Hungry? How does a turkey sandwich on whole wheat with potato chips sound? Does noshing on nitrate, sodium stearyl lactylate, and monocalcium phosphate have the same appeal? Probably not, but a look at the ingredients of store-bought sandwich meat, bread, and almost every other type of processed food reveals a menu of just such additives.

Few consumers know what they are, much less how to pronounce them. (Try saying diacetyl tartaric acid esters or ethoxylated monodiglycerides three times fast.) Yet according to Julie Miller Jones, a professor of foods and nutrition at the College of St. Catherine in St. Paul, Minn., and author of Food Safety (Eagan Press, $89), average Americans eat their weight in food additives every year. "That's a whole lot," she says, and it's worth finding out "what these things are and whether they're safe."

HIGH HEAVEN. The Food & Drug Administration broadly defines additives as "any substance the intended use of which results or may reasonably be expected to result...in its affecting the characteristics of food." Put simply, additives aren't food, they do things to food. Most often, they enhance flavor, ensure desirable texture, or retard spoilage. Without them, many edibles would mold and stink to high heaven before reaching store shelves. Salt would clump, mayonnaise separate, and marshmallows become as hard as cement. The good news is that most of the nearly 3,000 additives in the food supply are harmless; the bad news is that some may not be.

Several additives are suspected carcinogens. Take butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT). Food companies use these similar chemical substances to prevent spoilage in foods with oil or shortening and to preserve many breakfast cereals (from Total to Quaker Instant Oatmeal), enriched rice products, and dried soups. Repeated studies have shown that BHA and BHT increase the risk of cancer as well as
accumulate in body tissue, cause liver enlargement, and retard the rate of DNA synthesis and thus, cell development. However, one study, released in 1994, suggests these same additives may actually retard cancer development because of their antioxidant properties.

The evidence is less controvertible in the case of nitrates and nitrites, which prevent botulism in and enhance flavor and color of such meat products as processed turkey, ham, hot dogs, bologna, and bacon. They aren't carcinogenic by themselves, but when they pair with chemicals called amines, they become an extremely potent cancer-causing chemical known as nitrosamine. Amines occur naturally both in food and in the body and bind readily with nitrates and nitrites at high temperatures such as when frying bacon or roasting ham.

Also watch out for bromates (usually potassium bromate), which are added to wheat and other flours to improve baking performance. Britain and other European countries banned bromates in baked goods during the 1980s, when studies found they increased the incidence of kidney tumors in rats. Bromates are still legal in the U.S. To avoid them, look for flour and bakery items marked ``unbromated,'' which are available in supermarkets under some common brands, such as Pepperidge Farm.

Artificial sweeteners also have been linked to malignancies. Saccharin, most widely available in those little pink envelopes labeled Sweet 'N Low, causes cancer in lab animals and is classified by the FDA as a weak carcinogen. Acesulfame-K (sold as Sweet One or Sunette and found in chewing gum, instant coffee and tea, puddings, gelatin desserts, and nondairy creamers) has a chemical structure similar to saccharin and has promoted tumor growth in laboratory animals, too.

Unlike other sugar substitutes, aspartame--marketed as NutraSweet or Equal and added to such products as soft drinks and cookies--hasn't been shown to increase cancer risk. But complaints have been filed with the FDA alleging that aspartame causes headaches, dizziness, and nausea. Research has been inconclusive about such claims, but aspartame is definitely unsafe for those with phenylketonuria (PKU), a congenital condition afflicting over 15,000 Americans that inhibits the metabolism of an amino acid in aspartame. The sweetener is especially dangerous for fetuses and infants with PKU. (Babies are usually tested for the disease after birth.) In worst-case scenarios, brain damage could result.

Another troublesome category of additives is sulfites, which include such common substances as potassium metasulfite and sodium bisulfite. Found naturally in beer and wine, sulfites are synthetically produced to reduce discoloration in such foods as dried fruit, dehydrated soup mixes, processed seafoods, and syrups. The problem is that millions of Americans are sensitive to sulfites and can have reactions ranging from hives to death. As a result, the FDA banned their use on fresh fruits and vegetables in 1985, when grocers and salad-bar owners routinely used a sulfite dip to keep their produce colorfully appealing. But a 1990 lawsuit brought by
potato manufacturers legalized the use of sulfites on spuds sent to restaurants in the form of fries and hash browns. FDA officials hope to overturn the ruling.

FDA BAN. Artificial colors have been responsible for a range of adverse reactions. Derived from coal tar, 13 synthetic colorants have been banned by the FDA since 1956 because of public-health concerns. The remaining certified nonvegetable-based dyes, such as Red No.3 and Yellow No.5, continue to raise eyebrows among safe-food advocates. Red No.3, which is banned in cosmetics yet colors such foods as maraschino cherries and pistachio nuts, causes thyroid cancer in rats. Yellow No.5--used in cookies, cake mixes, chips, and soft drinks--must be individually listed on ingredient labels, rather than referred to as artificial color, because it is associated with such allergic reactions as hives, runny nose, and shortness of breath.

Ingesting aluminum compounds--aluminum sulfate, aluminum phosphate, sodium phosphate, aluminum chloride--that are common leavening agents in baked goods may be bad news, too. Although research remains inconclusive, some studies show a connection between aluminum and Alzheimer's disease.

Finally, look out for fizz. Phosphorous compounds make soft drinks bubbly (phosphoric acid), as well as keep canned vegetables firm (calcium phosphate) and dried instant oatmeals and soup mixes easy to hydrate (sodium phosphate). But nutritionists warn that consuming too much phosphorous can disturb the body's ability to absorb calcium, thus raising the danger of osteoporosis.

UNDER FIRE. It is the priority of the FDA's division of product policy to monitor food additives, especially BHA, BHT, sulfites, nitrites, nitrates, and bromates, says the director, George Pauli. However, he says his department, which is under fire from the antiregulatory Congress, has a limited budget for pursuing such concerns.

In the face of uncertainty, many food experts, such as William Artz, professor of food science at the University of Illinois, encourage consumers to weigh the benefits vs. the risks of eating additives. Benefits include convenience, economy, and protection against food-borne disease-producing agents. In addition, he says, "research is open to interpretation," and "no one can be absolutely assured of the safety of anything."

As a result, "you don't want to eat too large an amount of anything," counsels Barbara Deskins, professor of clinical dietetics and nutrition at the University of Pittsburgh, who defines many additives in The Nutrition Bible, co-authored with Jean Anderson (William Morrow, $30). She recommends eating a variety of foods to prevent prolonged exposure to potentially harmful additives, as well as to ensure that the body gets a full range of nutrients. So try to avoid a steady diet of chemical additives. Choose some foods with ingredients that aren't more of a mouthful to say
than to eat.

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