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Ingredient Guide

FOR BETTER
SCHOOL FOOD
PURCHASING

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This guide is a resource for school food leaders and manufacturers alike who are committed to improving the overall quality, nutritional value, and safety of food provided to all students in every school. It highlights unwanted ingredients to eliminate, or those to watch out for, as new food products are developed and others are modified.



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UNWANTED INGREDIENT LIST



Unwanted ingredients shall not be included in any amount in newly developed products, and should be eliminated over time from existing products.

ARTIFICIAL COLORS

Caramel Color: Class III, IV

Description: Caramel color is made by heat treatment of sugar compounds. Class III and IV are made with ammonium compounds as well. These ingredients are commonly found in processed foods such as soy and Worcestershire sauces, chocolate-flavored products, baked goods and pre-cooked meats, but the most significant sources in the diet are colas and caramel-colored beverages.

Concern: When produced with ammonia, caramel coloring contains contaminants (i.e., 2-methylimidazole, 4-methylimidazole), which have been found to cause cancer in animal studies conducted by the National Toxicology Program (NTP).² The International Agency for Research on Cancer (IARC), a division of the World Health Organization, has concluded that 2-methylimidazole and 4-methylimidazole are “possibly carcinogenic to humans.”^{3,4} Furthermore, under Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, the state of California classifies 2-methylimidazole and 4-methylimidazole as carcinogenic.⁵

Synthetic Food Dyes: Blue 1, Blue 2, Citrus Red 2, Green 3, Red 3, Red 40, Yellow 5, Yellow 6

Description: Dyes, originally derived from coal tar and now made from synthetic chemicals, are added to foods to make items look more appealing. Examples of these artificial colorings include: Blue 1, Blue 2, Citrus Red 2, Green 3, Red 3, Red 40, Yellow 5 and Yellow 6, and are commonly found in processed foods.

Concern: Studies demonstrate that food dyes trigger hyperactivity or other behavioral problems in some children.⁶⁻¹⁰ Some dyes are also known to cause allergic or hypersensitivity reactions.¹¹ In Europe, most dyed foods carry a warning label, “may have an adverse effect on activity and attention in children.” Animal studies show that certain food dyes pose a risk of cancer.⁶

ARTIFICIAL FLAVORS & UNSPECIFIED NATURAL FLAVORS

Description: The term artificial flavor or artificial flavoring is defined by the Food and Drug Administration (FDA) as “any substance, the function of which is to impart flavor, which is not derived from a spice, fruit or fruit juice, vegetable or vegetable juice, edible yeast, herb, bark, bud, root, leaf or similar plant material, meat, fish, poultry, eggs, dairy products, or fermentation products thereof.”¹²

The term natural flavor or natural flavoring is defined by the FDA as “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.”¹²

These types of flavors are commonly found in processed foods such as breakfast cereals, desserts, soft drinks, and many other foods.

Concern: The use of artificial and natural flavors indicates the absence of whole ingredients, most often fruits. Some people may be sensitive to certain flavoring ingredients.¹³

The FDA allows manufacturers to put natural flavor on ingredients lists without any specifics of what flavors are used. School food service departments are requesting that when natural flavors are used they include specific details explaining from which natural flavors the ingredients are derived. Many districts have students that are allergic or sensitive to certain ingredients. Therefore, products listing natural flavors without any additional specifics will not be permitted.

ARTIFICIAL PRESERVATIVES

Butylated Hydroxyanisole (BHA)

Description: BHA is an antioxidant preservative that retards rancidity in fats and oils; commonly found in processed products, particularly meats, cereals, potato chips and vegetable oils.

Concern: In the Report on Carcinogens the National Toxicology Program within the Department of Health and Human Services lists BHA as “reasonably anticipated to be a human carcinogen.”¹⁴

Butylated Hydroxytoluene (BHT)

Description: BHT is an antioxidant preservative that retards rancidity in oil. It is commonly found in processed foods, particularly cereals, meats, and oils.

Concern: Some animal studies of carcinogenicity and chronic toxicity of BHT have shown contradictory results. Researchers conclude that BHT's pervasive presence and controversial toxicological data should be of concern to consumers.¹⁵ The Center for Science in the Public Interest recommends that BHT be replaced by safer substitutes or left out of foods altogether.¹³

Propyl Gallate

Description: Propyl gallate is an antioxidant used to protect fats, oils, and fat containing foods from going rancid, and is commonly found in meat products, soup bases and potato sticks. It is commonly used in conjunction with BHA and BHT.¹³

Concern: Safety studies published by the US government have shown concerning results. In one study propyl gallate appeared to cause cancers in rats treated with a low dose of propyl gallate as opposed to those treated with a zero dose or high dose.¹⁶ The Center for Science in the Public Interest explains that this finding suggests this food additive could be an endocrine disruptor, as well as a carcinogen. More research is recommended to better understand how this additive impacts human health.¹³

Tert-Butylhydroquinone (TBHQ)

Description: TBHQ is an antioxidant preservative that is used to prevent rancidity. Sometimes it is used in conjunction with BHA, BHT and propyl gallate. It is commonly found in vegetable oil, snack foods, cereals and other fat-containing foods.¹³

Concern: A government animal study showed TBHQ increased the incidence of tumors.^{13,17}

ARTIFICIAL SWEETENERS & OTHER SUGAR-FREE SWEETENERS

Description: Artificial and other sugar-free sweeteners include a wide range of sugar substitutes including but not limited to: Acesulfame-potassium, Aspartame, Brazzein, Cyclamate, Monatin, Monk Fruit, Neotame,

Saccharin, Stevia Leaf Extract (Rebiana), Sucralose, Sugar Alcohols (Erythritol, Hydrogenated Starch Hydrolysate, Isomalt, Lactitol, Maltitol, Mannitol, Sorbitol, Xylitol), Thaumatin. These sweeteners are used to improve sweetness in foods or beverages with fewer calories than those produced with caloric sweeteners (e.g., cane sugar, high fructose corn syrup). These ingredients can be found in a range of products such as diet beverages, baked goods, yogurts and cereals, and are not limited to products labeled as diet or low-sugar.

Concern: In general, these sweeteners are mainly used in foods and beverages that are of lower nutritional quality and do not serve a functional role in PK-12 students' diets. Research findings have been inconsistent, and some studies have shown that a few artificial sweeteners including acesulfame-potassium, aspartame, saccharin, and sucralose may pose a risk of cancer.^{13,18-20}

FLAVOR ENHANCERS

Monosodium Glutamate (MSG)

Description: MSG is an amino acid that is used to enhance the meaty (i.e., umami) flavor of foods. It is commonly found in processed foods, and as an ingredient in artificial flavorings.

Concern: MSG is commonly used to substitute for flavor, allowing food manufacturers to reduce the use of nutritionally superior ingredients (e.g., using MSG to reduce amount of chicken needed in chicken soup). For certain sensitive individuals, MSG has been linked to adverse reactions including but not limited to headache, nausea, weakness, and a burning sensation on the back of the neck, forearms and chest. Some people report difficulty breathing, changes in heart rate or blood pressure, and chest pain.^{13,21}

FLOUR CONDITIONERS

Azodicarbonamide (ADA)

Description: Azodicarbonamide (ADA) is a chemical substance used by commercial bakers as a dough conditioner for bread baking and as a whitening agent in cereal flour.²² ADA is used in baked products such as breads, rolls and pizza crusts.

Concern: During bread making, ADA completely breaks down to form other chemicals, one of which is semicarbazide (SEM). At high levels, animal studies have shown SEM has increased the incident of tumors when fed to female mice.²² Another chemical that is a result of ADA's break down is urethane, a recognized carcinogen.¹³ The FDA explains that ADA is not necessary for bread making and there are alternative ingredients approved for use available.²²

Bromated Flours: Potassium Bromate

Description: Bromated flours are those that contain the additives potassium bromate or calcium bromate. These additives are flour "improvers" used to strengthen dough allowing for greater oven spring and higher rising. This type of flour is used in white breads, rolls, crackers, and pizza crusts.

Concern: The majority of bromate breaks down in the baking process. However, the main concern is that various animal studies demonstrate an association of potassium bromate with cancer.¹³ The International Agency for Research on Cancer considers potassium bromate to be possibly carcinogenic to humans, and the US Environmental Protection Agency considers it to be a probable human carcinogen.^{23,24} California's Proposition 65 also lists potassium bromate as a carcinogen.⁵ Many countries with the exception of the US and Japan have banned bromates.¹³

HIGH FRUCTOSE CORN SYRUP

Description: High fructose corn syrup (HFCS) is a sweetener derived from corn and chemically altered to change the natural fructose to glucose ratio. This caloric sweetener is commonly found in processed foods and beverages, and not limited to sweets.

Concern: Between 1970 and the late 1990's American's annual consumption of high fructose corn syrup (HFCS) increased from 3.6 pounds per capita to 62.4 pounds, primarily as a result of cheap HFCS available on the market.²⁵ At the same time childhood obesity was on the rise. Researchers have shown this increased consumption of HFCS has a temporal relation to the obesity epidemic.²⁶

It is important to note that *all* added sugars—not just high fructose corn syrup—contribute empty calories linked to numerous health problems, including weight gain, type 2 diabetes, metabolic syndrome and high

triglyceride levels, which increase the risk of heart disease. *All* added sugars must be carefully watched and eliminated from food served in schools when not serving a vital functional or culinary purpose.

However, the proliferation of HFCS as a cheap caloric sweetener in the food supply, and its subsequent link to rates of childhood obesity, overweight, diabetes, and dental caries elevate it to the Unwanted List. This particular ingredient is placed here because it is ubiquitous in overly processed, low quality foods districts seek to eliminate from their menus. Many food manufacturers, restaurants and school districts have already eliminated its use; a trend Focus is reinforcing.

NITRATES AND NITRITES

Description: Nitrates and nitrites are found in diets through vegetables (e.g., celery, lettuce, and spinach), fruits, cured meats, fish, dairy products and cereals. Some meats and meat products contain sodium nitrate and/or sodium nitrite as preservatives.²⁷ Additional functions include stabilizing the red color and adding flavor to cured meats. These ingredients are commonly used in processed meat products, such as bacon, ham, frankfurters, and luncheon meats.¹³

Concern: Nitrates and nitrites can lead to the formation of small amounts of potent cancer-causing chemicals known as nitrosamines.^{28,29} Several studies link consumption of cured meat and nitrite by children, pregnant women, and adults with various types of cancer.¹³ In 2015, the International Agency for Research on Cancer (IARC) at the World Health Organization classified processed meat as “carcinogenic to humans.”³⁰

PARTIALLY HYDROGENATED OILS

Description: Partially hydrogenated oil (PHO) is made by adding hydrogen to vegetable oil in a process called hydrogenation, which makes the oil more solid. These oils are used by food manufacturers to improve the texture, shelf life, and flavor stability of foods. During the hydrogenation process trans-fats are formed.³¹

Concern: Eating trans-fat raises one’s levels of low-density lipoprotein (i.e., LDL or “bad” cholesterol) and lowers high-density lipoprotein (i.e., HDL or “good” cholesterol) in the blood. Consumption of trans-fats can increase

one's risk of developing stroke, type 2 diabetes, and heart disease, the leading cause of death for men and women in the US.³² In June 2015 the FDA took action to significantly reduce PHOs in the food supply and recommends keeping dietary intake of trans fat as low as possible.³¹ An expert advisory committee for the 2015 Dietary Guidelines recommended that "partially hydrogenated oils containing trans-fat should be avoided."³³

WATCH INGREDIENT LIST

ADDED SODIUM

Description: Sodium and sodium chloride are added to foods, often during processing, for preservative or flavor purposes. In the average American diet almost half of all dietary sodium comes from these 10 foods: breads and rolls, cold cuts and cured meats (e.g., deli or packaged ham, or turkey), pizza, fresh and processed poultry, soups, sandwiches (e.g., cheeseburgers), cheese, pasta dishes, meat-mixed dishes (e.g., meat loaf with tomato sauce), and snacks (e.g., chips, pretzels, and popcorn).³⁴

Concern: Salt, at levels present in the diets of most people, is one of the single most harmful substance in the food supply. While the body needs small amounts of sodium to function properly, most Americans are consuming far too much of it, leading to high blood pressure, which in turn is associated with an increased risk of heart disease and stroke.³⁴ While these health problems typically manifest in adult populations, their precursors start in early childhood.³⁵ Children ages 2 to 19 consume more than 3,100 mg of sodium a day, which is over twice daily recommendation of the American Heart Association (AHA). The AHA recommends that Americans of all ages consume no more than 1,500 mg of sodium a day.³⁶

Sodium levels in school meals are already regulated by the USDA. Sodium limits and tiered reductions are currently in place.^{37,38} The inclusion of added sodium on this list is intended to support planned reductions in sodium limits by removing excess added sodium from highly processed food products.



These ingredients can be a red flag as they are frequently overused, common in foods of lower nutritional quality, and tend to indicate a highly processed food. As a result, we encourage school districts and food manufacturers to Watch Out for ingredients like these and demand transparency and accountability in their use.

Items in the Watch List will be scrutinized by buyers, and their function must be understood and justified through dialogue between Focus, districts and food manufacturers.

ADDED SUGARS

Description: Added sugars are caloric sweeteners added to processed and prepared foods that include but are not limited to: agave, anhydrous dextrose, brown sugar, cane juice, cane sugar, confectioner's powdered sugar, corn syrup, corn syrup solids, crystal dextrose, date sugar, dextrose, evaporated cane juice, fructose, fruit juice concentrate, high-fructose corn syrup, high-maltose corn syrup, honey, invert sugar, isomaltulose, lactose, malt syrup, maltose, maple syrup, molasses, nectars (e.g., peach nectar, pear nectar), pancake syrup, raw sugar, sucrose, sugar, sugar cane juice, trehalose, white granulated sugar. These types of sweeteners are commonly found in all types of foods and beverages but the major source of these are in sugar-sweetened beverages (e.g., soft drinks, energy drinks, sports drinks), baked goods (e.g., cakes, cookies, pies, cobblers, sweet rolls, pastries, donuts), fruit drinks (e.g., fruitades, fruit punch) and dairy desserts (e.g., ice cream).³⁹

Concern: Added sugars are ubiquitous and appear on ingredient labels of heavily processed foods in many forms. Excess daily consumption of added sugars, especially in beverages, has been linked to poor nutrient intake, tooth decay, overweight, obesity, diabetes, as well as the development of cardiovascular disease and its associated risk factors.⁴⁰⁻⁴³ Over the last decade American's consumption of added sugars has started to decrease but still remains higher than recommended levels.^{44,45} While most everyone enjoys a sweet, the majority of Americans of all ages consume too much of it.

While it is understood that certain foods and beverages require some level of added sugars, the quantities of these ingredients need to be within reason, and other foods and beverages do not require them. School food professionals have to be mindful of total grams of added sugar and total calories from such sweeteners to ensure that their menus meet USDA Meal Pattern Guidelines as well as contribute to healthful diets for students throughout the year. The school food environment is a place to model healthy eating by reducing added sugars.

ARTIFICIAL PRESERVATIVES

Benzoates and Benzoic Acid

Description: Benzoates (e.g., sodium benzoate, potassium benzoate, calcium benzoate) and its close relative benzoic acid are used as preservatives



BIGGEST CONCERNS:
Too much added sodium and sugars. The science is clear that added sodium and all added sugars are the food ingredients that pose the greatest dietary threat to human health in the US. These two ingredients are included in a vast array of foods and beverages, and consequently consumed in excessive amounts leading to poor health outcomes and serious chronic diseases.

to prevent the growth of microorganisms in acidic foods, and are commonly used in fruit juices, carbonated beverages, pickles and processed foods.

Concern: There is some evidence that benzoates such as sodium benzoate may cause hives, asthma, or other hypersensitivity reactions in sensitive individuals.⁴⁶ Benzoates can also react in beverages that contain ascorbic acid (i.e., vitamin C) or erythorbic acid, a chemical cousin of vitamin C, to form small amounts of benzene, a chemical linked to leukemia and other cancers.¹³ In 2006, the FDA's Center for Food Safety and Applied Nutrition shared findings on their survey of benzene in beverages in which 4 out of 100 beverages had elevated levels of benzene.⁴⁷ While this occurrence is uncommon school districts plan to keep an eye on products containing these types of preservatives.

Sulfites

Description: Sulfites are used as a preservative to prevent discoloration in foods such as dried fruits and processed potatoes (e.g., dried, fried or frozen potatoes).

Concern: This preservative destroys vitamin B1 in foods, thus, reducing the foods nutritional profile. For some sensitive individuals, in particular asthmatics, sulfites can cause severe reactions.^{13,48} The US FDA requires that foods that use sulfites as an ingredient or during processing declare its presence on food labels. Sulfites are prohibited from use with certain foods such as raw fruits and vegetables. However, they are still allowed with minimally processed potatoes and dried fruits.⁴⁹

BLEACHED FLOUR

Description: Bleached flour is flour that has been treated with an oxidizing agent, most commonly benzoyl peroxide, to accelerate the natural aging process that results in a whiter color and improves its baking properties.⁵⁰

Concern: Bleached flour tends to be used in highly processed foods. There is limited information available documenting the impact that bleaching has on flour's overall nutrient content. In 2001, a WHO's Expert Committee on Food Additives "noted the importance of assessing the nutritional and toxicological implications of treatment of foods treated with benzoyl peroxide

with respect to potential effects on proteins, vitamins, antioxidants and physiologically important lipids,” however, at the time of assessment no information was available.⁵¹ Unbleached flour that has been aged naturally without bleaching agents is preferred.

SPECIFIED NATURAL FLAVORS

Description: The term natural flavor or natural flavoring is defined by the FDA as “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.”¹²

Concern: These flavors serve no nutritional function and they are commonly found in many kinds of foods of low nutritional value. The use of natural or artificial flavors indicates that the real ingredient has been left out. School districts report that some of their children may have allergic or hypersensitivity reactions to certain ingredients. School food service departments are requesting that when natural flavors are used they include specific details from which natural flavor ingredients are derived. For example, an ingredient list should include details such as “natural flavors (banana extract)”.

THICKENING AGENTS

Carrageenan

Description: Carrageenans are large molecules called a polysaccharide that are extracted from edible red seaweeds. They are used in foods as gelling, thickening and stabilizing agents, and are commonly found in dairy products (e.g., chocolate milk, skim milk, evaporated milk, milkshakes and instant breakfast power, cottage and cream cheese products, yogurt) , dairy alternatives (e.g., almond milk, soy milk), fruit drinks, desserts (i.e., flans and custards, pudding, pie fillings), salad dressings, sauces (i.e., relish, pizza, BBQ), and tofu.^{13,52}

Concern: Carrageenan has no nutritional value.⁵³ Some people report that these thickening and texturing agents cause gastro intestinal problems.¹³ A number of animal studies have highlighted concern with findings demonstrating an association with “degraded” carrageenan with cancer.^{54,55} Small amounts of degraded carrageenan may contaminate food-grade carrageenan, and a bit more probably forms in the acidic conditions of the stomach.¹³

VEGETABLE PROTEINS

Isolated Vegetable Protein (IVP), Hydrolyzed Vegetable Protein (HVP) & Texturized Vegetable Protein (TVP)

Description: Isolated vegetable protein is typically extracted from soybeans but can also be derived from other foods such as peas. Textured vegetable protein is soy protein that has been combined with chemical additives and processed into granules, chunks, or strips that can function as a meat analog. Hydrolyzed vegetable protein is used as a flavor enhancer in a wide variety of foods including soups, frankfurters, sauce mixes and beef stew.¹³

Concern: These ingredients are found in many processed foods, in particular animal products. They serve various functions such as fillers, extenders or flavor enhancers, especially to make meat products cheaper. Most of these proteins that serve as meat analogs undergo processing with hexane, which the Center for Disease Control has classified as a neurotoxin, and it’s unclear how much of this remains in the proteins after processing.⁵⁶ In addition, HVP is made through the process of acidic hydrolysis of a vegetable protein. During the hydrolysis process carcinogenic compounds can be produced, and the resulting product is high in salt.⁵⁷ HVP also contains monosodium glutamate, which some individuals are sensitive to.⁵⁸ 🇺🇸

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