Food Additives Reference Material

General Information and Standards

# Food Types

##  There are three basic types of food we can produce or purchase for eating purposes.

A. **“Organic” foods** foods grown without the use of any pesticides or artificial fertilizers.

 Pesticides are chemicals that are used to kill unwanted pests like insects, plants, fungi, etc. Artificial fertilizers usually contain nitrogen and phosphorus to replenish the soil after nutrients were lost because of growing a crop. Both pesticides and artificial fertilizers have been found to cause many serious problems to humans and our environment. Organic foods became popular in the 1960’s when much anti-government activity was brewing in the United States. They are often associated with “hippies” or “dead heads.” Although many “down to earthers” do promote organic foods and are involved in selling them, all of us should seriously consider their use. Because organic foods are grown without pesticides and artificial fertilizers, they tend to be a little more expensive. It is difficult to cultivate crops without the use of pesticides, especially.



B. **“Natural” foods** any foods grown without any artificial fertilizers

 “Natural” is a very misused and misunderstood term among consumers *(you and me*). You will see many labels in stores that use the word “natural,” “natural flavoring,” “all natural ingredients,” “pure and natural,” etc. These words are often used as a gimmick to sell a product. Natural foods can be grown with pesticides. Therefore, a natural food product can be as unsafe as an artificial product, which is full of man-made chemicals. Some examples of natural foods are fruits and vegetables that are not in packages: apples, oranges, carrots, beans, peas, etc. It is very common for all of these foods to contain pesticides because the orchards or fields where they were grown are sprayed or dusted with pesticides to kill unwanted insects, etc.



C. **“Processed” foods** Basically, any foods that cannot be classified as “organic” or “natural” are processed.

 Many “natural foods” become processed due to packaging, addition of food additives and/or use of artificial fertilizers. In a normal supermarket, there are very few truly natural or organic foods. Usually, one needs to go to a specified market *(“open market*”) to find them.

# Food Additives

 Food additives are substances added directly to food or to other substances. It stands to reason that food additives may become components of a food or a substance to which they were added. This can occur through surface contact with equipment or packaging materials. It also occurs when substances affect a food or a substance without becoming part of it (*such as various forms of radiation used in food processing*).

### History

 The use of additives particularly in food is not a new phenomenon. When people first learned that fire would cook meat and that salt would preserve it without cooking, they began to use additives. “Smoking” foods and adding spices to food have long been used for preservation. Today, additives are used for almost any purpose one could think of. To name a few: hardening/softening, rising/shrinking, disease prevention, bacterial and fungal growth inhibitors, sweeteners/sourers, drying/wetting, coloring/paling, foaming/anti-foaming, whipping/settling, sterilizing, propellants, increase volume/decrease volume, make smoother/make less smooth, etc. etc. etc. The most famous uses of food additives are for flavor, preservation, looks and smell. There are thousands of man-made and natural additives that accomplish our wants.

1. **Natural versus synthetic additives**

 Advertisement has influenced many of our concepts concerning additives. Many people believe that a food with a synthetic (*man-made*) additive is more dangerous than a food with a natural additive. This may have been true in the “old days,” but with today’s technology, an additive can be equally harmful or safe, whether synthetic or natural. A natural additive simply means that it is already in some food such as sugar, salt and many vitamins. Citric acid is found in all citrus fruit. It produces the sour taste of these fruits. “Lecithin” is found in soybeans and corn. It is used to break down large fat molecules to smaller molecules so water will mix with oils (broken down fat). Many foods contain sugars, salt and vitamins naturally. Sometimes, foods also contain many toxic or harmful additives as well. Safrole is a toxin found in sassafras roots, oxalic acid is found in spinach and rhubarb greens.



 Synthetic additives are purposely added to perform a specific function. Many consumer products have synthetic additives simply because we like the effect, the taste, the smell or the looks those additives produce. “Propionates” are synthetic additives added to bread products to retard mold. Propionates are also a natural food additive found in cheese. Companies have produced thousands of synthetic additives for many functions as mentioned earlier.

1. **Intentional versus incidental additives**

 Intentional additives are deliberately added to a food for a specific purpose. Hundreds of known intentional additives are used throughout the food industry. However, there are also additives that enter or effect foods that were not intentionally added. These are incidental food additives and may be present in finished food in small quantities as the result of some phase of production, processing, storage or packaging. Some incidental additives include dirt, paper taste from a container, aluminum from cooking pans, and chemicals used in containers for preservation.

### So, what’s safe to eat?



 There is no way to absolutely guarantee safety in regard to food production, processing or preparation. As with all items in our lives, we must strike a balance between freedom and government control. To ensure proper freedom we must have appropriate government control. Of course, most of us do not want the government to place too many restrictions on our lives, but we need to learn from history that without reasonable government control disaster and much ill treatment of men towards one another grows rampant. Food is no exception … I strongly recommend anyone to read The Jungle by Upton Sinclair. This book exposes the horrendous past practices of industries left to control themselves. No matter how much we hate “rules and regulations” and the authority that goes with them, it sure beats tyranny, which allows cheating, stealing, misuse, misrepresentation, false advertising, abuse and more.

1. **GRAS list**

 “GRAS” is an acronym for the phrase “Generally Recognized as Safe.” The GRAS list is used in the law to recognize substances not considered as “food additives” and, therefore, need no clearances as “food additives.” The GRAS list was compiled largely of lists of substances already recognized in 1958 as suitable for food by publication in FDA Food Standards, by publication in certain State regulations, and through lists of substances known to have been used in food for some years without reported adverse effects.

1. **Delaney clause**

 The Delaney clause is a constitutional amendment that prohibits the use of any food additive found to induce cancer (**carcinogens**) when ingested by man or animal. This only includes carcinogenic *substances (substances which produce cancer*), but does not include **teratogenic** substances *(substances which produce birth defects*). Many additives have been outlawed from their original use because of the Delaney clause. Some examples are Nitrates to enhance meat products, saccharin as a sugar substitute, and DES to increase weight in animals.

1. FDA (Food and Drug Administration)

 The United States has established many regulations and standards concerning food research, food processing, food production and even food sales. The most useful guide to consumers is the food label. Not all food products are required to have labels, but any manufacturer who uses a label is liable for any incorrect information on the label. With the competition in today’s industry, the pressure seems to increase integrity of food labeling.

1. Standards and Definitions

 All food products must comply with three standards established by the Food and Drug Administration. The FDA is the consumer’s “watchdog” to protect our food.

1. **Identity**

 The standard or identity on a food label requires that a food manufacturer establish what a product is so the consumer knows what to expect. There are standards to define the terms “natural” versus “artificial” or” imitation” products or ingredients. Most products do not require these titles and often they are simply used to mislead consumers. However, in some cases, these titles have specific meaning. For instance, for a fruit preservative or jelly, there must be a minimum or 45% fruit in order to be called “natural.” The other 55% can be sugar or water. If there is less than 45% fruit, then, the manufacturer must use the word “artificial” or “imitation” flavor. The standard of identity requires proper naming of a product.



1. **Quality**

 All products are given minimum standards and specifications in regard to tenderness, color and freedom from defects. Under this standard, many products must have an expiration date. Terms such as “below standard” or “excessively broken” might be seen on products, which have been damaged somehow. Also, many stores have a “cheap” item rack. Most of those items are beyond the expiration date or contain defects/damage.

1. **Fill (fullness)**

 All product labels must allow consumers to know how full a container is even after settling down. This standard involves the “net weight.” In the past, many manufacturers used larger containers for products to make them look bigger. This practice has been greatly reduced due to this standard.

1. Food Labels

 All foods for which a nutrition claim is made, as well as all fortified foods, must display nutrition information on the labels. The label must include the name, net weight and ingredients in that product. Also, information is provided on at least eleven items: calories, protein, carbohydrate, fat, five vitamins (*A, C, thiamin, riboflavin, and niacin*), and two minerals (*calcium and iron*). There are other optional listings such as contents of cholesterol, fatty acid, and sodium as well as other non-required vitamins and minerals.

 Nutrition information must appear in a standard format in which nutrients are always listed in the same order and location. This makes it easier for consumer comparison. The following is the minimum information found on a label placed in the correct order and format. (The amounts shown are taken from an example food product):

#### Nutrition Information

(Per serving)

serving size = 1 oz.

servings per container = 12

 calories 110

 protein 2 grams

 carbohydrate 24 grams

 fat 0 grams

#### Percentage of U.S. Recommended Daily Allowances

(U.S. RDA)

 protein 2

 thiamin 8

 niacin 2

 vitamin A \*

 vitamin C \*

 riboflavin \*

 calcium \*

 iron \*

\*Contains less than 2% of U.S. RDA