanying legal protections significantly hinders their power to demand better working conditions, putting them at greater risk of severe health conditions. Migrant workers in animal factories are more likely to remain silent about health problems and dangerous working conditions due to their precarious immigration status.⁹⁴ Increasing this fear, workers at processing plants can be fired at any moment, discouraging employees from speaking out, and that burden is even greater for the manipulated immigrant work force.⁹⁵ There have been several instances of undocumented workers who were fired after filing com-



pensation claims for health problems as a result of the hazardous working conditions.⁹⁶

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of plant-based proteins in your diet can play a critical role in offering safe, beneficial, and legitimate working opportunities for food workers.

- Organic production of plant proteins is safer for farm workers due to reduced exposure to toxic synthetic chemicals common in conventional crop production,⁹⁷ many of which are known to result in endocrine disruption, birth defects, and respiratory problems.⁹⁸
- Conventional farmers and farm workers had increased genetic damage, as compared to farmers and farm workers at organic farms, indicating safer working conditions for organic crop production.⁹⁹
- Farmworkers and their families on conventional farms experience more exposure to pesticides than any other group in the U.S. due to the excessive use of these dangerous chemicals.¹⁰⁰
- Studies show that animals in animal factories are kept in such confined spaces with uncomfortable positions that their levels of happiness are decreased and their aggression is increased.¹⁰¹ This increase in aggressive behavior puts livestock handlers in grave danger of injuries from angered animals.¹⁰²

- Comparatively, organic livestock production emphasizes access to the outdoors and enough space for each animal, enhancing their overall wellbeing and reducing the danger to handlers.¹⁰³
- Organic farm workers aren't at a higher risk of contracting antibiotic resistant bacteria because certified organic animals may not be raised with antibiotics.

FOR POLLINATORS

Animal factories threaten pollinator health through reliance on pollinator-toxic chemicals, destruction of pollinator habitats and food sources, and generation of excess toxic waste.

Mass production of animal feed crops, like corn and soy, use large volumes of chemicals that kill pollinators and other beneficial insects and destroy critical pollinator habitats.

Over one-third of the corn grown in the U.S. is used as animal feed,¹⁰⁴ and more than 90 percent of conventional corn is treated with neonicotinoids. Neonicotinoids are a class of extremely long-lasting insecticides that can build up in the soil and contaminate nearby streams and other water bodies.¹⁰⁵ Exposure to neonicotinoids can cause sub-lethal and lethal effects in pollinators and other beneficial species,¹⁰⁶ including paralysis, tremors, other neurological problems, weakened immunity, impaired reproductive capacities, diminished survival, and mortality.¹⁰⁷

Habitat loss is also a significant driver of pollinator decline.¹⁰⁸ Persistent agrochemicals used on animal feed crops contaminate the habitats and resources upon which pollinator species rely. For example, milkweed is a primary food source and nesting site for monarch butterflies. Glyphosate, an herbicide used in mass corn production, kills milkweed, and is behind the rapid decline of North American monarch butterfly populations.¹⁰⁹ Wild areas are



often destroyed to plant monoculture corn and soy fields or to build animal factories, fragmenting pollinator and other wildlife habitats.¹¹⁰

The enormous volumes of waste produced in animal factories is often contaminated with pesticides, heavy metals, or animal drug residues that pose direct threats to pollinator species. CAFO manure can enter soils through ground application, injection, and “manure lagoon” leaks. Pollinators may be exposed to parasites, viruses, and bacteria, as well as residues of animal drugs, pesticides, or heavy metals, all of which may be present in manure from animal factories.¹¹¹

Manure applied to cropland or leaking from lagoons may pose particular risk to many species of ground-nesting bees and dung-nesting pollinators.¹¹² Lead, and other heavy metals found in CAFO waste,¹¹³ have been detected in the feathers and tissues of hummingbirds and other pollinating birds.¹¹⁴ These metals have been correlated with behavioral changes, as well as decreased growth and reproductive capacity.¹¹⁵ Heavy metal contamination has also been correlated with declines in solitary wild bee populations.¹¹⁶

Excessive use of tetracycline, an antibiotic used on hog, turkey, and beef CAFOs, has been found to decrease gut microbes in honey bees, increasing their risk of pathogen exposure and mortality.¹¹⁷

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of whole plant proteins in your diet can help protect the pollinator species that are critical to a sustainable food supply.

- Certified organic plant proteins do not use pollinator-toxic agrochemicals used in CAFO feeds, preventing negative health effects, habitat loss and fragmentation, and food source loss for bees, monarchs, hummingbirds, and other important pollinators.
- Growing organic plant proteins does not generate enormous volumes of waste contaminated with heavy metals, pathogens, hormones, and antibiotics.
- Organic and non-GMO plant proteins rely on pollination from bees, butterflies, and other pollinators,¹¹⁸ so it is in the farmer’s interest to protect these species.
- Organic animal farmers are required to use organic corn and soy for livestock feed, and conserve biodiversity by supporting pollinator habitats.¹¹⁹
- Rotational grazing and cropping, which are not present on CAFOs, increase biodiversity and support pollinator species.¹²⁰

FOR WATER CONSERVATION

Animal factories rely upon excessive amounts of water and endanger communities by contaminating their sources of drinking water. Raising animals in industrial factory systems and intensive production of feed crops requires incredible amounts of precious water resources, resulting in excessive water consumption per unit of animal protein produced.

Producing meat in intensive industrial systems requires large volumes of water: one pound of beef requires 1,799 gallons of water, one pound of pork requires 576 gallons water, and one pound of chicken requires 468 gallons of water.¹²¹



In part, this water use is attributed to the water-intensive feed crops that we feed animals: corn and soybeans. Irrigation for feed crops alone accounts for seven percent of global water use.¹²² Beef production takes 100 times the amount of water to produce the equivalent amount of plant protein.¹²³ Intensive feed crop production also relies on large amounts of fertilizer that can contaminate local water resources due to nutrient runoff from crop fields,¹²⁴ which can lead to dead zones in freshwater sources.¹²⁵ The United Nations Food and Agriculture Program declared animal factories and the livestock sector as major players in raising water depletion levels.¹²⁶

Animal factories also produce enormous quantities of manure that are difficult to manage. Many CAFOs liquefy the animal waste and store it in “manure lagoons.” This abundance of waste can lead to overflowing manure storage systems and/or excessive application of manure to fields. Pathogens, chemicals, and residues in animal factory manures can contaminate ground and surface water.

Manure lagoons at animal factories, even though many are lined, can easily break and leach contaminants into surrounding soil and water sources, which will remain for prolonged periods of time.¹²⁷ Animal factory waste contains antibiotics, hormones, pathogens, heavy metals, and other animal drugs that cause algal blooms and unsanitary drinking water sources.¹²⁸ The U.S. Geological Survey stated that manure from animal factories is

the cause of poor water quality in significant areas across the country due to discovered contaminants.¹²⁹

Reducing overall consumption of meat and poultry proteins; sourcing certified humane, organic, and/or pasture-raised meats; and increasing portions of whole plant proteins in your diet can play a critical role in replenishing and protecting water sources.

- Plant-based proteins are produced using less water than animal production. Farming plants, instead of animals, also reduces negative impacts on water quality. For example: one pound of avocados requires 141 gallons of water and one pound of broccoli requires 34 gallons of water; both amounts are significantly less than the 1,799 pounds of water required to produce one pound of beef.¹³⁰
- A 30-year field trial demonstrated that organic crop production stores and utilizes water more efficiently than conventional production.¹³¹ Organic farming systems enhance restoration of water quality by preserving the surrounding biodiversity and conserving resources on farm ecosystems.¹³² Organic systems also improve the water holding capacity of soils.¹³³
- Pasture-raised cattle rely on grasses watered by rain, instead of irrigated feed crops.¹³⁴ Relying on rain fed grasses greatly reduces the impact of drawing from surrounding water resources.¹³⁵ Not relying on irrigated feed crops also means reduced indirect water contamination from fertilizer runoff.¹³⁶
- Through managed grazing, pasture-raised cattle can actually enhance the surrounding ecosystem services by improving soils and water retention rates.¹³⁷ Healthy soils and grasslands in pasture-raised cattle systems have high water-retention capacity, replenishing rather than depleting local water sources.¹³⁸
- Routine uses of antibiotics are prohibited in organic production, which means pharmaceuticals are not leaching into surrounding water sources.¹³⁹



FOR ANIMALS

Animal factories threaten animal welfare by confining animals in crowded conditions indoors, often severely restricting their movement, and relying on a variety of animal drugs and painful physical alterations to keep the animals from getting sick or injured in such terrible living conditions.

Animals in CAFOs are “tightly crammed, caged, and sometimes even chained or tethered,”¹⁴⁰ unable to turn around or lie down.¹⁴¹ Packed by the thousands or tens of thousands, they are “often unable to breathe fresh air, see the light of day, walk outside, peck at plants or insects, scratch the earth, or eat a blade of grass.”¹⁴² Poor ventilation causes buildup of toxic gases that cause illness or even death.¹⁴³ Living on concrete floors causes increased agitation, biting of penmates,¹⁴⁴ and lesions. Cows are often forced to lie in their own waste.

Animal factories rely on various animal drugs to enhance animal productivity that have terrible physical impacts on the animals. The cattle drug, **Zilmax**, causes immobilization, stomach ulcers, brain lesions, blindness, lethargy, bloody noses, respiratory problems, heart failure, and has caused cow’s feet to fall off.¹⁴⁵ The steroid **Melengestrol acetate** is associated with pneumonia, disease, and decreased fertility in cattle.¹⁴⁶ ¹⁴⁷ **Ractopamine**, a growth booster, causes muscular skeletal tremors; contraction of cardiac tissue; increased heartbeat, aggression, and

hyperactivity; increased risk of broken appendages, severed tendons or ligaments; and increased risk of nerve paralysis, fractured vertebral columns, or metabolic conditions.¹⁴⁸

Animal factories rely on painful procedures to counteract extreme aggression induced by confinement. The tails of piglets are often clipped, and the horns of young cattle are sawed off or chemically shortened.¹⁴⁹ Pregnant pigs are placed in gestation pens, where they are unable to turn or lay sideways, and are exposed to high concentrations of their own waste.¹⁵⁰ Litter sizes have steadily increased,¹⁵¹ causing greater stress for pregnant animals and reduced their ability to fight infections.¹⁵² Physical brutality from some handlers, including beating, stabbing, kicking, and dragging, are common.¹⁵³

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of plant-based proteins in your diet can promote improved conditions for food animals.

- Growing organic and non-GMO plant proteins does not generate the mass amounts of ammonia, manure, or heavy metal waste as industrial animal factories do, protecting quality of life for animals in the surrounding ecosystems as well.
- Organic livestock farmers are required to provide livestock with shade, clean bedding, fresh air, clean drinking water, direct sunlight, and outdoor access during the grazing season. They also must provide room for animals to exercise,¹⁵⁴ lie down, stand up, fully extend their limbs, and move freely.¹⁵⁵ Organic farmers who produce swine must provide group housing for them.¹⁵⁶
- Use of antibiotics, growth hormones, or prohibited feed additives are not permitted on organic livestock farms.¹⁵⁷
- Some physical alterations, including teeth clipping, tail cutting, and castration of animals over seven days old, are restricted on organic and certified humane farms as well.¹⁵⁸ ¹⁵⁹

FOR CLIMATE

Animal factories are a leading contributor to climate change. CAFOs emit large quantities of climate pollutants through on-site manure storage problems and the conversion of native forests to intensive livestock or feed cropping systems. They also rely upon fossil fuel-intensive resources, exacerbating climate change.

Food animal production is responsible for 18 percent of global greenhouse gas production and over 7 percent of greenhouse gas emissions in the United States.¹⁶⁰ Manure storage from animal factories results in excess methane production, exacerbating climate change.¹⁶¹ Animal factories are large sources of both methane and nitrous oxide, with 37 percent of methane emissions coming from grain-fed animals.¹⁶²

Deforestation is a dangerous side effect of clearing land for large-scale industrial animal factories and the cropland required to grow enough animal feed. Industrial animal production has led to extreme deforestation, and reduction in wooded areas can emit up to 2.4 billion metric tons of carbon dioxide annually.¹⁶³

Intensive production of feed groups to sustain animal factories consumes large amounts of fossil fuels and depletes soils. Grain-based feeds used by animal factory operators rely on intensive production of soy and grains like corn.¹⁶⁴ Livestock feeds grown with synthetic fertilizers contribute 65 percent of nitrous oxide and 30 million tons of ammonia annually.¹⁶⁵ The ratio of fossil fuel energy inputs per unit of food energy produced for industrial meat products is 35:1.¹⁶⁶

Monocultures of corn and soybeans also reduce soil fertility and hinder soil's ability to sequester carbon from the atmosphere.¹⁶⁷ Soil carbon sequestration is an important tool for combatting climate change.¹⁶⁸ Carbon sequestration could capture 5–15 percent of the yearly global fossil-fuel emissions.¹⁶⁹

Food animal production is responsible for 18 percent of global greenhouse gas production and over 7 percent of greenhouse gas emissions in the United States.

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of plant-based proteins in your diet can play a critical role in stopping and reversing the effects of climate change.

- Plant-based whole proteins are more energy efficient and associated with less greenhouse gas emissions than animal-based proteins.¹⁷⁰ Industrial beef systems produce 250 times more greenhouse gas emissions than legumes.¹⁷¹
- As the amount of protein increases in a plant-based product, the amount of greenhouse gases emitted decreases.¹⁷² For animal-based products, it is the opposite.¹⁷³
- Reduced meat consumption can lead to increased land available for reforestation or organic and other climate-friendly crop production practices that foster soil fertility and protect its capacity to sequester carbon.¹⁷⁴
- Organic producers are required by law to implement livestock management practices that protect natural resources, mitigating climate change through fostering healthy, fertile soils.¹⁷⁵
- Manure input on organic farms is calculated based on capacity of the site, preventing excessive nitrous oxide emissions from massive amounts of animal waste.
- Animals raised in well-managed systems on land can enhance nutrient cycling through strong grazing practices.¹⁷⁶

FOR HEALTHY COMMUNITIES

Animal factories threaten community health by contaminating local soils and waterways, spraying toxic pesticides on feed crops, compromising air quality, and reducing quality of life for nearby residents.

Animal factories generate more annual waste than some U.S. cities, contaminating soils and local waterways. One of the most egregious effects of this is the smell.¹⁷⁷ Stench from hog CAFOs in North Carolina and Iowa is so awful it inhibits residents from sitting outdoors, hosting cookouts, and hanging laundry. The odor permeates into their homes as well.¹⁷⁸

Moreover, residues of animal drugs and chemical feed additives can enter local waterways through manure lagoon seepage, runoff, and through the air. The long-term health impacts of the drugs are not well understood,¹⁷⁹ however hormones commonly used in beef are linked to endocrine disruption and developmental disorders. *E. coli* and other common pathogens present in CAFO manures are environmentally persistent, and endanger both aquatic ecosystems and drinking water resources.¹⁸⁰

Manure lagoon ruptures also cause massive fish kills, harmful algal blooms, and aquatic dead zones, harming local ecosystems and ecosystem benefits. From 2005 to 2014, pollution from hog CAFO lagoons in Illinois killed half of the fish in the state.¹⁸¹ Harmful algal blooms can also produce dangerous toxins that sicken or even kill people.¹⁸²

CAFOs use large amounts of conventional grain (primarily corn) and soy as feed ingredients¹⁸³, the two crops that alone make up the majority of pesticide use in the U.S. each year.¹⁸⁴ During spraying, pesticides can drift miles away from crop fields into surrounding communities. Pesticides are known to cause adverse health effects like cancer, neurological complications, birth defects, respiratory conditions, and other ailments.¹⁸⁵ Residents in farming communities, lower-income areas, and communities of color are particularly vulnerable to pesticide drift and the health risks that come with it.

Particulate matter and irritants, like hydrogen sulfide, nitrous oxide, and ammonia are often emitted

from CAFOs and are known to cause respiratory problems, mental stress, and elevated blood pressure. Chronic exposure to animal factory emissions can also lead to asthma and asphyxiation.¹⁸⁶

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of whole plant proteins in your diet can support production systems that do not put the health and wellbeing of nearby communities in jeopardy.

- If Americans increased plant-based protein intake by 10 percent, we would conserve enough water to provide two-thirds of California's water supply,¹⁸⁷ providing more water to communities affected by drought.
- Organic crop producers are prohibited from relying on toxic, synthetic pesticides and synthetic fertilizers, reducing the exposure of nearby communities to harmful pollutants and chemicals.
- Organic and humane animal producers do not generate the enormous levels of manure, emissions, or particulate matter created by CAFOs, meaning nearby communities are less likely to experience the odors, irritants, and air pollutants associated with industrial animal factories.

FOR FOOD SAFETY

Animal factories create breeding grounds for bacteria and pathogens, and increase the risk of widespread foodborne illness outbreaks. **CAFOs also rely heavily on animal drugs to suppress disease and get animals to slaughter more quickly, posing food safety threats from resistant bacteria and drug residues.**

The poor living conditions characteristic of animal factories harbor dangerous foodborne pathogens. Harmful bacteria may be more present in industrial livestock due to corn and soy-based diets, which increase acidity and cause ulcers or infections in animals.¹⁸⁸ In crowded living conditions

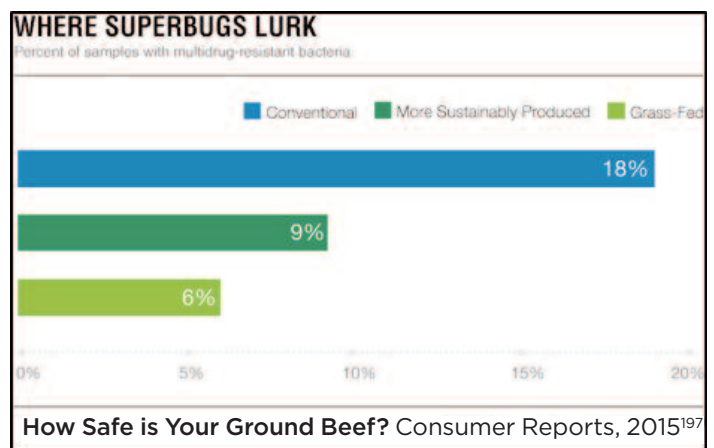
the animals are likely in contact with their manure, exposing them to *E. coli*.¹⁸⁹ As a result, conventional beef is more likely to contain bacteria and more likely to harbor antibiotic-resistant bacteria.¹⁹⁰

Food safety can be easily and quickly compromised as a result of our concentrated production system. A single package of factory-raised ground meat could contain tissue from hundreds if not thousands of animals, and a single downed cow infected with a pathogen such as *E. coli* could contaminate more than 100,000 hamburgers with an infectious dose.¹⁹¹

Antibiotics are used to preventatively mitigate the negative health effects from poor living conditions, but their routine use puts both human and animal health at risk. **Food animal production is the largest abuser of antibiotics worldwide and contributes to rising antimicrobial resistance.**¹⁹² About 80 percent of all antibiotics sold in the U.S. are marketed to animal producers, and many are used to boost productivity, rather than actually treat sick animals.¹⁹³ Human exposure to antimicrobial resistant bacteria is contributing to a public health crisis. Resistance limits the treatment options for infections making it more costly to find effective solutions.^{194 195 196}

In September 2017, a report by the Center for Disease Dynamics, Economics and Policy, along with researchers from Princeton University, the United Nations' Food and Agriculture Organization (FAO), and others demonstrated that limiting meat intake to the equivalent of one fast-food burger per person, per day globally could reduce antibiotic consumption in animals raised for food by 66 percent, and significantly help avoid a future in which antibiotics are no longer effective in fighting infections. That means limiting meat products to 40 grams/day.¹⁹⁸

Animal drugs such as ractopamine, hormones, and several antimicrobials are regularly given to animals, raising significant concerns for food safety. Limited research on ractopamine's human health impacts



prompted the Russian Federation¹⁹⁹ and the European Food Safety Authority²⁰⁰ to ban its use. Data on the direct effects from hormone exposure is also scant, but there is sufficient evidence that hormones in livestock still reach humans and have the potential for adverse health effects.²⁰¹

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of plant-based proteins in your diet can reduce your exposure to harmful pathogens and antibiotic-resistant bacteria.

- Beef that was raised without antibiotics, is certified organic, or is 100 percent grass-fed is less likely to be contaminated³ with *Staphylococcus aureus* or *E. coli* than conventional.²⁰²
- Sustainably raised products are less likely to have bacteria resistant to multiple antibiotic drugs than conventional meat and poultry.²⁰³
- Organic crop producers are required to process animal manures in some way, such as composting, before using them to fertilize soils,²⁰⁴ reducing the risk of pathogens or harmful residues contaminating crops.⁴
- Organic vegetables contain half the amount of nitrates, which are harmful in high quantities, as

³ Regardless of source, it is best practice to store and cook meat and poultry at the proper temperatures and clean all surfaces that were in contact with raw meat or poultry.

conventional vegetables 94–100 percent of organic food is free of pesticide residues.²⁰⁵

- The Food Safety Modernization Act (FSMA), acknowledging the increased food safety benefits of organic agriculture, requires that all new FSMA regulations must align with the strict standards of organic production.²⁰⁶

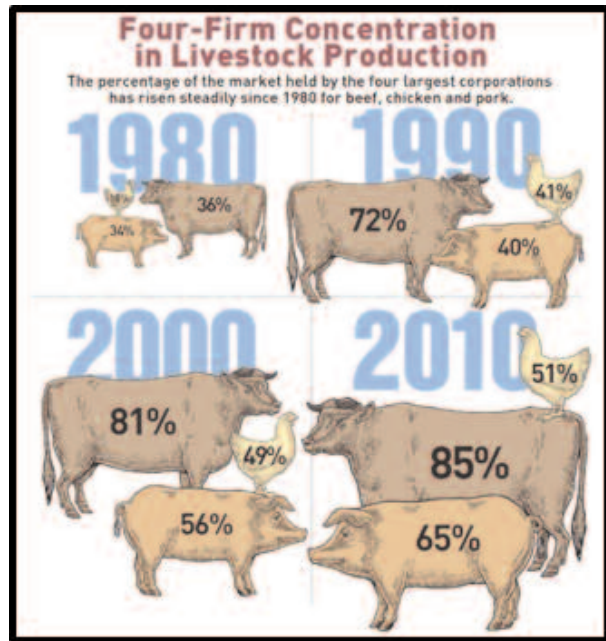
FOR FARMERS

Animal factory production restricts farmer liberties and profits, while allowing large companies to dictate policy changes that increase their market power. **Corporate control over the entire supply chain in food animal production exploits the farmers actually raising the animals and leads to policies that privilege large-scale producers.**

Consolidation has contributed to the loss of nearly 5 million independent family farms since 1935.²⁰⁷ Many companies contract with farmers for their animals²⁰⁸, profiting off their labor and investment while returning little wealth to the farmers.²⁰⁹ Contracts require farmers to use the specific feed provided to them. The farmers may not have access to information on which drugs or chemicals may be in feed.

Farmers are forced to foot the bill for maintaining their facilities, including the huge costs of managing the large amount of manure, which can be in the millions of dollars and often puts farmers deep in debt.²¹⁰ However, the majority of the money made selling the animal products goes to the corporation, not the farmer, leaving the farmer economically at the mercy of the company.²¹¹ If a company decides not to renew a contract with a farmer, it can destroy their entire operation and livelihood.

Food corporations can devote considerable resources to lobbying government, influencing policies that favor large-scale production and disadvantage



How Corporate Control Squeezes Out Small Farms. Pew Charitable Trusts (2012).

smaller farms. In 2016, the National Pork Producers Council spent \$1.6 million on lobbying.²¹² “Right-to-Farm” laws, supported by large food animal producers, have been enacted to prevent communities from resisting the construction of animal factories.²¹³ In 2010, meat trade groups spent nearly \$8 million lobbying against and successfully cut funding for reforms that would strengthen farmers’ rights.²¹⁴

In 2010, when Congress reauthorized the Child Nutrition Act, Tyson Foods spent over \$2.5 million lobbying.²¹⁵ The CNA reauthorization resulted in increased prevalence of meat and poultry in school lunches. In 2013, Tyson received nearly \$90 million from USDA in purchases of chicken, beef, and pork for school lunch programs.²¹⁶ The corruption runs rampant.

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of plant-based proteins in your diet can help support a diverse group of independent farmers operating at a variety of scales.

⁴ Raw produce may still host microbes of concern as a result of potential contamination during production, processing, and transport. Best practice for preventing foodborne illness is to thoroughly wash all produce.

- Shifting land use from conventional corn and soy for animal feeds toward other fruits and vegetables could raise farm incomes by \$336 million a year and generate 6,724 new jobs.²¹⁷
- Even with higher labor costs, organic crop farming can be 22 to 35 percent more profitable than conventional practices.²¹⁸
- One study found that organic broiler production, when compared to conventional, was more profitable for the farmer even with higher production costs.²¹⁹
- Another study found that organic agriculture and the use of community supported agriculture (CSAs) decreased the gender income gap for women farmers in the U.S.²²⁰
- Investments in biodiversity of organic livestock and produce farms reduce soil erosion, which decreases property losses.²²¹

FOR LOCAL ECONOMIES

Animal factories buy land that could be cropped or grazed by independent farmers and put market pressure on others to grow and utilize more intensive methods. **The presence of animal factories negatively impacts local economies by decreasing property values and removing wealth from local businesses.**

Property values can fall by about 10 percent when a new CAFO is located near a residence.²²² Animal factory operations often come with persistent odors, pollution risks, and insect infestations that lower market values for nearby homes. CAFO development can motivate locals and businesses to relocate, thereby shrinking the local property tax base. This may require an increase in government aid to the community.²²³

Owners of large animal factories invest less in the local communities. Smaller farms spend two times more on local expenditures than larger farms do.²²⁴

Livestock farms, which are more likely to be owned by large corporations, purchase only 11 to 59 percent of their inputs locally, compared to 85 percent for crop farms.²²⁵ Animal factory producers are more likely to hire as few workers as possible and purchase resources from other agribusinesses.²²⁶ Wealth from these transactions will not circulate within the community despite the companies' claims to the contrary.

Consolidation and corporate power in the meat and poultry markets pushes small, local livestock farmers out of business. In the beef industry, four meatpackers process roughly four out of five beef cattle.²²⁷ This consolidation pressures smaller farms to leave the industry, or grow and become more intensive.²²⁸ Without the market share to demand fair prices, more than half of U.S. farms lost money in 2012.²²⁹ The value of meat products is diminishing for independent producers. Pork producers in Iowa raised twice as many hogs in 2007 (47.3 million) than they did in 1982 (23.8 million), but the total value was 12 percent *less* in 2007.²³⁰

Reducing overall consumption of meat and poultry proteins, sourcing certified humane, organic, and/or pasture-raised meats, and increasing portions of plant-based proteins in your diet can support local economic growth and development.

- Shopping at farmers' markets has positive direct and indirect impacts on local economies. Farmers' market shoppers in Oklahoma spent \$3.3 million in 2001, yielding \$7.8 million in direct and indirect economic impacts on Oklahoma's economy.
- An estimated 795 jobs were directly generated from the success of these farmers' markets.²³¹
- Increasing consumption of plant proteins is also more cost effective for personal food expenses. The cost per gram of protein for soybeans and peanuts, for example, is roughly \$0.20 compared to about \$0.70 per gram of protein for beef and pork.²³²



HOW TO OPT OUT OF INDUSTRIAL MEAT

Protein is a necessary part of the human diet. Every cell in the human body contains protein, and dietary protein helps your body build and repair cells. It is particularly important during the growth and development stages of life. In addition to providing essential amino acids, many protein-rich foods are important sources of iron, a nutrient of which many people in the U.S. are deficient.²³³

That said, according to the Dietary Guidelines Scientific Advisory Committee, roughly 35 percent of people in the U.S. exceed the daily recommended intake for protein, the vast majority of which comes from animal sources.²³⁴

In order to address the environmental, social, human health, and economic consequences of intensive

animal production, we must end our overconsumption of meat and poultry, and shift our diet to include more plant-based proteins. We can do this by **cutting our meat consumption in half and eating wholesome plant-based proteins instead.**

Reducing total protein consumption and integrating more plant-based protein sources into your diet would have a substantial impact on environmental pressures while simultaneously providing healthy nutrition.²³⁵

In addition to reducing the amount of meat in your diet, it is important to intentionally source humanely-raised meats when you do eat meat. This includes certified humane, organic, and pasture-raised meat products.

Three Strategies for Cutting Meat Consumption in Half and Eating Wholesome Proteins

1. EAT LESS MEAT LESS OFTEN

There are many benefits to eating meat less frequently. Eating less meat is shown to correspond with consuming more plant-based foods like grains, fruits, and vegetables.²³⁶ It can also make buying certified organic, humane, and pasture-raised meats more practical. The price of these organic, humane, and pasture-raised meats may make them seem inaccessible, but the higher price is an investment in your personal health and the health of the planet. If you cut your meat intake in half, buying organic, humane, and pasture-raised meats shouldn't make your total food budget increase. Supporting certified producers also contributes to the growth and vitality of your local economy, including more jobs and more dollars staying in your region.²³⁷

TIPS FOR REDUCING FREQUENCY OF MEAT CONSUMPTION:

Start each week with a Meatless Monday. A growing body of evidence suggests that healthy thinking and behavior is synchronized to the week, with Monday being the day people associate with healthy resolutions. People are more likely to start diets, exercise regimens, quit smoking or schedule doctor's appointments on Monday than on other days of the week.²³⁹

People report that starting the week off with healthy eating keeps them on track throughout the week.²⁴⁰ Starting each week with a Meatless Monday can help you recommit to opt out of industrial meat!

The Meatless Monday movement, a campaign revived by Sid Lerner and the John Hopkins Center for a Livable Future (CLF), gained nationwide attention as many individuals, restaurants, school districts, celebrities, and businesses participating. With the intent of drawing attention to excessive

Studies have shown that people with very low meat intake had significant decreases in risk of death, and that the longer one adheres to a low meat diet, the more the significant the decrease in mortality.²³⁸

meat consumption globally and educating the public on the environmental and human health impacts of such meat consumption, there are Meatless Monday campaigns in 29 countries.²⁴¹ A study conducted in 2012 by CLF attempted to quantify the impacts of the campaign and found that 62% of the 1,000 respondents stated that the campaign influenced their dietary habits and they try to incorporate Meatless Mondays into their weekly routines.²⁴² Studies have shown that going just one day per week without any meat for a family of four equates to taking your car off the road for five weeks.²⁴³

For one meal each day, replace meat with plant foods. A 2014 survey found that people were generally most comfortable with simply removing meat from meals occasionally without substitution rather than seeking out other meat substitutions (e.g., tofu, meatless "burgers," tempeh, etc.).²⁴⁴ While it may not be necessary to include a protein in every meal, it is important to eat diverse, well-rounded meals whenever possible. If you choose to eliminate meat from a meal, look for healthy, organic plant proteins to substitute it with, like beans, nuts and seeds.

Reframe meals so meat is not the central component. In the West, meat tends to occupy the central position on our plates, and is often depicted as the focus of meals. There is a strong misconception that meat is a necessity with every meal.²⁴⁵ People often think about what to cook or order by determining what type or cut of meat they want and building the other decisions around it. It may take some time, but refocusing your meal planning by making decisions based on other meal components beyond the protein can help identify



creative ways to increase plant-based items in a meal or cut the meat entirely.

Another strategy is to eat smaller portions when choosing to include meat in a meal. Reducing meat portions and the intake of animal proteins per meal can improve heart health and reduce risk of disease. Additionally, by eating a reduced portion, the certified humane, organic, and pasture-raised meat you paid a price premium for in the market will cover more meals, leading to a lower cost per meal than consuming it all at once. Eating smaller portions of meat at each meal helps in so many ways: you can incorporate more plant-based foods in your diet; increase your access to certified humane, organic, and pasture-raised meats; improve your personal health and quality of life; and send a critical signal to the industrial meat complex.

Tell your local markets and restaurants that you want more plant-based options. Make it known to your local food businesses that you would purchase meals with plant-based proteins. The more they hear from you, the more they will include organic and non-GMO plant protein items on their shelves and menus.

TIPS FOR EATING REDUCED PORTIONS OF MEAT:

Cut the amount of meat you eat in HALF. If you are taking part in our “HALF for WHOLE” challenge by committing to cut your meat con-

sumption by half, the simplest way is to literally eat half the portion of meat you normally would with your meal. Take the pledge: <http://clf.center/Half-ForWhole>

Give your favorite recipes a flexitarian spin. That sounds a lot stranger than it is, but all it's really quite simple: add some plant-based ingredients to your meat products to reduce the actual portion of meat in the dish. Researchers call this “sustainability by stealth,” which is a creative way of saying making changes to your meals that aren't noticeable. For example, by mixing mushrooms into ground beef for hamburger patties, you reduce the portion of beef per patty while maintaining the texture, taste, and overall portion size of the burger.

Diversify your dish. Rather than a meat-centric entrée with vegetable and a starchy side dishes, change the way you think about the definition of a meal. Focus on plant-based foods first, like beans, vegetables, or grains, and bring any meat in as a small component of the broader dish rather than the main star. That way you will also have plenty of plant-based ingredients to satisfy your hunger rather than relying primarily on the meat portion to fill you up.

RESTAURANTS MAKING CHANGE

Restaurants around the country are diversifying menus by offering dishes and even entire *pre fixe* menus that put plants in the center of the plate. In addition to the growing number of exclusively plant-based restaurants, many chefs are choosing creative strategies for incorporating more plants and serving meat as a smaller component of well-rounded, healthy meals. Even the Culinary Institute of America challenged chefs in 2016 to rethink the protein on their menus.²⁴⁶

Use tools like The Eat Well Guide to find the best plant-based and sustainable food sources in your area: <https://www.eatwellguide.org/>



2. CHOOSE CERTIFIED HUMANE, ORGANIC, AND PASTURE-RAISED MEAT PRODUCTS

Reducing the amount of meat you consume is one part of a holistic solution. Whether choosing to eat meat occasionally or reducing the portion size of meats in your meals, the **protein that you do eat must come from certified humane, organic, and pasture-raised sources.** Effecting necessary change in the food and animal farming system will require both reducing the amount of meat consumed AND ensuring that the meat you do eat is raised in a manner that protects the planet and provides a healthy, wholesome product.

Producers who certify their products as humane, organic, and pasture-raised are required to meet specific standards of practice. These standards require some level of protection for the natural environment on the farm. Certified organic producers, for example, are required by law to protect natural resources, including soil, water, and biodiversity. By protecting soil health and fostering soil fertility, sustainable livestock systems actually sequester carbon in the ground, mitigating climate change by keeping carbon from building up in the atmosphere.²⁴⁷ Certified organic producers manage manure in a way that does not lead to nutrient pollution, and intentionally manage grazing of animals on land not suitable for crop production to enhance nutrient cycling.²⁴⁸

Certification standards for humane, organic, and pasture-raised products do not allow routine, non-therapeutic use of animal drugs, and prohibit the use of growth promoters. This decreases the likelihood of drug residues or antibiotic-resistant bacteria on the meat products you buy.²⁴⁹ Additionally, meat from grassfed cows have been shown to be higher in omega-3 fatty acids, which are important for reducing blood pressure and risk of heart attack, as well as promoting mental health.²⁵⁰ It is also higher in vitamins E, A, and C, and has lower total fat and caloric content than grain-fed meat.²⁵¹

Tips for finding and identifying certified humane, organic, and pasture-raised meat products:

SHOPPING AT FARMERS' MARKETS:

Community centers, libraries, and local city webpages can provide information on the days, times, and months of operation for local farmers' markets. Additionally, the USDA has a searchable tool called the National Farmer's Market Directory that can be used to find the nearest farmer's market based on zip code.

Questions to ask at the farmer's market:

- How many animals do you raise?
- Do they have access to the outdoors?
- Is part of that space covered with soil and vegetation?
- How big is the area they live in?
- What do they eat?
- Do you give them antibiotics in their feed or water?
- Do you give them drugs to promote weight gain?
- Are you certified organic or by any third-party welfare labels?

SHOPPING AT GROCERY STORES:

More and more, food retailers like grocery chains and independent markets are increasing the

amount of certified humane, organic, and pasture-raised meat offerings on their shelves, responding to consumer demand for such high value products. When walking the aisles, look for labels that certify products as meeting a high bar for animal welfare and are supported by a verifiable standard. If a local store does not appear to offer many of these labels, let the management know that you would purchase them if they were available.

Watch out for meaningless labels that sound similar to certified humane, organic, and pasture-raised, but don't have standards behind them. Food companies often try to trick consumers into paying a premium price for conventional food products by mimicking the language of well-regulated labels when they are essentially meaningless. Use this pocket guide from the GRACE Communications Foundation to help you decipher which meat labels are meaningful and which aren't: <http://cfs.center/meatlabels>

Labels to look for at the grocery store



- Animal Welfare Approved
- Certified Humane
- USDA Certified Organic
- American Grassfed Association
- A Greener World Certified Grassfed

CERTIFIED FARMERS IN THE UNITED STATES

There are thousands of farmers around the country raising animals humanely in systems that protect

Food companies often try to trick consumers into paying a premium price for conventional food products by mimicking the language of well-regulated labels when they are essentially meaningless.

the environment and manage resources effectively. They may choose to be certified under one or several of the quality labeling programs to help them communicate to their customers that their farms and products meet a high standard of care and stewardship.

These farmers market the meat they raise through farmers markets, community supported agriculture (CSA), local retailers, online stores, and some national retailers. The farmers need the continued support of customers to keep the high-welfare management practices economically viable.

For profiles of just a few of the country's diverse certified farmers, including information on how to find and access the products they sell, visit endindustrialmeat.org.

EATING AT RESTAURANTS:

As with grocery retailers, national and regional restaurants are also responding to increased consumer demand for certified humane, organic, and pasture-raised meat options. Many have begun to reform their menus to include one or several meat items that are more sustainably and humanely raised. Most restaurants will proudly advertise their sourcing policies if they will be received positively by consumers. The following regional and national chains source some or all of their meat from producers that meet a verifiable standard of welfare.

Committing to source meats raised without routine antibiotics and no hormones is a positive step towards protecting human health and animal welfare, but is not alone a guarantee that animals were not raised in intensive confinement settings. Whenever possible, check the company's website to learn about how they verify that their meats are raised



in a manner that is consistent with their antibiotics and/or hormones policies and the company's additional animal welfare policies. For a ranking of national restaurant chains based on antibiotics policies, download CFS' Chain Reaction report: <http://cfs.center/chainreaction>

Use the Eat Well Guide to find more restaurants with certified humane, organic, and pasture-raised meat on the menu: <https://www.eatwellguide.org/>

3. EAT MORE ORGANIC AND NON-GMO PLANT PROTEINS

Only eating meat occasionally and reducing its portion size allows you to incorporate more plant-based foods into your diet, thereby improving your overall health, nutrition, and quality of life. Many plant foods are rich in protein and can contribute to a healthy, sustainable diet. Diets high in organic and non-GMO plant proteins help to lower the risk of heart disease²⁵², lower cholesterol²⁵³, lower systolic blood pressure²⁵⁴, reduce risk of obesity in children²⁵⁵, and lower mortality. Beans, nuts, seeds, fruits, and vegetables that are certified organic are required to be produced in a way that maintains or improves the natural resources of the farm and the surrounding ecosystem, including water, soil, and biodiversity. There is also mounting evidence that organic plant foods offer significant health benefits over their conventional counterparts, most notably a substantial reduction in exposure to toxic pesticide residues.²⁵⁶

The amount of protein your body needs varies depending on your personal attributes, health, and lifestyle. Generally the Centers for Disease Control and Prevention (CDC) recommends that 10-35% of your daily calories come from protein—roughly 46 grams of protein per day for adult women and 56 grams per day for adult men.²⁵⁷ Eating extra protein from meats in particular can lead to poor health outcomes, like elevated LDL, or “bad,” cholesterol.²⁵⁸ Only two servings of pork, for example, would exactly meet the recommended protein consumption for adult women for an entire day.²⁵⁹

Tips for identifying, finding and using organic, non-GE whole plant proteins:

SHOPPING AT GROCERY STORES

There are many grains, nuts, seeds, legumes, vegetables, and even some fruits that have a significant amount of protein per recommended serving. In combination, these plants can provide a healthy daily portion of protein in addition to a diverse array of other nutrients that contribute to a well-rounded and healthy diet. Be sure to look for the USDA Certified Organic seal on product labels or produce stickers, and the Non-GMO Project Verified label on plant-based processed foods. The chart below provides a list of several common plant foods that have a high amount of protein per serving. (*For more specific information on plant-based proteins, please see Protein Table on page 30.*)

EATING AT RESTAURANTS

In addition to intentional sourcing of meat and poultry products, restaurants are increasingly recognizing that consumers are interested in flexitarian diets and may choose to eat meatless meals occasionally. As a result, many have improved the availability of meatless items on their menus. Use HappyCow to find restaurants near you that source meatless meals: <https://www.happycow.net/search>



CONCLUSION

Ending overconsumption of meat and poultry products is critical to end the environmentally destructive, socially unjust, and inhumane industrial animal factory system. Consumers have considerable power to influence the market. Eating meats occasionally, choosing certified humane, organic, and/or pasture-raised meats, and incorporating more organic and non-GMO plant proteins can affect positive change. Shifting demand can send a strong signal to the industry that business-as-usual will no longer be acceptable.

But market changes are only one way to affect the necessary change, and do not guarantee that the industry as a whole will implement and maintain critical reforms. To create lasting, enforceable changes, we need policy initiatives that hold the food animal industry accountable for harmful practices and support producers that are or shift to humane, organic, and/or pasture-raised systems.

THE FEDERAL GOVERNMENT MUST:

- Hold CAFOs and other animal factories accountable for emissions and pollution.
- Prohibit the use of animal drugs for all productivity purposes, including growth promotion, feed efficiency, and disease prevention.
- Create baseline national standards for farm animal welfare.
- Strengthen technical assistance and other support programs for food animal producers to adopt sustainable and humane practices or to seek out third party welfare certification.
- Support immediate implementation and enforcement of the Organic Pasture Rule and the Organic Livestock and Poultry Practices Rule, as well as transition incentive programs for conventional food animal producers interested in becoming certified organic.
- Develop policies that protect the rights of workers in the food animal supply chain and ensure safe and humane working conditions.
- Enforce anti-trust laws and prevent illegal consolidation in the food animal industry.

PLANT-BASED SOURCES OF PROTEIN

	Standard Serving ²⁶⁰	Grams of Protein ²⁶¹	% Recommended Daily Protein ⁵
Peanuts (raw)	1.5 ounces	11 grams	21.6%
Beans, Great Northern (canned)	0.5 cup	9.6 grams	18.8%
Pumpkin Seeds (dried)	2 tablespoons	9 grams	17.6%
Almonds (raw)	1.5 ounces	9 grams	17.6%
Lentils (cooked)	0.5 cup	9 grams	17.6%
Cashews (raw)	1.5 ounces	7.8 grams	15.3%
Beans, Pinto (canned)	0.5 cup	7.7 grams	15%
Beans, Black (canned)	0.5 cup	7.5 grams	14.7%
Beans, Fava (canned)	0.5 cup	7 grams	13.7%
Wild Rice (cooked)	1 cup	7 grams	13.7%
Beans, Kidney (canned)	0.5 cup	6.6 grams	12.9%
Hemp Seeds	2 tablespoons	6.3 grams	12.4%
Beans, Chickpea (canned)	0.5 cup	6 grams	11.8%
Spinach (cooked)	1 cup	5.4 grams	10.4%
Chia Seeds (dried)	2 tablespoons	5 grams	9.8%
Amaranth (cooked)	0.5 cup	4.7 grams	9.2%
Guava (raw)	1 cup	4.2 grams	8.2%
Peas	0.5 cup	4 grams	7.8%
Quinoa (cooked)	0.5 cup	4 grams	7.8%
Farro	0.5 cup	4 grams	7.8%
Flax Seeds	2 tablespoons	3.8 grams	7.5%
Avocado	0.25 cup	1 gram	2%
Meats			
Chicken (breast, cooked)	3 ounces	16 grams	31.4%
Pork (lean loin, cooked)	3 ounces	23 grams	45.1%
Beef	3 ounces	24 grams	47%
Turkey	3 ounces	15 grams	29.4%

⁵ Based on 51 gram average recommended daily protein.



FISH

In selecting diverse proteins, many consumers seek out fish for its lean protein and high omega-3 fatty acid content. As with meat and poultry products, it is important to source fish carefully. Frequent consumption of fish increases consumer exposure to the environmental contaminants present in the ocean,²⁶² such as methylmercury or polychlorinated biphenyl

(PCBs). Overconsumption of fish has also contributed to dwindling global fish supplies and harms to marine ecosystems.

Here are a few tips to consider when choosing to include fish as an occasional source of protein:

Avoid farmed fish that are raised in intensive aquaculture systems in cages and pens in the open ocean:²⁶³

- Ocean-based fish farms contribute to overfishing and a dangerous reduction in global fish supplies.
- Ocean-based facilities have high rates of escapes. Escaped fish threaten wild species and surrounding ecosystems.
- Open-ocean facilities change the behavior and physiology of wild species surrounding these farms.
- Fish waste accumulates in high quantities and pollutes the ocean, spreading disease and pathogens.
- In ocean-based fish farms, large marine predators have been killed by getting trapped in the nets and cages or shot by workers.
- Fish confined in cages store more fat, making them more susceptible to bioaccumulation of fat-seeking pollutants like mercury and PCBs.

When choosing wild-caught fish, make sure that the practices used do not harm other aquatic species and the surrounding ecosystems:²⁶⁴

- Avoid fish caught by a bottom trawl. A bottom trawl is a fishing net pulled along the seafloor that disrupts the benthic communities and causes damage to coral.
- Avoid fish caught by dredging. Dredging is the practice of dragging a metal basket along the seafloor that also causes harm to the seafloor ecosystem and results in high levels of by-catch.
- Avoid fish caught by gillnetting. Gillnetting is the practice of leaving a large net suspended in the water that fish swim into accidentally. This often results in unintentional by-catch and can seriously injure or kill other aquatic species.

Further resources for information about sourcing seafood sustainably include the Marine Stewardship Council and the Monterey Bay Aquarium Seafood Watch Consumer Guide.

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CENTER FOR FOOD SAFETY (CFS) empowers people, supports farmers, and protects the environment from the harmful impacts of industrial agriculture. CFS uses legal actions, policy initiatives, groundbreaking scientific and policy reports, educational materials, market pressure and grassroots campaigns to protect and promote our right to safe food and the environment.

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