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## The Hidden Dangers of Undeclared Food Additives

As insidious as it is for consumers to navigate their way through the over ten thousand synthetic and industrialized chemicals currently in the U.S. food supply, with some education and a willingness to read the ingredients labels prior to purchase, it can be done. The same cannot be said for a number of food additives the U.S. Food and Drug Administration (FDA) has determined are so irrelevant they do not even require an appearance on the food label—otherwise known as ‘undeclared additives’. These are substances that occur either as a byproduct of the food packaging process or as a result of the long storage and transport times necessary for many processed foods (both scenarios have been demonstrated scientifically to trigger chemicals of concern to leach into the food and drink) or substances intentionally inserted into the food and drinks in which the FDA has determined are too inconsequential to require alerting consumers about. Unfortunately, for some consumers (perhaps even many) consuming these hidden, undeclared additives can spell serious negative consequences and are anything but inconsequential.

This paper will offer a brief overview of three types of undeclared additives hiding in U.S. processed foods for which we argue the information should be made available to consumers:

(1) Industrial food packaging chemicals; (2) *Aspergillus Niger* (AN), more commonly known as black mold; (3) Sources of mysterious ‘natural flavoring’ and ‘artificial flavoring’.

## *1-Industrial food packaging chemicals*

One source of toxic chemical presence in the U.S. food supply comes from the industrial chemicals used in processed food packaging—chemicals that have been shown to leach or migrate into food and drinks. These chemicals include Bisphenol-A (BPA), Formaldehyde, Octyl Gallate, Styrene (otherwise known as Polystyrene—Styrene and Benzene—or Styrofoam), Perchlorates/PFC/PFCA/PFOA, Silicon Dioxide, Sodium Hexametaphosphate, Sulfuric Acid, BHA, nanoparticles such as Silver-nano, pesticides such as Triclosan used as anti-fungal and anti-mold agents, and Phthalates, to name a few.

Numerous studies have uncovered industrial chemicals from food packaging migrating or leaching into the food, among them are: Bisphenol-A (BPA), a known endocrine-disrupting chemical, is widely used primarily in the production of polycarbonate plastics and epoxy resins and used in the inner lining of canned food and plastic food and drink containers (covered more in detail later in this section), and hexabromocyclododecane (HBCD), a widely-used flame retardant, which has also been found in foods. Polybrominated diphenyl ether (PBDE), another kind of flame retardant, has been found in butter and its paper wrapping, leading to butter contamination, and Perfluorooctanoic Acid (PFOA) used in food packaging (including take-out packaging and food wrap papers treated to resist grease), as well as some nonstick cookware, has been detected in the food supply. PFOAs have been linked in scientific studies to liver and thyroid problems, immune system disorders, infertility and other reproductive problems in women, as well as developmental problems. Animal studies have uncovered a connection with PFOAs and tumors of the liver, testicles, mammary glands, and pancreas in rodents. Perchlorates (potassium perchlorate and sodium perchlorate monohydrate)/PFCs are also commonly used in U.S. food containers including pizza boxes and take-out packaging such as food wrap papers treated to resist grease. They have been linked in scientific animal studies to a number of serious health consequences including fetal and infant brain abnormalities, thyroid and liver problems, reduced sperm count/male reproductive problems, and cancer. A recent petition to the FDA has been filed by nine separate

organizations including the National Resource Defense Council, asking that these chemicals of concern be banned from food packaging where they have been shown to migrate into the food.

**New Study Links Perfluorinated Compounds (PFOAs) with Diabetes**

**Diabetes**

Diabetes is a chronic condition characterized by high blood sugar levels. Insulin is the hormone responsible for regulating glucose in the body.

**Classic Crust**  
CRISPY, AIRY, FLAKY LAYERS

**Studies show that the PFOA chemical is present in 98% of Americans' blood (and 100% of newborns). It doesn't break down and thus accumulates in our bodies over time.**  
*-Los Angeles Times*

**PFOAs are found in Food Packaging of microwave popcorn, frozen pizzas, fast food wrappers, snack food, and other processed food containers.**

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KEEP FROZEN

Phthalates leaching into the food supply are potentially problematic because they are known endocrine disrupting chemicals. Scientific studies have linked phthalates to breast cancer, diabetes, obesity, asthma, brain development problems, and numerous endocrine abnormalities like triggering early menopause, premature breast development in girls, lowered hormones in men, damaged sperm, and premature births. Phthalates can be found in processed food packaging, some commercial clear food wrap, and child lunchboxes, as well as plastic food storage containers, where they can leach into stored food. Food processing techniques can also cause high levels of phthalates in milk and dairy

products (even organic versions) and commercial spices (including those labeled as ‘organic’), and at varying levels in all processed, packaged food items sold in grocery stores. A scientific study conducted in 2013 tested a random sample of food and drinks from grocery store shelves—researchers discovered some level of phthalates *in every food product they sampled*.

And it’s not just the processed foods found in grocery stores. A study published in 2016 found that people who had eaten the most fast food in the past day had levels of phthalate metabolites that were 24 to 40 percent higher than those of the people who hadn’t eaten fast food. The findings of this latest study are important because they implicate yet another popular food category as a potential source of U.S. consumers’ phthalate exposure. The study also suggested that meat and grain items — including bread, cake, pizza, burritos, rice dishes and noodles — were the biggest contributors to phthalate exposure in the people who ate fast food. Researchers have suggested that phthalates might get into fast food if the food comes into contact with plastic packing or PVC tubing (used in food processing) that contains the chemical. It’s also possible that the plastic gloves that fast food workers wear may be a source of phthalates contaminating the food.

Another industrial food packaging chemical that has been found to leach into the food and has been linked in numerous peer-reviewed scientific studies to a variety of adverse health outcomes is Bisphenol-A, otherwise known as BPA. BPA, like the other food additives highlighted here, makes an appearance on U.S. grocery shelves with no packaging warnings or even a listing on the labels to alert consumers of its presence. BPA, developed in 1891 as a synthetic estrogen, came into widespread use in the 1950’s when scientists realized it could be used to make and strengthen polycarbonate plastic and some epoxy resins to line food and beverage cans. In recent years BPA has been found to leach into food by way of cans, the lids of canning jars, and plastic food and drink containers, including baby bottles and toddler sippy-cups, and has been detected in infant formula and baby food as well as dental fillings. BPA is a reported endocrine-disrupting chemical and numerous peer-reviewed studies

conducted by independent scientists have linked exposure to BPA to a variety of adverse health consequences such as an increased risk for endocrine-related cancers including breast cancer and prostate cancer, spikes in blood pressure, heart disease, abnormalities in liver function, low sperm counts in men, metabolic abnormalities, weight gain and increased serum cholesterol levels, neurological damage/altered brain development including a link with schizophrenia, puberty advances, disruptions, and abnormalities, insulin resistance and diabetes, adverse reproductive and developmental effects including recurrent miscarriages, gynecomastia (a male breast disease that causes abnormal breast growth in boys and men), and perinatal exposure to BPA has recently been linked to an increased risk of food intolerance in adulthood. BPA appears to be pervasive in the bodies of people living in the U.S. Researchers at the Centers for Disease Control and Prevention found BPA to be present in the urine of 95 percent of Americans tested, and other studies have detected BPA in the breast milk of nursing mothers, and with prenatal exposure, where testing detected BPA in the biological fluids and placenta, as well as the urine and umbilical cords of newborns.

A number of countries have banned BPA over the years and following public pressure from U.S. consumers and food safety advocates, in July 2012 the FDA finally banned BPA from infant and toddler foods and food containers. But when it comes to the rest of us, BPA is yet another food additive in which the FDA has failed to take action that many experts argue would potentially protect the health and safety of consumers (a recent study by the Environmental Working Group found that one in 10 cans of food in U.S. grocery stores contained BPA levels more than 200 times the government's recommended level of exposure to industrial chemicals). In 2010 the National Resources Defense Council (NRDC) filed a lawsuit against the U.S. Food and Drug Administration for its failure to act on a 2008 Citizens Regulatory Petition to ban the use of Bisphenol-A (BPA) in food packaging, food containers, and other materials likely to come into contact with food. Among other things, the petition argued that BPA exposure has been associated in primate and other empirical animal studies with a

wide range of adverse effects, including reproductive defects, chromosomal damage, nervous system harm, increased rates of breast and prostate cancer, and metabolic changes including obesity and insulin resistance (a condition that commonly precedes the development of diabetes) and studies in human tissue link BPA exposure with breast cancer and diabetes. In early 2014 the FDA released the results of its own study to determine safety levels of this chemical. A number of prominent scientific researchers and scholars, including some working on FDA-funded research to determine the safety of certain food chemicals, have harshly criticized the FDA study as seriously flawed due in part because the control subjects used in the study were contaminated. The FDA refused to publicly discuss the problems with their study and instead used it to justify continuing their policy of permitting BPA to remain in the food supply—of course with no indication on food labels that it exists.

In response to the FDA's failure to act, in July 2014 three members of the U.S. Congress seeking to ban BPA released their Ban Poisonous Additives Act which would deem food to be adulterated if the packaging is made with BPA or may otherwise release BPA into food. The bill would also require the FDA to examine the effects of BPA on workers who may be exposed to the chemical during the manufacturing process. While the bill has garnered numerous sponsors and supporters, including a number of public health and food safety advocacy organizations, it remains to be seen if it will pass. In the meantime consumers who want to avoid the risks associated with this industrial chemical are left on their own to educate themselves about avoiding canned foods and drinks in plastic bottles not clearly marked “BPA Free”.

### *2-Aspergillus Niger (AN) black mold*

We all know that *Aspergillus Niger* (a form of black mold) can occur naturally. According to the Scientific Laboratory for Food Intolerance (SLFI), *Aspergillus Niger* (AN) is a form of mildew present

nearly everywhere that generally contaminates dry food, dried fruits, nuts, fermented teas and herbal teas, when they are exposed to humidity during storage.

But did you know that it also makes an appearance as a food additive in processed foods? We are familiar with *Aspergillus Niger* because in both the U.S. and Canada it is commonly used in the food industry as a non-declared additive. In short, it is usually not listed on the food label. The foods AN (and its extracts) most often appear as an additive in/occur in include bread, beer, cheese, chocolate, fruit juices, and especially (canned/boxed/frozen) processed/precooked foods. But it can also appear hidden in the form of food preservative and additive “citric acid”...

### **Citric Acid**

*Where Found:* This industrialized food additive (not to be confused with the naturally occurring version) is made from the mold *Aspergillus Niger*. It is used as a preservative, antioxidant, and acidifier, and can be commonly found in salad dressings, baked goods, crackers, pasta, processed dairy products and cheeses, margarine, dried fruit, fruit juice, sports drinks, coffees, teas, soda, canned fruit (including canned tomatoes/tomato sauce), canned vegetables, condiments (such as pickles, relish, mayonnaise), jams, jellies, confectionery, chocolate, desserts, frozen meals, processed meats, and snack foods. Citric acid may also be a non-declared food additive—that is, not listed on the ingredients label.

*Red Flags:* Some people may have allergic reactions to this additive—especially those who are sensitive to molds, yeast, and/or corn. Adverse reactions range from mild to severe and may include skin reactions (including itching, hives, rash), edema (and subsequent weight gain), sore throat, swelling of tongue, mouth, face, throat, digestive problems (including pain, bloating, diarrhea), mouth ulcers, headaches, agitation, or insomnia. Also of note, citric acid is an industrialized food additive, commercially produced typically using glucose and hydrolyzed corn starch, and as such may contain genetically modified organisms (GMO). It is also a known hidden source of gluten which can trigger

serious adverse reactions in people with certain autoimmune disorders. Additionally, during industrialized processing of this additive the remaining protein is hydrolyzed and may result in some processed free glutamic (MSG).

For those consumers who have sensitivity to molds or fermented foods, or have unexplained adverse reactions after eating certain processed foods, like SLFI, we recommend they talk with their healthcare providers about whether avoiding mass-produced, highly processed/prepackaged foods entirely, and in general, limiting consumption of other products at risk for containing *Aspergillus Niger* is warranted. Foods especially at risk to contain AN include dry foods such as dried spaghetti and macaroni noodles, dried fruits, as well as nuts, fermented teas and herbal teas, bread, beer, cheese, chocolate, and fruit juices. Consumers who experience negative reactions to AN may be told to replace these food items whenever possible with homemade versions made from fresh, whole ingredients. Additionally, those individuals with sensitivity to molds or fermented foods might also consider discussing with their healthcare providers the possibility of avoiding commercially processed foods containing the additive citric acid.

### *3-Sources of 'natural flavoring' and 'artificial flavoring'*

Both 'natural flavoring' and 'artificial flavoring' listed as ingredients in processed foods have something in common: they are both a mystery. This can mean serious problems for consumers with allergic reactions, chemical sensitivities, and other health conditions, as well as issues for those consumers who are avoiding certain ingredients for ethical or religious reasons. The 'natural flavoring' additive commonly consists of the industrialized/laboratory blending of naturally-occurring chemicals—of *unknown* specifications to the consumer. The Federal Code of Regulations' approved

sources for “natural flavoring” can include any number of plant sources, spices and yeast people may be allergic to, as well meat, poultry, seafood, eggs and dairy. (And as the mainstream media recently reported on, ‘natural flavoring’ has even included the substance derived from beaver castor sacs—otherwise known as their anal glands. Thankfully for the beavers this natural flavoring, no matter how tasty it may sound, is too costly for most food producers to consider.)

Food manufacturers have considerable freedom in how they can choose to list natural flavoring sources on food labels. Numerous naturally-occurring food additives that in their industrialized states have been linked with health-related problems may appear simply as “natural flavoring” on ingredients labels. (Autolyzed yeast, for instance, which may contain or produce processed free glutamic acid and tend to stimulate glutamate in the body in a process similar to MSG, may be listed simply as “natural flavoring”.) Additives listed as “natural flavoring” make an appearance in a wide variety of processed foods.

The U.S. Code of Federal Regulations specifies that ‘natural flavorings’ consist of:

“the essential oil, oleoresin, essence or extractive, protein hydrolysate, distillate, or any product of roasting, heating or enzymolysis, which contains the flavoring constituents derived from a spice, fruit or fruit juice, vegetable or vegetable juice, edible yeast, herb, bark, bud, root, leaf or similar plant material, meat, seafood, poultry, eggs, dairy products, or fermentation products thereof, whose significant function in food is flavoring rather than nutritional” (21CFR101.22).

As a footnote, the federal regulations permit the following for 'natural flavoring' processing: “protein hydrolysate, distillate, or any product of roasting, heating or enzymolysis...” As one food safety advocate has stated, “As long as you start with a product that is not made in a factory, you can do all kinds of unnatural things to it and still call it natural.”

Individuals with allergies or sensitivities to any of the source chemicals used for 'natural flavoring'

may also experience adverse reactions to the derivatives contained in this food additive including respiratory problems, headaches, difficulty concentrating, insomnia, mood disturbances, edema, skin reactions (including rashes, hives, itching), and digestive problems, among others.

'Artificial flavoring', is another mystery ingredient as the precise synthetic additives are an unknown to consumers. In general, synthetic chemical additives used for flavoring may be problematic for sensitive individuals but there is no definitive way of knowing in advance. The only real test is to spin the wheel, ingest the food item, and see what happens. Like their 'natural flavoring' counterparts, 'artificial flavors' are found in a wide variety of processed foods, drinks, candies, and snacks. The bottom line is that for those consumers who are at risk for adverse reactions and do not want to turn their supper into a Las Vegas gamble, or those consumers who have ethical and/or religious convictions that prohibit consuming meat, seafood, poultry, eggs, or dairy products, they cannot rely on the FDA or big food manufacturers to disclose the needed information. For these consumers the only real solution is to avoid all together purchasing and consuming any processed foods and drinks on grocery store shelves with 'natural flavoring' listed on the ingredients labels.

### *Eating should not be a game of Russian roulette*

Fortunately for consumers with certain food allergies (like peanuts, milk, wheat and soy) the food and drink labels on processed food items in the U.S. are marked as containing (or possibly containing) these ingredients. But what about people who have adverse reactions to molds like food additive *Aspergillus Niger*? Or certain plant sources, spices, or yeast? Or who need to avoid meat, poultry or seafood? When it comes to undeclared additives like 'natural flavorings' in the food and drinks they consume they are just left to roll the dice for whether these items are present. The same goes for people who have serious health conditions like obesity, diabetes, heart, liver or kidney ailments,

asthma, and many other conditions, who must avoid additives that may worsen these conditions—additives like certain industrial food packaging chemicals that have been linked in scientific studies with these conditions that are known to leach into the food and drink. The FDA believes the risk for people with these conditions is simply not enough to require food label changes. As is the case with questionable listed additives common in processed food items it has been left up to the consumer to self-educate and avoid.

### *Why change won't happen anytime soon*

The problems with inadequate food labeling (both undeclared additives as well as labeled but problematic chemicals of concern in the food that lack warnings for consumers) are directly linked to problems within the FDA—systemic problems that are embedded within a complex content of politics, lobbying, campaign contributions, economics, legal and funding restrictions, regulatory capture facilitated by a revolving door ‘industry-to-regulator posts’ norm consisting of government regulators moving to high-ranking posts at the industries they are supposed to be regulating and back again, outdated, antiquated methodology and scientific standards used by the FDA for determining which additives may put the general public at risk, and other factors that run interference with the agency’s ability to act in the public’s best interest, instead favoring the interests of Big Food corporations who have little incentive to alert consumers to potentially deleterious additives in their products.

The bottom line is that the problems surrounding an inefficient regulatory agency that fails to adequately protect (or even warn) U.S. consumers from potentially harmful food additives are substantial and require what President Obama said needed to be done as a part of his original campaign platform: to completely overhaul the FDA. That plan never reached fruition of course, though the

President did appoint previous Big Chemical Corporation Monsanto's previous counsel Michael Taylor to act as Food Czar. While this was an exceptionally interesting choice, to date the appointment has done nothing to resolve the ongoing problems the FDA has with protecting consumers from potentially dangerous chemicals in the U.S. food supply. These problems will only get worse as a recent report commissioned by Pew Charitable Trust points out since a substantial amount of new chemicals have been entering the food supply for the past fifteen years without the FDA's knowledge of what the chemicals even are, what foods they are in, and without having ever been properly safety tested to assure they are safe for human consumption.

#### *A viable alternative*

Updating and modernizing food ingredients labels in the U.S. (something that is seriously needed and long past due) would not be that difficult for food manufacturers to comply or the U.S. consumer to interpret. A sophisticated yet simple color-coding scheme could allow for a symbol (◇) of varying colors on the food product to alert consumers when processed foods and drinks contain ingredients that have been linked in scientific research, medical studies or clinical trials, to the possibility of adverse reactions in people with certain health conditions—especially those ingredients that are currently considered 'undeclared additives' and completely hidden from the consumer. The key for the color-coding could be printed on a chart that hangs near grocery store entrances or customer service counters as well as being made easily assessable on the FDA website. Additive safety information could also be made available with an app in which consumers could swipe the food product barcode with their smartphones and receive a complete accounting of all product ingredients with corresponding color coded safety information.

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