

Poison-Free Poultry in Maryland

Fact Sheet • August 2010

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, arsenic is now also used as a growth promoter and cosmetic additive in the feed given to broiler chickens. Between 1995 and 2000, 70 percent of the 8.7 billion broilers produced each year were fed arsenic,¹ and one industry source estimates that use of arsenic is even more widespread today.² Meanwhile, new studies have shown that the risk to human and environmental health is much higher than presumed when the government originally approved use of arsenic as a feed additive. A few chicken companies have claimed to stop using arsenic. But it shouldn't be left to individual companies to decide and consumers to wonder whether their poultry is exposed to this chemical — it's time to ban the use of arsenic in chicken feed.

Why Feed Arsenic to Chickens?

Poultry farmers in the United States have been using arsenic to treat the common poultry disease coccidiosis for decades.³ Coccidiosis causes anemia and diarrhea. While not all infected chickens die, their growth remains impaired, leading to economic losses for farmers. The parasite spreads via chicken waste and develops resistance to treatments.⁴

The Food and Drug Administration (FDA) first approved roxarsone (3-Nitro-W), the most common arsenic-based drug, as a feed additive for coccidiosis prevention in 1944.⁵ The chicken industry discovered that roxarsone made broiler chicks gain weight faster and made chicken flesh pinker.⁶ In 1951, Salsbury Labs got its first FDA approval for roxarsone — not as a treatment for disease, but to promote growth and improve meat pigmentation.⁷

The U.S. chicken industry changed dramatically during the second half of the 20th century, with fewer farmers raising larger flocks. In 1950, 78.3 percent of American farms had chickens.⁸ By 1992, only 5.6 percent of farms raised chickens. In the 1940s, commercial flocks typically consisted of layer hens (used for egg production), as opposed to broiler chickens, and had several hundred layers. Today, flocks as large as 350,000 broilers are common.⁹

Chickens experience additional stress in large-scale poultry facilities, where access to natural sunlight is almost non-





existent and “stocking densities” of 25,000 to 30,000 birds per building are common.¹⁰ With such high density, diseases could spread quickly to thousands of birds, so feeding all the chickens roxarsone and other drugs became standard practice.¹¹

Chicken industry groups argue that the arsenic-based drug roxarsone is safe for consumers of chicken.¹² New scientific research, however, reveals that arsenic in poultry feed poses significant risks for both human health and the environment.

Health Impacts

Chronic exposure to arsenic is associated with increased risk for several kinds of cancer, including bladder, kidney, lung, liver and colon.¹³ Arsenic exposure also leads to cardiovascular disease and diabetes as well as neurological problems in children.¹⁴ Health impacts from arsenic exposures such as increased soil arsenic concentrations and even arsenic in house dust have been found in areas with high broiler chicken production.¹⁵

Exposure

The use of arsenic in chicken production creates several routes for people to be exposed to arsenic, including any arsenic that remains in the chicken’s body when eaten and through the environment where chicken waste is disposed.¹⁶

The FDA set levels for how much arsenic residue could remain in poultry in 1951¹⁷ — 2 parts per million (ppm) for liver and 0.5 ppm for muscle meat.¹⁸ These standards are long overdue for revision. American chicken consumption

has increased substantially since the time roxarsone was initially approved. In the 1940s, Americans ate less than 20 pounds of poultry per person per year.¹⁹ In 2008, Americans on average ate nearly 60 pounds per person each year.²⁰ Certain subsets of the population tend to eat more chicken and are thus at risk of more arsenic exposure, including African Americans and Hispanics.²¹

The Institute for Agriculture and Trade Policy (IATP) tested arsenic levels in chicken sold at grocery stores and fast food outlets in a 2006 study. Of the retail packages tested, 55 percent had detectable levels of arsenic, up to 21.2 parts per billion (ppb).²² Separating out the premium brands, which include brands that do not use roxarsone, 74 percent of the chicken tested from grocery stores had detectable levels of arsenic.²³ Of the fast food chicken tested, arsenic was detectable in all samples, at levels ranging from 2.2 to 46.5 ppb.²⁴

The risk from arsenic consumption is based on a person’s weight, with the same amount of arsenic being more dangerous to someone who weighs less. A recent USDA study estimated that the typical American is exposed to between 3.62 and 5.24 micrograms of inorganic arsenic per day and 5.57 and 8.07 micrograms of total arsenic per day from chicken consumption.²⁵ (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 United Nation’s World Health Organization recommend that no one consume more than 22.7 micrograms per pound per day of inorganic arsenic.²⁶ While the USDA estimates that U.S. exposure from chicken is still below these levels, it does show that typical consumption of chicken contributes significantly to total daily intake.²⁷

Environmental Impacts

The arsenic in chicken feed has to go somewhere. While organic arsenic (the form found in chicken feed) breaks down into inorganic arsenic, it does not break down further and remains in the environment. Nearly 90 percent of the arsenic fed to chicken is excreted through urine and feces.²⁸ Studies estimate that approximately 2 million pounds of roxarsone are fed to chicken each year,²⁹ contaminating much of the estimated 26 to 51 billion pounds of waste produced by broiler chickens.³⁰ Approximately 90 percent of chicken litter is applied to cropland as fertilizer,³¹ and recent scientific research has found that organic arsenic in chicken litter converts to the much more toxic inorganic arsenic in as little as a week.³²

Elevated levels of arsenic have been found in fields fertilized with poultry litter,³³ and crops grown in soil contaminated with arsenic can absorb arsenic.³⁴ Both organic and inorganic arsenic can also leach into ground and surface waters.³⁵ Scientists estimate that between 70 and 90 percent of arsenic in poultry becomes water-soluble, creating significant contamination risk for water sources.³⁶ Several scientists have raised concerns that arsenic from poultry litter poses a long-term threat to ground and surface water.³⁷

In areas 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.³⁸ Alternative uses of poultry litter include burning it as a biofuel, which can release arsenic into the air, or turning it into commercial fertilizer pellets, which still contain arsenic.³⁹



Arsenic and the Eastern Shore

Poultry and eggs are major players in the economy of the Delmarva Peninsula. According to the 2007 U.S. Census of Agriculture, poultry and eggs make up nearly 70 percent of Delmarva's total agricultural sales.⁴⁰ According to the poultry industry, there are approximately 1,700 chicken operations growing nearly 11 million chickens per week on the Delmarva Peninsula.⁴¹

On the Delmarva Peninsula, poultry operations produce more waste than a city of 4 million people.⁴² By comparison, the population of the entire state of Maryland is approximately 6 million people.⁴³ 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.⁴⁴ Researchers estimate that between 20 and 50 metric tons of roxarsone is applied to Delmarva fields each year via poultry waste.⁴⁵

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.⁴⁶ Groundwater tests throughout Maryland's coastal plains found arsenic in some domestic wells using two specific aquifers. Concentrations reached up to 13 times the U.S. Environmental Protection Agency (EPA) tolerance limit. In general, arsenic concentrations were higher on the Eastern Shore than in Southern Maryland. While scientists blame much of the contamination on naturally occurring arsenic, "the possibility of surface contamination cannot be ruled out."⁴⁷ Either way, Maryland residents do not need further arsenic exposure from the chicken they eat or the environment.

Regulatory Failure

The FDA, USDA and EPA all share responsibility for monitoring and regulating toxic contaminants in our food and environment. Unfortunately, in the case of arsenic, they also share the blame for failing to rein in this unnecessary public health threat.

FDA

The FDA evaluates drugs for safety and effectiveness. Roxarsone received its initial approval in 1944, and over a hundred of roxarsone-based "combination drugs" have been approved since.⁴⁸ In response to new regulations, the FDA affirmed its finding that roxarsone has no significant environmental impact in 1981.⁴⁹

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."⁵⁰ The FDA has not re-evaluated the tolerance levels for arsenic in meat in light of new studies.

EPA

The EPA sets maximum levels of contaminants in the environment as well as intervening in specific instances of severe localized contamination. The EPA reduced the maximum contaminant levels from 50 ppb to 10 ppb for arsenic in drinking water in 2001 at the recommendation of the National Academy of Sciences.⁵¹ While the action to reduce arsenic exposure is laudable, the risk of cancer from arsenic levels at the new standard, one case in 2,000 people, is still 50 times higher than the risk allowed for many other carcinogens.⁵²

USDA

The USDA evaluates chemical residues in meat. Since 1989, the agency has evaluated arsenic in chicken, but focused on chicken livers, rather than the muscle tissue that people typically eat, even though separate tolerance standards exist for livers and muscle tissue.⁵³ In 2001, the agency checked only 1,207 samples of an estimated 8.6 billion broiler chickens.⁵⁴ The USDA's Inspector General recently conducted an evaluation of the residue-testing program and found "that it is not accomplishing its mission of monitoring the food supply for harmful residues."⁵⁵

Raising Chicken Without Arsenic

The poultry industry vigorously defends the effectiveness and safety of roxarsone and tries to pin any consumer exposure to arsenic on naturally occurring levels of arsenic in the environment or other sources.⁵⁶ And yet, some major players have stopped the use of arsenic, and the search is on for roxarsone alternatives.

Tyson Foods and Perdue, two of the largest poultry companies in the United States, claim to have stopped using arsenic compounds in 2004⁵⁷ and 2007,⁵⁸ respectively. According to a Tyson 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."⁵⁹ Perdue, on the other hand, promotes the "good animal husbandry and best management practices" that allow it to operate without the use of arsenic.⁶⁰ As of 2006, Tyson and Perdue slaughtered 24 and 7 percent of broiler chickens, respectively.⁶¹ According to reports from a March 2010 legislative hearing in Maryland, 88 percent of broilers in the United States are fed arsenic,⁶² which doesn't exactly fit with claims by producers of more than 30 percent of broiler chickens to have given up arsenic. But it shouldn't be left to consumers to try to reconcile company claims with limited data about roxarsone use. This confusion is just one more reason for the government to ban arsenic, rather than leave the decision up to individual companies.

Researchers have recently stepped up efforts to prevent and treat coccidiosis without the use of arsenical products. One focus is gut health in poultry, as healthy intestines are less susceptible to coccidiosis and other diseases.⁶³ Other alternatives include probiotics⁶⁴ and vaccines.⁶⁵



There is no question that chickens can be raised without arsenic. The European Union (EU) decided not to leave this important health decision to individual companies. The EU banned the use of arsenicals in poultry feed in 1999 and does not allow any roxarsone residue in food.⁶⁶ Economic analysis of Denmark's ban on all antimicrobial drugs as growth promoters found the regulation to have no net cost for the poultry industry.⁶⁷ In the United States, certified organic poultry producers cannot use arsenic.⁶⁸

Several organizations have petitioned the FDA to prohibit the use of arsenic additives in animal feed.⁶⁹ Representative Steve Israel (D-NY) introduced the "Poison-Free Poultry Act" in Congress in 2009.⁷⁰ To date, neither of these proposals has moved forward. But Maryland does not have to wait for the federal government to act. In 2010, a bill to prohibit the use of arsenic in poultry feed was introduced in the Maryland State Legislature, but was not brought up for a vote.⁷¹ In 2011, the legislature should ban the use of arsenic in poultry feed.

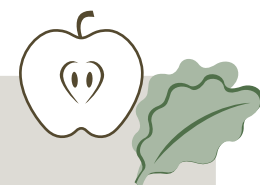
What You Can Do

Tell your delegate and state senator you want them to support a bill to end the use of arsenic in the poultry industry. Tell them to sign the pledge to support poison-free poultry in Maryland.

Endnotes

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