Poison-Free Poultry

Why Arsenic Doesn’t Belong in Chicken Feed
About Food & Water Watch

Food & Water Watch works to ensure the food, water and fish we consume is safe, accessible and sustainable. So we can all enjoy and trust in what we eat and drink, we help people take charge of where their food comes from, keep clean, affordable, public tap water flowing freely to our homes, protect the environmental quality of oceans, force government to do its job protecting citizens, and educate about the importance of keeping shared resources under public control.

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# Poison-Free Poultry

## Why Arsenic Doesn’t Belong in Chicken Feed

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Executive Summary

U.S. poultry farmers have used drugs containing arsenic, a known poison, to control the common disease coccidiosis for decades.¹ The Food and Drug Administration (FDA) approved the arsenic-based drug roxarsone as a feed additive in 1944.² The chicken industry discovered that roxarsone promoted growth, increased feed efficiency (pounds of chicken produced from each pound of feed), and improved flesh pigmentation as well.³ Between 1995 and 2000, 70 percent of broiler chicken producers used roxarsone feed additives.⁴

While the chicken industry maintains that arsenical drugs are safe, arsenic poses problems to human health from exposure to chicken meat and waste. Chronic arsenic exposure increases the risk of cancer, cardiovascular disease, diabetes and other health problems.⁵ A study of the U.S. Department of Agriculture (USDA)'s limited data found arsenic levels in young chickens to be approximately three times higher than average levels in other meats.⁶ Most arsenical drugs fed to chickens are excreted in waste, which can rapidly decompose into more toxic forms.⁷ Typically used as fertilizer, the waste can contaminate soil, water and crops.

The FDA, USDA and the U.S. Environmental Protection Agency (EPA) coordinate a fragmented system to regulate arsenic.

- The FDA set allowed levels for arsenic residues in poultry in 1951 and has not revised them since.⁸ Yet, the average American’s annual chicken consumption has tripled from less than 20 pounds in the 1940s to nearly 60 pounds in 2008.⁹
- The EPA reduced the maximum contaminant levels for arsenic in drinking water from 50 parts per billion (ppb) to 10 ppb in 2001.¹⁰ The cancer risk at the new standard is still 50 times higher than the risk allowed for many other carcinogens.¹¹
- The USDA Food Safety and Inspection Service (FSIS) tests very few broiler chickens for arsenic residues. In 2005 and 2008, FSIS did not test any domestically produced chickens for arsenic residues.¹² Just over half the chickens tested between 2000 and 2008 contained detectable arsenic residues.¹³

Two major chicken companies, Tyson Foods and Perdue Farms, have claimed to stop using arsenical feed additives,¹⁴ though some evidence raises questions about those claims. The European Union has set a ban on arsencals in poultry feed and a zero-tolerance level for arsenic in chicken meat,¹⁵ which leaves little doubt that alternative methods are available. There are ongoing legislative efforts to ban arsenic use in U.S. chicken production.

It’s high time to re-evaluate the use of arsenic in U.S. poultry production. Food & Water Watch recommends:

- **A Ban on Arsenical Feed Additives and Drugs**: The FDA should prohibit the use of arsenic-based additives in animal feed.

- **Research on Poultry Production**: USDA research priorities should include means to improve chicken gut health through improved nutritional and flock management, including studying the effects of stocking density on disease prevalence.

- **Mitigate Environmental Contamination**: Ground and surface water monitoring in areas with concentrated poultry production should include testing for arsenic. Contaminated drinking water must be treated to protect public health.

Growth promotion and improved pigmentation are not sufficient reasons to introduce carcinogens into the food supply and the environment. It is time for an end to the use of arsenic in U.S. poultry and livestock production.
Introduction

It may be hard to believe, but over the last 60 years, arsenic has become a routine part of a chicken’s diet. Used originally to treat intestinal disease, it is now also used as a growth promoter and cosmetic additive in the feed given to broiler chickens (chicken raised for meat). Between 1995 and 2000, 70 percent of the 8.7 billion broilers produced each year were fed arsenic,\(^{16}\) and one industry source estimated that the use of arsenic is even more widespread today.\(^{17}\) Meanwhile, new studies have shown that the risk to human and environmental health is much higher than presumed when the government originally approved arsenical drugs as feed additives. A few companies have claimed to stop using arsenic. But it shouldn’t be left to individual companies to decide and consumers to wonder if companies use it or not — it’s time to ban the use of arsenic in chicken feed.

Arsenic in Modern Poultry Production

Poultry farmers in the United States have been using arsenic as a means to control a common poultry disease known as coccidiosis for decades.\(^{18}\) Coccidiosis is caused by a protozoan parasite (Eimeria, commonly known as coccidia) that invades the intestinal cells of poultry. Affected birds experience a variety of symptoms including diarrhea, impaired food absorption and growth, immune suppression, and even death.\(^{19}\) While not all chickens infected with coccidia die, their meat and egg production remains impaired, leading to significant economic losses for farmers.\(^{20}\) The parasite can be spread through exposure to contaminated chicken litter, creating challenges for poultry farmers of all scales.\(^{21}\)

The Food and Drug Administration (FDA) approved roxarsone, a new arsenical compound, as an animal feed additive for the prevention of coccidiosis in March 1944.\(^{22}\) The preventive use was important, since symptoms of coccidia infestation can appear quickly, making treatment ineffective
at preventing fatalities and production losses.\textsuperscript{23} Yet, by the mid-1950s, roxarsone was only effective against two of the nine species of chicken coccidia, as coccidia again developed resistance to the treatment. During the 1970s, chicken producers used a class of antibiotics known as ionophores more commonly to prevent coccidiosis.\textsuperscript{24}

However, the chicken industry soon discovered that roxarsone promoted growth in broiler chicks, so producers continued to use it.\textsuperscript{25} In 1951, Salsbury Labs got its first FDA approval for roxarsone, not as an anticoccidial but “to promote growth, feed efficiency and improve pigmentation” for poultry.\textsuperscript{26} By the 1970s, ionophores became the most widely used drugs to prevent coccidiosis in broiler chickens and were used in combination with the growth promoter roxarsone.\textsuperscript{27} By the 1980s, producers began to doubt roxarsone’s value as a growth promoter and its use declined, but only temporarily. Some growers began to notice that ionophores alone without roxarsone failed to control coccidiosis. Tests showed that roxarsone was actually the effective agent against some of the coccidia that had become resistant to the ionophores. The ionophoreroxarsone combination regained popularity and continued to be used by the broiler industry.\textsuperscript{28} Between 1995 and 2000, at least 70 percent of broiler chicken producers used roxarsone additives in their feed.\textsuperscript{29}

The U.S. chicken industry grew and concentrated substantially during the second half of the 20th century. In the 1940s, commercial chicken flocks typically consisted of layer hens, as opposed to broilers, and had 400 or more layers. Chicken meat at that time was largely a byproduct of egg production, but agricultural research in the 1940s and 1950s made commercial broiler production possible.\textsuperscript{30} By the mid-1980s, the chicken meat industry had mostly converted to large year-round, broiler-only operations.\textsuperscript{31} As of 2008, a medium-sized poultry operation held a whopping 600,000 broilers.\textsuperscript{32}

As specialized farms grew, fewer and fewer farmers raised chickens on diversified farms with multiple crops and livestock types. In 1950, 78.3 percent of American farms had chickens. By 1964, that number dropped by more than half to 38.3 percent, and by 1992, only 5.6 percent of farms raised chickens.\textsuperscript{33}

Chickens experience additional stress in large-scale poultry facilities, known as confined animal feeding operations (CAFOs), where access to natural sunlight is almost nonexistent and having 25,000 to 30,000 birds per chicken house is common.\textsuperscript{34} As chicken production industrialized, coccidia have proven to be very adaptable and, thus far, impossible to eradicate.\textsuperscript{35} In 2005, Dr. David Chapman, renowned in the field of coccidial research, claimed that “As long as chickens are raised on the ground and therefore in contact with their feces, then coccidiosis will remain a threat to the poultry industry.”\textsuperscript{36} Anticoccidials, arsenical growth promoters and antibiotics have thus been used to maintain the health of larger flocks.

The companies that produce feed additives have concentrated as well. As of 2000, the pharmaceutical company Alpharma Animal Health (Alpharma) was the top producer of antibiotic feed additives and the second-largest producer of anticoccidial drugs.\textsuperscript{37} In 2008, King Pharmaceuticals acquired Alpharma.\textsuperscript{38} Alpharma produces more than half of roxarsone products currently in use, and just six companies produce more than 90 percent of them.\textsuperscript{39}

Chicken industry groups argue that using roxarsone in chicken production is safe for consumers.\textsuperscript{40} New scientific research, however, has identified that arsenic in poultry feed may pose significant risks for both human health and the environment. Additionally, more and more chicken producers are demonstrating that raising chickens successfully is possible without arsenic.
Environmental and Human Health Impacts

Arsenic poses problems both in the chicken meat itself and in chicken waste. U.S. chicken consumption has increased significantly over the last several decades, and new studies demonstrate that arsenic residues may be higher in chicken meat than has been previously known. More research is necessary to understand just how much arsenic Americans consume in chicken. Arsenic is also present in chicken waste, where it converts to more dangerous forms of arsenic than those originally used in the feed. Arsenic in chicken litter can contaminate soil and water as well as damage crops, and it complicates alternative disposal methods for chicken litter.

Health Impacts

Chronic exposure to arsenic is associated with increased risk for several kinds of cancer, including bladder, kidney, lung, liver and prostate. Arsenic exposure is associated with increased risk of cardiovascular disease and diabetes, as well as neurological problems in children. Americans are most likely to be exposed to arsenic through natural sources in groundwater or through arsenic used in industrial processes. Each exposure contributes to a person’s total arsenic exposure, and sources such as the American Cancer Society urge the importance of reducing arsenic exposure from any venue as much as possible.

Areas with concentrated poultry production have experienced public health concerns tied to the use of arsenic feed additives, such as increased soil arsenic concentrations and even arsenic in house dust. When chicken litter containing arsenic is used as fertilizer, it can contaminate soil and water, a particular threat to local populations. In Maryland’s Eastern Shore, an area with high broiler production, an analysis of tap water found higher levels of arsenic in areas where chicken litter is spread on fields than where it is not.

Arsenic Exposure Through Chicken Consumption

The FDA set allowed levels for arsenic residues in poultry — 2 parts per million (ppm) for liver and 0.5 ppm in muscle (meat) — in 1951. Those standards are long overdue for reconsideration, particularly because Americans’ consumption of chicken has increased substantially since that time. In the 1940s, Americans ate less than 20 pounds of poultry per person per year. In 2008, Americans on average ate nearly 60 pounds per person. African Americans and Latinos generally eat more chicken and are thus at risk of more arsenic exposure. Additionally, according to epidemiologist Dr. Keeve Nachman, the tolerance levels “predate our current understanding of the human health effects of exposure to arsenic.”

Hogs and Turkeys

While chickens are the focus of this report, arsenic-based feed additives are also used in the turkey and hog industries to prevent disease and promote growth. There is far less research on the public health and environmental impacts of using arsenic with these animals. One study has found evidence of inorganic arsenic in waste lagoons on large hog operations where arsenic feed additives are used. The recommendations included in this report apply to all livestock treated with arsenic-based drugs.

Very little is known about arsenic residues in chicken meat due to lack of oversight. The U.S. Department of Agriculture (USDA’s Food Safety and Inspection Service (FSIS) National Residue Program (NRP) evaluates chemical residues, including drugs and pesticides, in meat. Since 1989, the NRP has evaluated arsenic in chicken, but focused testing on chicken livers, rather than the muscle tissue that people typically eat. Because the NRP is continually under-prioritized, FSIS tests very few, if any, samples of chicken each year (see discussion below).

A USDA study examined the limited NRP chicken liver data to extrapolate arsenic levels in chicken meat and estimate American’s average arsenic intake based on modern chicken consumption levels. The mean arsenic concentration in young chickens, which comprise 99 percent of U.S. chicken consumption, ranged from 0.33 to 0.43 parts per million (ppm), averaging 0.39 ppm. Compared to other meat and poultry, arsenic levels in young chickens were approximately three times higher.

The study estimated that this level of consumption results in the typical American eating between 2.13 and 8.07 micrograms of total arsenic and between 1.38 and 5.24 micrograms of inorganic arsenic per day. (When arsenic is bonded to carbon atoms, as it is in roxarsone, it is considered organic arsenic. The pure element is inorganic arsenic, which is far more toxic to humans.) The risk of arsenic consumption is based on a person’s weight, with the same amount of arsenic being more dangerous to someone who weighs less. The United Nation’s World Health Organization recommends that no one consume more than 50 micrograms per kilogram of body weight per day of inorganic arsenic. For a 150-pound person, that’s just under 0.05 ounces of arsenic per year. While still below these tolerance levels, typical American consumption of chicken adds to any other arsenic exposure from drinking water and other environmental sources.
A study by the Institute for Agriculture and Trade Policy (IATP), a non-governmental organization, went a step further and tested arsenic levels in the chicken meat sold at grocery stores and fast food outlets. Of the 151 retail packages tested, 55 percent had detectable levels of arsenic, up to 21.2 ppm. The range of brands sampled included certified organic chicken and other companies that do not use arsenical feed additives. Of the non-premium and non-organic brands, 74 percent of the retail chicken tested had detectable levels of arsenic. Of the 90 orders of fast food chicken tested, arsenic was detectable in all samples, at levels ranging from 2.2 to 46.5 ppm. These two studies point to the need for a more comprehensive evaluation of arsenic residues in the chicken flesh consumers actually eat and a re-examination of allowable residue levels.

**Environmental Impacts**

Arsenic is an element. While it combines with other elements to form other compounds, it doesn’t break down in nature. Nearly 90 percent of the arsenic fed to chickens is excreted through urine and feces. An estimated 2 million pounds of roxarsone are fed to chickens each year, contaminating much of the estimated 26 to 51 billion pounds of waste broiler chickens produce each year. Most of that waste is applied to fields as fertilizer, providing a pathway for arsenic to contaminate soil, water and crops.

Concentrations of arsenic vary in chicken litter. Two studies found a range of 15 to 48 milligrams per kilogram (mg/kg) of roxarsone and 1 to 39 mg/kg of total arsenic in different tests of chicken litter. What’s concerning about the arsenic in waste is not just the amount, but also the type. Organic arsenic in chicken litter can rapidly convert to the much more toxic inorganic arsenic. A study analyzing forms of arsenic in chicken litter found roxarsone to be the dominant organic form in half the samples and a form of inorganic arsenic to be dominant in the other half. Further research indicates that composting methods and duration affect the rate at which roxarsone converts to inorganic arsenic.

Farm fields to which poultry litter has been applied have been found to have elevated levels of arsenic, and crops grown in soil contaminated with arsenic can absorb arsenic, contaminating the crops. Crop absorption of arsenic depends on the plant and the soil type. Arsenic chemically resembles phosphorus, a necessary plant nutrient included in fertilizers, and under certain conditions, such as sandy soils, plants are more likely to absorb arsenic from the soil instead of phosphorous. States have varying standards for maximum acceptable arsenic in soils.

Both organic and inorganic arsenic can leach into ground and surface waters. Scientists estimate that between 70 and 90 percent of arsenic in poultry litter becomes water-soluble, creating significant contamination risks for water sources. The EPA recently reduced the tolerable level of arsenic in drinking water to 10 parts per billion, a five-fold decrease from the previous limit. Even that level of arsenic creates a cancer risk for the public, as the EPA itself admits. Several researchers have raised concerns that arsenic from poultry litter poses a long-term threat to ground and surface water.

Land application is by far the most common use for poultry litter, with approximately 90 percent of litter disposed of in this fashion. However, in areas of the country where poultry production is concentrated, as much as half of the litter is surplus, meaning there is too much of it to apply to local cropland. Alternative uses of poultry litter include burning it as a biofuel or turning it into pellets to be sold as commercial fertilizer. Both methods pose risks for arsenic contamination. Arsenic can be emitted through the air when poultry litter is burned, and the process of pelletizing poultry litter does not eliminate arsenic in the litter, leading to many of the same problems as using the litter directly as fertilizer in the first place.
Who’s Responsible?

The FDA, USDA and EPA all share responsibility for monitoring and regulating toxic contaminants in our food and environment. In the case of arsenic, the system is weak and fragmented and leaves consumers and the environment unprotected.77

Food and Drug Administration

The FDA is responsible for evaluating drugs both for humans and animals, which includes livestock and pets, as well as monitoring food for certain contaminants, including pesticides and industrial chemicals. Roxarsone received its initial approval in 1944, and the FDA has approved over a hundred roxarsone-based “combination drugs” since.78

The National Academy of Sciences and National Research Council, independent bodies, published a report on roxarsone use in 1970. The report revealed the need for updated information on the efficacy and manufacturing of roxarsone.79 The application to approve a new form of the drug in 1981 provided the opportunity for the FDA to review roxarsone’s environmental impact, which had not been sufficiently covered in its approval to meet earlier regulatory standards. In February 1981, the FDA approved Salsbury Labs’ Environmental Impact Analysis Report (EIAR) for roxarsone. The report acknowledged the possibility that feeding roxarsone to poultry and swine could yield “residues of the compound which may be present in the food of man.”80 The EIAR denied that roxarsone causes any other negative impact, even via the “inadvertent pollution of water streams with poultry and swine waste.”81 Clearly, given the scientific studies described above, chicken litter containing roxarsone poses a legitimate environmental risk as well as a risk to human health. Additionally, the report claimed that “the total market for 3-Nitro-W [roxarsone] is small, and is limited to small farm operations.”82 While roxarsone use had declined in the 1970s, it is clearly widespread in broiler production today and used in large-scale farms. The EIAR led the FDA to a “finding of no significant impact” later that year. While there had been serious environmental contamination near roxarsone’s production facility in Charles City, Iowa (see below), the FDA deemed that Salsbury Labs had taken the required corrective actions and were in compliance with emission requirements.83

In response to publicity regarding new studies on arsenic in 2007, an FDA spokesperson stated that it “has no data to suggest that there have been any adverse health effects in humans” because of roxarsone in chicken feed.84 The lack of evidence seems to have as much to do with a failure to look for it than a lack of adverse effects. While the drinking water standard for arsenic has been strengthened, the standards for arsenic residues in poultry have remained unchanged by the FDA for nearly 60 years.85

Environmental Protection Agency

The EPA addresses maximum levels of contaminants in the environment as well as specific instances of severe localized contamination. In 2001, the EPA reduced the maximum contaminant levels for arsenic in drinking water from 50 parts per billion (ppb) to 10 ppb with compliance required by January 2006.86 While the action to reduce arsenic exposure is laudable, the risk of cancer from arsenic levels at the new standard is still 50 times higher than the risk allowed for many other carcinogens.87

In 1977, the EPA investigated Salsbury Labs’ roxarsone production facility in Charles City, Iowa, and discovered that waste was contaminating groundwater near the facility and reaching the Cedar River watershed. The facility became a Superfund site and the EPA still monitors it every five years (as does all former Superfund sites) to ensure that corrective practices are followed. While the FDA found little environmental impact in 1981, problems at the facility continued after that time, and the EPA did not consider the cleanup and corrective actions sufficient until 1993. As of 2005, the year of the most recent review, the facility continues to follow the appropriate measures to prevent further contamination.88
U.S. Department of Agriculture

The USDA Food Safety and Inspection Service (FSIS) is responsible for monitoring various residues in meat and poultry, but the agency has failed to take appropriate action to determine arsenic residues in chicken meat. In 2001, the FSIS checked only 1,207 samples of an estimated 8.6 billion broiler chickens.90 The monitoring focused on chicken livers, not the chicken parts most commonly consumed.90 Yet, even this paltry level of testing has dwindled in recent years, with FSIS not testing any domestically produced chickens for arsenic residues in 2005 and 2008.91 In total, FSIS tested 5,786 of the approximately 72 billion broiler chickens produced between 2000 and 2008. That’s 0.00008 percent — or one in every 12 million chickens — tested.92

More troubling is the fact that the testing has revealed arsenic residues in a significant number of the chickens tested. Of just under 6,000 young chickens tested, only four tests revealed arsenic levels above the tolerance levels. Yet, just more than half of the tests revealed some arsenic to be present in the chicken.93 The presence of some amount of arsenic is so common, that it is critical to re-evaluate the FDA’s tolerance levels to assure consumers are protected. It is also critical to test more chickens, not fewer.

In 2010, the USDA inspector general released an evaluation of the FSIS’s National Residue Program and reported “that it is not accomplishing its mission of monitoring the food supply for harmful residues.”94 Two criticisms stand out. The first one is that the FSIS fails to recall meat even when it finds evidence of veterinary drug residues. The second is that the FSIS, the EPA, and the FDA fail to coordinate effectively to prevent the public from harm by establishing relevant standards.95 The demonstrated existence of arsenic residues in chicken meat is a case example of oversight failure and insufficient monitoring to protect consumers.

Outdated tolerance levels and infrequent monitoring on top of a failure to consider decades of new scientific knowledge about arsenic as a primary environmental contaminant and cause of cancer mortality add up to an ineffective system for protecting public health.

Raising Chickens Without Arsenic

The poultry industry vigorously defends the effectiveness and safety of arsenic-based drugs and feed additives and tries to pin any consumer exposure to arsenic on naturally occurring levels of arsenic in the environment or other sources.96 The National Chicken Council has stated, “We are not aware of any study that shows implications of any possibility of harm to human health as the result of the use of these products at the levels directed.”97 The major arsenic feed additive manufacturer, Alpharma, claims its product “does not greatly increase arsenic levels compared to naturally occurring arsenic levels in poultry.”98 Additionally, the company notes that its arsenic feed additive “in poultry litter applied to fields has no detectable impact on the environment even after 20 years of use,” citing environmental studies from the 1960s.99 And yet, the search is on for alternatives, some major players have stopped the use of arsenic, and there are ongoing legislative efforts to ban the use of arsenic in poultry feed.

Researchers have recently stepped up efforts to prevent and treat the poultry intestinal disease coccidiosis without the use of arsenical products. One research focus is improving poultry intestinal health, so poultry are less susceptible to coccidiosis and other diseases.100 Alpharma has a patent pending on a feed additive to promote the growth of healthy bacteria in poultry digestive tracts, to be used with or without arsenic feed additives.101 Companies are also working to promote anticoccidial vaccines, both in response to drug-resistant varieties of coccidia and to prevent concerns about drug residues.102

Tyson Foods and Perdue Farms, two of the largest U.S. poultry companies, claim to have stopped using arsenic compounds in July 2004 and 2007, respectively.103 Tyson Foods defends the use of roxarsone, but made the decision in the face of consumer pressure. According to a spokesman, “We believe roxarsone is safe; however, public criticism of the product in recent years led to public misunderstanding and prompted us to suspend using it.”104 Perdue Farms has stated it can operate effectively without the use of arsenic.105 Even

USDA Arsenic Residue Testing in Broiler Chickens

![Graph showing arsenic residue testing in broiler chickens from 2000 to 2008]

Arsenic on the Eastern Shore

Poultry and eggs are major players in the economy of the Delmarva Peninsula, which includes Delaware and the Eastern Shore of Maryland and Virginia. According to the 2007 U.S. Census of Agriculture, poultry and eggs make up nearly 70 percent of Delmarva’s total agricultural sales. According to the poultry industry, there are approximately 1,700 chicken operations raising nearly 11 million chickens per week there, which amounts to 7 percent of U.S. broiler production.

On the Delmarva Peninsula, poultry operations produce more waste than is produced by a city of 4 million people. By comparison, the population of the entire state of Maryland is approximately 6 million people. Manure produced on the Delmarva Peninsula far exceeds the local need to fertilize crops, by two or three times as much in some areas, posing serious potential for excess nutrient runoff into the Chesapeake Bay. Researchers estimate that between 20 and 50 metric tons of roxarsone is applied to Delmarva fields each year via poultry waste.

An analysis of Delmarva tap water found higher levels of arsenic in areas where chicken litter is spread on fields than where it is not. Groundwater tests on both sides of Maryland’s Chesapeake Bay Coastal Plains found arsenic in some household wells using two specific aquifers beneath the Eastern Shore. Concentrations reached up to 13 times the EPA tolerance limit. In general, arsenic concentrations were higher in the parts of Maryland on the Delmarva Peninsula. While scientists blame much of the contamination on naturally occurring arsenic, “the possibility of surface contamination cannot be ruled out.” Either way, local residents do not need further arsenic exposure from the water they drink, the chicken they eat or their environment.

Recent lawsuits and legislation indicate how contentious issues around chicken production in Delmarva can be. Two environmental groups, Assateague Coastkeeper and the Waterkeeper Alliance, recently sued Perdue and one of its contract farmers over alleged improper handling of chicken litter. The recent settlement of a lawsuit against the EPA and a subsequent executive order from President Obama, require standards be set for nitrogen and phosphorus polluting the Chesapeake Bay. The EPA is developing specific regulations to address pollution from livestock manure, which, according to the Washington Post, “has surpassed human waste as a bay pollutant.” In 2010, a bill to specifically prohibit the use of arsenic in animal feed was introduced in the Maryland State Legislature. The resolution of these lawsuits and regulations will impact how poultry waste is handled in concentrated areas of production and affect the role of arsenic in poultry production.
Antibiotics in Poultry Production

The use of antibiotics in poultry production has paralleled the use of arsenic in many ways. Nearly since their creation, antibiotics have been used not only to treat humans, but also livestock. As with roxarsone, antibiotics are routinely put in animal feed to prevent disease and promote growth, rather than being reserved for treatment after an animal gets sick.\(^{131}\)

And, just as widespread use of roxarsone has led to resistant species of coccidia, so too does widespread use of antibiotics lead to antibiotic-resistant bacteria. Unfortunately, because humans and livestock often use the same antibiotics, and those resistant bacteria infect humans, too, antibiotic-resistant bacteria pose a significant threat to human health.\(^{132}\)

Used since at least the early 1950s, antibiotics had become a widespread livestock feed additive by the 1970s.\(^{133}\) Roxarsone and antibiotics are commonly used together in broiler feed, with approximately 66 percent of broilers receiving antibiotics in feed as of 2000.\(^{134}\) Antibiotics used for non-therapeutic purposes (growth promotion) in livestock account for 70 percent of total antibiotic use in the United States.\(^{135}\)

The FDA began raising questions about the use of antibiotics in animal feed, beginning with a task force to review the issue in 1970.\(^{136}\) Attempts to limit antibiotic use failed due to opposition from industry interests.\(^{137}\) In June 2010, the FDA issued draft guidance to livestock producers recommending antibiotics be used “judiciously” in livestock to treat illness in consultation with a veterinarian, which would prevent their routine use in feed.\(^{138}\) Note that these recommendations, once finalized, will still not be requirements.\(^{139}\)

Recent initiatives in industry and government may limit the use of antibiotics. Due in part to consumer pressure, a few major companies are voluntarily reducing the use of antibiotics in feed.\(^{140}\) Two of those companies, Tyson Foods and Perdue Farms, have also ended the use of arsenic in chicken feed. As with arsenic, the EU has banned subtherapeutic antibiotic use in livestock.\(^{141}\)

In 2008, the American Medical Association recommended that FDA create new guidelines for the use of veterinary drugs to protect people from antibiotic-resistant bacteria.\(^{142}\) Representative Louise Slaughter (D-NY) introduced the “Preservation of Antibiotics for Medical Treatment” Act in Congress in 2009.\(^{115}\) In 2010, a bill to prohibit the use of arsenic in animal feed was introduced in the Maryland State Legislature.\(^{116}\) To date, these proposals have not moved forward.

Consumers are left to fend for themselves in grocery stores and restaurants that mostly sell chicken raised on feed with arsenic additives. Some companies voluntarily opt not to use arsenic, but reserve the option to begin feeding chickens arsenic feed additives at any moment. Moreover, there is no consumer label or disclosure. An industry-wide ban on the use of arsenic feed additives would reduce consumer confusion about which chickens are fed these additives, reduce the public’s exposure to arsenic residues in food, and reduce discharges of arsenic compounds into the environment. Indeed, the European Union has taken this very stance. The EU has banned the use of arsenicals in poultry feed and does not allow any roxarsone residues in food.\(^{112}\)
Recommendations

It’s high time to re-evaluate the use of arsenic in U.S. poultry production. Food & Water Watch recommends:

- **A Ban on Arsenical Feed Additives and Drugs:** The FDA should prohibit the use of arsenic-based additives in animal feed.

- **Research on Poultry Production:** USDA research priorities should include means to improve chicken gut health through improved nutritional and flock management, including studying the effects of stocking density on disease prevalence.

- **Mitigate Environmental Contamination:** Ground and surface water monitoring in areas with concentrated poultry production should include testing for arsenic. Contaminated drinking water must be treated to protect public health. Growth promotion and improved pigmentation are not sufficient reasons to introduce carcinogens into the food supply and the environment. It is time for an end to the use of arsenic in U.S. poultry and livestock production.
Endnotes


3 Ibid.


9 USDA Economic Research Service.

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