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Our November 2018 Newsletter for Healthy Living

The Environmental Impact of CAFOs

When you house nearly 10 million pigs in a coastal state like North Carolina, placing them primarily in low-lying counties near the coast, you've set the stage for inevitable environmental disaster. Yet, many are talking about the devastation caused to North Carolina's concentrated animal feeding operations (CAFOs) by Hurricane Florence as a catastrophe, as though it came as a surprise. History has already shown that hog waste, which amounts to 10 billion gallons annually in North Carolina alone, is not adequately contained in tidy, impenetrable "lagoons," the way Big Agriculture would have you believe. Even under the best circumstances, the lagoons may



leak, seeping millions of gallons of waste a year into neighboring soil and groundwater. Add in a formidable force like a hurricane, however, and the potential for leakage,

overflow and runoff grows exponentially higher, if not virtually guaranteed.

With Hurricane Florence, North Carolina has already taken a heavy environmental hit, one that's been made much worse due to the overwhelming presence of CAFOs in the state. Pigs raised in CAFOs live in enclosed buildings on slatted floors, which are painful for their feet but convenient for the farmers because the waste falls right through to the ground beneath. Occasionally it's flushed into a nearby "lagoon" for longer-term keeping until

it's eventually sprayed (in far too large of quantities) onto nearby fields. The lagoons are open to the elements and pumped full of anaerobic bacteria that help to digest the waste, and in so doing turn the lagoons a sickening bright pink color. When a hurricane rolls through, structural damage to the lagoon may occur, leading to breaches. Heavy rains may also cause the lagoons to overflow

inspectors. To get an idea of just how much waste is being held in this coastal state, it amounts to 10 billion gallons of wet animal waste annually — enough to fill more than 15,000 Olympic-sized swimming pools. According to the U.S. Environmental Protection Agency (EPA), manure from industrial agriculture is the primary source of nitrogen and phosphorus in waterways.

“CAFOs are notoriously bad for the environment and public health with or without hurricanes.”

or they may be completely overtaken by floodwaters, adding even more noxious contamination to the already-toxic mix.

Untreated hog waste is a force to be reckoned with, especially in massive quantities. Known to pollute soil, water and air, even living near a hog CAFO increases the risk of all-cause and infant mortality, the rate of hospital admissions and the incidence of low birth weight in infants. Among North Carolina communities, the lowest life expectancy occurs among those living in the southeastern part of the state, where many large hog CAFOs are found.

North Carolina is home to thousands of CAFO waste lagoons, and data from the North Carolina Department of Environmental Quality revealed that at least 132 of them had released pig waste into the environment or were at risk of doing so, The New Yorker reported. That count may continue to rise as more data comes in, as preliminary reports have been given by farmers, not state

Even without hurricanes causing breaches, liquefied waste from CAFO lagoons often leaches into groundwater and wells, poisoning drinking water and running into waterways, turning once pristine bodies of water into veritable toilets. The resulting damage includes an excess of nutrients that lead to algae overgrowth, depleting the water of oxygen and killing fish and other marine life in expansive dead zones. Such risks are again magnified if large quantities of waste enter waterways following hurricane-driven flooding or overflow. EWG released before-and-after satellite images from the U.S. Geological Survey of a section of North Carolina coastline near Marine Corps Base Camp Lejeune. The “after” images clearly show massive amounts of brown sludge pouring from inland waterways to the coast. Further, as reported by The New Yorker, Cape Fear riverkeeper Kemp Burdette documented two “total

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Get Your Garlic

As you age, your arteries stiffen and continue doing so over time.

It happens to virtually everyone to varying degrees, a 2012 study observes, and leads to more frequent physiological problems related to poor blood circulation, including an increased risk of renal impairment — renal being the organs involving your kidneys, bladder and

ous cooking methods. Garlic cloves were boiled in water for three minutes or less; others were oven-heated at 200 degrees Fahrenheit, and neither suppressed the IVAA activity.

The scientists noted: “Heating for six min[utes] completely suppressed IVAA in uncrushed, but not in previously crushed, samples. The latter samples

wait, some of the antiplatelet activity is retained a bit longer. That’s because the enzyme that makes the antiplatelet compounds is activated by crushing but destroyed by heat faster than it creates the compounds. By crushing first and letting the enzyme work its magic before cooking, one can delay the loss of function.”

Another thing that is highly significant in the study is that the clot-busting activity was “always” linked to allicin and pyruvate levels. Science Direct explains that the pyruvic acid amount in both onions and garlic is a reflection of their pungency. Besides having high levels of phosphorus, garlic also has compounds with high concentrations of sulfur. In fact, thiosulfates, including allicin, compose the most prominent active components in garlic. Allicin in garlic battles bacteria by deterring sulfur-containing enzymes that (bad) bacteria need to survive.

In addition to these actions by garlic compounds, there are many more advantages to finding a garlic-containing recipe you love, because your health can be impacted in a number of positive ways. These include: helping to lower your blood pressure; detoxifying your liver; helping ward off colds and flu; preventing tooth decay and oral infections; reducing signs of aging; protecting your skin from ultraviolet light; improving memory, and much more. No matter your diet, adding fresh, crushed garlic to your daily meals is a simple way to increase not only their flavor but also their health benefits — exponentially!

Reference: *JRSM Cardiovascular Disease* September 2012; 1 (6):cvd2012012124. *Nutrition Review* May 2013; 71(5):282-99. *Nutrition Facts* October 2, 2018. *Journal of Agricultural and Food Chemistry* February 21, 2007; 55(4):1280-88. *Food Chemistry* 1995; 54(2):183-88.

“Garlic seems to improve the function of the inner lining of our arteries.”

urethra, the system that regulates the passage, storage and elimination of urine — as well as stroke. In 2013, researchers reported following a meta-analysis on the effects of garlic on serum lipids that garlic consumption may help optimize cholesterol levels, leading to a reduced risk of coronary events.

In fact, authors stated that you can eat less than a quarter-teaspoon of garlic powder per day, as the studies found that participants appeared to have less aortic stiffness. “We think this is because garlic seems to improve the function of the inner lining of our arteries, which helps our arteries relax. But the protective mechanisms of garlic against cardiovascular diseases are multiple, and include a combination of anti-clotting, clot-busting, antioxidant, and blood pressure- and cholesterol-lowering effects.”

In demonstrating exactly how raw garlic can slow the development of blood clots to help prevent cardiovascular disease, researchers used both crushed and uncrushed garlic cloves to compare their in-vitro antiaggregatory activity (IVAA), also comparing numer-

had reduced, yet significant, antiplatelet activity. Prolonged incubation (more than 10 min) at these temperatures completely suppressed IVAA. Microwaved garlic had no effect on platelet aggregation.” Then the scientists tried something else: they increased the amount of garlic juice applied to both the crushed and uncrushed garlic and found that in the microwave to have a beneficial effect on the crushed, but not the uncrushed garlic in terms of its ability to prevent platelet aggregation.

The study authors noted that the addition of raw garlic juice to uncrushed garlic cooked in the microwave “restored a full complement of antiplatelet activity that was completely lost without the addition”. In other words, NutritionFacts explains that by crushing or chopping garlic and waiting, say, 10 minutes before cooking it, the enzyme responsible for making the antiplatelet compounds is activated. Here’s how it works when using raw garlic: “If you cook it for just a few minutes, it does fine; but after cooking for about five minutes, the benefit is abolished. If, however, you pre-crush the garlic and

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failures” at hog farms in North Carolina’s Duplin and Sampson counties following the storm. He, in cooperation with EWG, determined that an estimated 7.3 million gallons of waste had been released — “including decades-old sludge that Kemp described as ‘the worst constituents of hog waste concentrated’ — into tributaries of the South River and the Cape Fear River.”

These two failures again represent only the tip of the iceberg, and more are bound to be discovered. The fact remains that CAFOs are notoriously bad for the environment and public health

with or without hurricanes, but the facilities located in hurricane-prone areas are veritable ticking time bombs of destruction. What’s the solution? Hit them where it hurts the most — in their pocketbook, by refusing to give any of your food dollars to this distorted, inhumane and disastrous form of livestock rearing.

In addition to avoiding most meat from supermarkets (which primarily comes from CAFOs), remember that the meat in most restaurants is also CAFO-raised. We choose to offer: certified organic pork from Graham’s Organics, a small family-owned farm in

Rosebush, MI; Humane-certified pork from DeVries Pork, a family-owned grower/processor in Coopersville, MI; 100% grass-fed beef and lamb from Lamb Farm, a small family-owned and certified organic farm in Manchester, MI; and, for Thanksgiving, pasture-raised Michigan Fresh Turkeys from the Biehl family, owners of Circle B Turkey Ranch in Mancelona, MI. You do have options, and they are low environmental impact. Vote with your dollars.

Reference: *The New York Times* September 19, 2018. *North Carolina Medical Journal* September-October 2018; 79(5):278-88. *Environmental Working Group* September 21-22, 2018. *The New Yorker* September 21, 2018

No Advantage to Artificial

Recent research into the health effects of artificial sweeteners deliver yet another blow to safety claims. The animal study, published in the journal *Molecules*, found all artificial sweeteners currently approved and

were both found to cause DNA damage.

Previous studies have also revealed an extensive list of safety concerns for **sucralose** (a synthetic organochlorine sweetener), some of which are very similar to those found in the

muscle and, indeed, evidence of protein break down was found in the animals' blood. Essentially, the rats were burning muscle as a source of energy when given artificial sweeteners. Considering what we now know about the gut microbiome and its influence on health and disease, it's becoming easier to see how and why artificial sweeteners are able to wreak havoc on your health.

“Sweeteners kind of trick the body. And then...your body's not getting the energy it needs.”

deemed safe by the U.S. Food and Drug Administration cause DNA damage in, and interfere with the normal and healthy activity of, gut bacteria. Artificial sweeteners included in this study included; aspartame, sucralose, saccharin, neotame, advantame and acesulfame potassium-k.

As reported by Business Insider, the research team concluded that all of these sweeteners "had a toxic, stressing effect, making it difficult for gut microbes to grow and reproduce." While the authors do not directly refer to them as having antibiotic effects, when something is killing bacteria, that's essentially what's happening. According to the researchers, the effects on your gut health may in turn affect your body's ability to process regular sugar and other carbohydrates. According to this study, the toxic limit for these artificial sweeteners appears to be around 1 milligram per milliliter (mg/mL). Ariel Kushmaro, Ph.D., professor of microbial biotechnology at Ben-Gurion University and lead author, told Business Insider, "We are not claiming that it's toxic to human beings. We're claiming that it might be toxic to the gut bacteria, and by that, will influence us."

While, overall, all six artificial sweeteners were found to have toxic effects on gut bacteria, there were individual differences in the type and amount of damage they produced. For example: **Saccharin** caused the greatest, most widespread damage, exhibiting both cytotoxic and genotoxic effects, meaning it is toxic to cells and damages genetic information in the cell (which can cause mutations).

Neotame was found to cause metabolic disruption in mice, and raised concentrations of several fatty acids, lipids and cholesterol. Several gut genes were also decreased by this sweetener.

Aspartame and acesulfame potassium-k — the latter of which is commonly found in sports supplements —

featured study, including: genotoxicity (DNA damage) and potentially adverse epigenetic effects; the generation of toxic compounds (chloropropanols) when heated; destruction of gut bacteria; one study found it can kill as much as 50 percent of your microbiome, and appears to target beneficial microorganisms; alterations in glucose, insulin and glucagon-like peptide-1 levels and responses, which raises the risk for diabetes; decreased red blood cells, a sign of anemia, at levels above 1,500 mg per kilo per day, and increased male infertility by interfering with sperm production and vitality, as well as brain lesions at higher doses. Other recent research adds to the ever-growing evidence pile showing that artificial sweeteners raise your risk of obesity and type 2 diabetes to the same or greater degree as sugar.

The study in question explored how different sweeteners — including glucose, fructose, aspartame and acesulfame potassium-k — affect energy usage, energy storage and vascular functioning. According to the authors, both high amounts of sugar and artificial sweeteners caused vascular impairment and other effects "that may be important during the onset and progression of diabetes and obesity." The artificial sweeteners, however, accumulated in the blood, thereby harming the blood vessel lining to a greater degree. Of the two artificial sweeteners included in this study, acesulfame potassium-k appeared to be the worst.

As noted by lead author Brian Hoffmann, Ph.D., assistant professor in the department of biomedical engineering at the Marquette University and Medical College of Wisconsin: *"Sweeteners kind of trick the body. And then when your body's not getting the energy it needs — because it does need some sugar to function properly — it potentially finds that source elsewhere,"* Hoffman says.

One alternative sugar source is

Holiday Wine Tasting:

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Details in store, or call 734 996-8111

If you're overweight and/or have insulin resistance or Type 2 diabetes, it's really important to understand that artificial sweeteners are not going to help matters. They're probably only going to make it worse. If you have to choose between two evils, regularly-sweetened beverages are likely less hazardous in the long run, since your body at least knows how to metabolize fructose, even if it is processed.

Ditching soda and other sweetened beverages is one of the most important steps you can take to improve your weight and health. Remember, pure water is a zero-calorie drink. You cannot find a beverage that contains fewer calories. If you want some flavor, just squeeze a little bit of fresh lemon or lime into mineral water. When you are cooking, baking or your beverage needs a little sweetener, be mindful of your choice.

Reference: *Molecules* 2018; 23(10):2454. *Business Insider* October 2, 2018. *Journal of Toxicology and Environmental Health, Part B: Critical Reviews*, 16(7):399-451. *Journal of Toxicology and Environmental Health, Part A* 2008; 71(21):1415-29. *Diabetes Care*, 2013 Sept; 36(9):2530-35. *Medical News Today* April 23, 2018.



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