The Weston A. Price Foundation

Dirty Secrets of the Food Processing Industry

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WE HAVE ALWAYS PROCESSED OUR FOOD; this is an activity that is uniquely human. We cook our food—that is one type of processing–as well as ferment, grind, soak, chop and dry. All of these are types of food processing.

Traditional processing has two functions: to make food more digestible and to preserve it for use during times when food isn't readily available. Nutritious, longlasing processed foods including pemmican, hard sausage and old-fashioned meat puddings and haggis, as well as grain products, dairy products, pickles—everything from wine and spirits to lacto-fermented condiments. Farmers and artisans—bread makers, cheese makers, distillers, millers and so forth—processed the raw ingredients into delicious foods that retained their nutritional content over many months or even years, and kept the profits on the farm and in the farming communities where they belonged.

Unfortunately, in modern times, we have substituted local artisanal processing with factory and industrial processing, which actually diminishes the quality of the food, rather than making it more nutritious and digestible. Industrial processing depends

upon sugar, white flour, processed and hydrogenated oils, synthetic food additives and vitamins, heat treatment and the extrusion of grains.

BREAKFAST CEREALS

Let's look at the processing involved in the typical American breakfast of cereal, skim milk and orange juice. Cold breakfast cereals are produced by a process called extrusion. Grains are mixed with water, processed into a slurry and placed in a machine called an extruder. The grains are forced out of a tiny hole at high temperature and pressure, which shapes them into little o's or flakes or shreds. Individual grains passed through the extruder expand to produce puffed wheat, oats and rice. These products are then subjected to sprays that give a coating of oil and sugar to seal off the cereal from the ravages of milk and to give it crunch.

In his book *Fighting the Food Giants*, biochemist Paul Stitt describes the extrusion process, which treats the grains with very high heat and pressure, and notes that the processing destroys much of their nutrients. It denatures the fatty acids; it even destroys the synthetic vitamins that are added at the end of the process. The amino acid lysine, a crucial nutrient, is especially damaged by the extrusion process.

Even boxed cereals sold in health food stores are made using the extrusion process. They are made with the same kind of machines and mostly in the same factories. The only "advances" claimed in the extrusion process are those that will cut cost, regardless of how the process alters the nutrient content of the product.

With so many millions of boxes of cereal sold each year, one would expect to see published studies showing the effects of these cereals on animals and humans. But breakfast cereals are a multi-billion dollar industry that has created huge fortunes for a few people. A box of cereal containing a penny's worth of grain sells for four or five dollars in the grocery store–there is probably no other product on earth with such a large profit margin. These profits have paid for lobbying efforts and journal sponsorships that have effectively kept any research about extruded grains out of the scientific literature and convinced government officials that there is no difference between a natural grain of wheat and a grain that has been altered by the extrusion process.

THE RAT EXPERIMENTS

Unpublished research indicates that the extrusion process turns the proteins in grains into neurotoxins. Stitt describes an experiment, conducted in 1942 by a cereal company but locked away in the company's file cabinet, in which four sets of rats were given special diets.¹ One group received plain whole wheat grains, water and synthetic vitamins and minerals. A second group received puffed wheat (an extruded cereal), water and the same nutrient solution. A third set was given water and white sugar. A fourth set was given nothing but water and synthetic nutrients. The rats that received the whole wheat lived over a year on this diet. The rats that got nothing but water and vitamins lived about two months. The animals on a white sugar and water and all the puffed wheat they wanted died within two weeks—even before the rats that got no food at all. These results suggest that there was something very toxic in the puffed wheat itself! Proteins are very similar to certain toxins in molecular structure, and the pressure of the puffing process may produce chemical changes that turn a nutritious grain into a poisonous substance.

Another unpublished experiment was carried out in 1960. Researchers at the University of Michigan in Ann Arbor were given eighteen laboratory rats. These were divided into three groups: one group received cornflakes and water; a second group was given the cardboard box that the cornflakes came in and water; the control group received rat chow and water. The rats in the control group remained in good health throughout the experiment. The rats eating the box became lethargic and eventually died of malnutrition. The rats receiving the cornflakes and water died before the rats that were eating the box! (The first box rat died the day the last cornflake rat died.) Furthermore, before death, the cornflakes-eating rats developed aberrant behavior, threw fits, bit each other and finally went into convulsions. Autopsy revealed dysfunction of the pancreas, liver and kidneys and degeneration of the nerves of the spine, all signs of insulin shock.² The startling conclusion of this study was that there was more nourishment in the box than in the cornflakes. This experiment was designed as a joke, but the results were far from funny.

Most Americans eat boxed cereals today. Because these are fortified with synthetic nutrients, the USDA can claim that they are as healthy as the grains from which they are made. Many of these cereals contain at least 50 percent of calories as sugar. Those sold in health food stores may be made of whole grains and fewer sweeteners. However, these whole grain extruded cereals are probably more dangerous than their refined grain counterparts sold in the supermarkets, because they are higher in protein, and it is the proteins in these cereals that are rendered toxic by this type of processing.

THE EXTRUSION PROCESS

When we put cereals through an extruder, it alters the structure of the proteins. Zeins, which comprise the majority of proteins in corn, are located in spherical organelles called protein bodies. The scientific literature does contain one study on extruded grains, which investigated changes in protein body, shape and release of encapsulated alpha-zeins as a result of the extrusion processing.³Researchers found that during extrusion, the protein bodies are completely disrupted and the alphazeins dispersed. The results suggest that the zeins in cornflakes are not confined to rigid protein bodies but can interact with each other and other components of the system, forming new compounds that are foreign to the human body. The extrusion process breaks down the organelles and disperses the proteins, which then become toxic. When the proteins are disrupted in this way, it can adversely affect the nervous system, as indicated by the cornflake experiment.

OLD FASHIONED PORRIDGE

There is only one way to put these companies out of business, and that is not to eat their food. So, what are you going to have for breakfast instead of cheerios and corn flakes? Eggs-any style-are always a good choice. As for grain, old-fashioned porridges made from non-extruded grains provide excellent nourishment at an economical price. Grains such as oats should be cut or rolled and then soaked overnight in a warm, acidic medium to neutralize the many anti-nutrients naturally occurring in grains, such as irritating tannins, digestion-blocking enzyme inhibitors and mineralblocking phytic acid. This treatment can also gently break down complex proteins in grains. You soak the grains in warm water plus one tablespoon of something acidic, like whey, yoghurt, lemon juice or vinegar. The next morning, your grain will cook in just a few minutes. It's best to eat your porridge with butter or cream, like our grandparents did. The nutrients in the dairy fats are needed in order for you to absorb the nutrients in the grains. Without the fat-soluble vitamins A, D and K₂, you cannot absorb the minerals in your food. Furthermore, the fats in butter and cream slow down the release of glucose into the bloodstream, so that your blood sugar remains stable throughout the morning.

MILK

Milk is one of nature's most perfect foods. Most of our milk comes from a sacred animal, the cow. Today, however, in the industrial system, we imprison cows indoors for their entire lives; we give them inappropriate feed such as soy, bakery waste, citrus peel cake and the swill from ethanol production, foods that cows are not designed to eat. The confinement environment and the inappropriate feed make these cows sick, so they need antibiotics and other drugs. We breed them to give huge amounts of milk, and give them hormones to increase milk production as well. These cows produce large quantities of watery milk with only half the amount of fat compared to milk produced by old-fashioned cows eating green grass. Then this milk is shipped to factories for processing. Inside the plants, the milk is completely remade. As described by Emily Green in the *Los Angeles Times*,⁴ centrifuges separate the milk into fat, protein and various other solids and liquids. Once segregated, these are recombined at specific levels set for whole, lowfat and no-fat milks. Of the reconstituted milks, whole milk will most closely approximate original cow's milk. What is left over will go into butter, cream, cheese, dried milk, and a host of other milk products. The dairy industry promotes lowfat milk and skim milk because they can make more money on the butterfat when used in ice cream. When they remove the fat to make reduced-fat milks, they replace it with powdered milk concentrate, which is formed by high temperature spray drying.

Then the milk is sent by tanker trucks (which are not refrigerated) to bottling plants. The milk is pasteurized at 161°F for fifteen seconds by rushing it past superheated stainless steel plates. If the temperature is 230°F (over the boiling point), the milk is considered ultrapasteurized. This ultrapasteurized milk will have a distinct cooked milk taste, but it is sterile and shelf stable. It may be sold in the refrigerated section of the supermarket so the consumer will think it is fresh, but it does not need to be. The milk is also homogenized by a pressure treatment that breaks down the fat globules so the milk won't separate. Once processed, the milk will last for weeks, not just days.

Processing makes the milk difficult to digest and renders the proteins allergenic. Animals fed pasteurized milk exclusively develop nutrient deficiencies and become infertile after several generations.⁵

Fortunately, Real Milk from pasture-fed cows, milk that is not pasteurized, processed or homogenized, is becoming more widely available. In fact, demand for Real Milk is growing rapidly. To find Real Milk in your area, visit realmilk.com

In order to make powdered milk, fluid is forced through a tiny hole at high pressure and then blown out into the air. This causes a lot of nitrates to form, and the cholesterol in the milk becomes oxidized. Contrary to popular opinion, cholesterol is not a demon but your best friend; you don't have to worry about consuming foods containing cholesterol, except that you do not want to consume oxidized cholesterol. Evidence indicates that oxidized cholesterol can initiate the process of atherosclerosis.⁶

Powdered milk is added to reduced-fat milks and milk products to give them body. So, when you consume reduced-fat milk or yoghurt, thinking that it will help you avoid heart disease, you are actually consuming oxidized cholesterol, which can initiate the process of heart disease.

ORANGE JUICE

Now, let's turn to the orange juice, part of our "healthy breakfast" of cereal, lowfat milk and juice. An article from *Processed and Prepared Foods*⁷ describes a "a new orange juice processing plant is completely automated and can process up to 1,800 tons of oranges per day to produce frozen concentrate, single strength juice, oil extracted from the peel and cattle feed." The new method of producing juice puts the whole orange in the machine. Another abstract states: "Various acid sprays for improving fruit peel quality and increasing juice yield are added to these processed oranges."^s These compounds are added to extract as much juice as possible, as well as the oil out of the skin. The conventional orange crop is sprayed heavily with pesticides called cholinesterase inhibitors, which are very toxic to the nervous system. When they put the whole oranges into the vats and squeeze them, all that pesticide goes into the juice. Then they add acids to get every single bit of juice out of these oranges. So commercial orange juice can be a very toxic soup. This may be one reason that consumption of fruit juice is associated with increased rates of dementia.⁹

What about the peel used for cattle feed? The dried, left-over citrus peel from orange juice production is processed into cakes, which are still loaded with cholinesterase inhibitors. Mark Purdey, in England, has shown how this practice correlates with mad cow disease.¹⁰ The use of organophosphates either as a spray on the cows or as a component of their feed, causes degeneration of the brain and nervous system in the cow, and if it's doing it to the cow, there's a possibility it may be doing it to you also.

The U.S. government tries to give the impression that pasteurization of juice is necessary to ensure our safety. However, it might surprise you to learn that researchers have found fungus that is resistant to pressure and heat in processed juices. They found that seventeen percent of Nigerian packages of orange juice and twenty percent of mango and tomato juices contained these heat-resistant fungi. They also found *E. coli* in the orange juice; it was pressure resistant and had survived pasteurization.¹¹ So there is plenty of danger from contamination in these pasteurized juices.

In one study, heat-treated and acid-hydrolyzed orange juice was tested for mutagenic activity. The authors found that the heating process produced intermediate products which, under test conditions, gave rise to mutagenicity and cytotoxicity.¹² In other words, there were cancer-causing compounds in the orange juice. In another study, gel filtration and high performance liquid chromatography were used to obtain mutagenic fractions from heated orange juice.¹³

So if you want juice with your breakfast, avoid commercial processed orange juice. Instead, squeeze yourself a couple of organic oranges or an organic grapefruit–in other words, process the juice yourself! Mix that fresh juice with sparkling water and a pinch of salt for a delicious spritzer.

NATURAL NOURISHING BROTHS

In the past, many traditional cultures made use of animal bones to make broth. They recognized the health-giving properties of bone broth as well as wonderful flavors broth gave to soups, sauces, gravies and stews. Modern science has shown us that homemade bone broths are indeed the healing wonders of the food pharmacopia; they provide minerals in abundance, strengthen bones and sinews, heal the gut and help us detoxify. The gelatin in homemade bone broth is a natural digestive aid.¹⁴

INDUSTRIAL SOUPS

Most commercial soup bases and sauces contain artificial meat-like flavors that mimic those we used to get from natural, gelatin-rich broth. These kinds of short cuts mean that consumers are shortchanged. When the homemade stocks were pushed out by the cheap substitutes, an important source of minerals disappeared from the American diet. The thickening effects of gelatin could be mimicked with emulsifiers, but, of course, the health benefits were lost. Gelatin is a very healthy thing to have in your diet. It helps you digest proteins properly and is supportive of digestive health overall.

Research on gelatin and natural broths came to an end in the 1950s when food companies discovered how to induce maillard reactions-the process of creating flavor compounds by mixing reduced sugars and amino acids under increased temperatures-and produce meat-like flavors in the laboratory. In a General Foods Company report issued in 1947, chemists predicted that almost all natural flavors would soon be chemically synthesized.¹⁵ Following the Second World War, American food companies discovered monosodium glutamate, a food ingredient the Japanese had invented in 1908 to enhance food flavors, including meat-like flavors. Humans actually have receptors on the tongue for glutamate—it is the protein in food that the human body recognizes as meat-but the glutamate in MSG has a different configuration, which cannot be assimilated properly by the body. Any protein can be hydrolyzed (broken down into its component amino acids) to produce a base containing MSG. When the industry learned how to synthesize the flavor of meat in the laboratory, using inexpensive proteins from grains and legumes, the door was opened to a flood of new products, including boullion cubes, dehydrated soup mixes, sauce mixes, TV dinners, and condiments with a meaty taste.

The fast food industry could not exist without MSG and artificial meat flavors, which beguile the consumer into eating bland and tasteless food. The sauces in many commercially processed foods contain MSG, water, thickeners, emulsifiers and caramel coloring. Your tongue is tricked into thinking that you are consuming something nutritious, when in fact it is getting nothing at all except some very toxic substances. Even dressings, Worcestershire sauce, rice mixes, flavored tofu, and many meat products have MSG in them. Almost all canned soups and stews contain MSG, and the "hydrolyzed protein" bases often contain MSG in very large amounts.

So-called homemade soups in most restaurants are usually made by mixing water with a powdered soup base made of hydrolyzed protein and artificial flavors, and then adding chopped vegetables and other ingredients. Even things like lobster bisque and fish sauces in most seafood restaurants are prepared using these powdered bases full of artificial flavors.

The industry even thinks it is too costly to just use a little onion and garlic for flavoring-they use artificial garlic and onion flavors instead. It's all profit based with no thought for the health of the consumer.

Unfortunately, most of the processed vegetarian foods are loaded with these flavorings, as well. The list of ingredients in vegetarian hamburgers, hot dogs, bacon, baloney, etc., may include hydrolyzed protein and "natural" flavors, all sources of MSG. Soy foods are loaded with MSG.

Food manufacturers get around the labeling requirements by putting MSG in the spice mixes; if the mix is less than fifty percent MSG, they don't have to indicate MSG on the label. You may have noticed that the phrase "No MSG" has actually disappeared. The industry doesn't use it anymore because they found out that there was MSG in all the spice mixes; even Bragg's amino acids had to take "No MSG" off the label.

HEALTH PROBLEMS

While the industry was adding MSG to food in larger and larger amounts, in 1957 scientists found that mice became blind and obese when MSG was administered by feeding tube. In 1969, MSG-induced lesions were found in the hypothalamus region of the mouse brain. Subsequent studies pointed in the same direction. MSG is a

neurotoxic substance that causes a wide range of reactions in humans, from temporary headaches to permanent brain damage. It is also associated with violent behavior. We have had a huge increase in Alzheimer's, brain cancer, seizures, multiple sclerosis and diseases of the nervous system, and one of the chief culprits is the flavorings in our food.¹⁶

Ninety-five percent of processed foods contain MSG, and, in the late 1950s, it was even added to baby food. Manufacturers say they have voluntarily taken it out of the baby food, but they didn't really remove it; they just called it "hydrolyzed protein" instead.

An excellent book, *Excitotoxins*, by Russell Blaylock, describes how nerve cells either disintegrate or shrivel up in the presence of free glutamic acid if it gets past the blood-brain barrier. The glutamates in MSG are absorbed directly from the mouth to the brain. Some investigators believe that the great increase in violence in this country starting in 1960 is due to the increased use of MSG beginning in the late 1950s, particularly as it was added to baby foods.

INDUSTRIAL FATS AND OILS

The food processing empire is built on industrial fats and oils, extracted from corn, soybeans and other seeds. Crude vegetable oil-which is dark, sticky and smelly-is subjected to horrendous processing to produce clean-looking cooking oils, margarine, shortening and spreads. The steps involved in processing usually include degumming, bleaching, deodorizing, filtering and removing saturates to make the oils more liquid.¹⁷ In the process, the nutrients and antioxidants disappear-but not the pesticides. Most processors also add a hexane solvent in order to squeeze the very last drop of oil out of the seeds. Caustic refining, the most widely used process for oil refining, involves adding very alkaline, chemicals to the oil.

In order to make a solid fat out of liquid oil, manufacturers subject the oils to a process called partial hydrogenation. The oil is extracted under high temperature and pressure, and the remaining fraction of oil is removed with hexane solvents. Manufacturers then steam clean the oils, a process that removes all the vitamins and all the antioxidants—but, of course, the solvents and the pesticides remain. These oils are mixed with a nickel catalyst and then, under high temperature and pressure, they are flooded with hydrogen gas. What goes into the reactor is a liquid oil; what comes out of that reactor is a smelly mass resembling grey cottage cheese. Emulsifiers are mixed in to smooth out the lumps, and the oil is then steam cleaned once more, to get rid of the horrible smell. The next step is bleaching, to get rid of the grey color. At this point, the product can be called "pure vegetable shortening." To make margarines and spreads, artificial flavors and synthetic vitamins are added. But the government does not allow the industry to add synthetic color to margarine–they must add a natural color, such as annatto–a comforting thought. The margarine or spread is then packaged in blocks and tubs and advertised as a health food.

(http://www.westonaprice.org/wp-

content/uploads/edibleoilflowchart.gif)

Vegetable oil is a highly processed product, as shown in this chart depicting the steps involved in turning crude vegetable oil into final products.

Saturated fat is the type of fat found in such foods as lard, butter and coconut oil. Saturated fat molecules are straight, so they pack together easily. That is why saturated fats are solid at room temperature. Unsaturated fats have a little bend at each double bond, with two hydrogen atoms sticking out on the same side. And when that molecule gets incorporated into your cells, the body wants those two hydrogen atoms to be on the same side of the carbon chain, forming an electron cloud; that is where controlled chemical interactions take place. During the process of partial hydrogenation, one of those hydrogen atoms is moved to the other side, causing the molecule to straighten out so that it behaves chemically like a saturate—although *bio*chemically it behaves very differently. The original, unsaturated molecule is called a "cis" fatty acid, because the two hydrogens are together, and then it becomes a *trans* fatty acid, because the two hydrogens are across from each other ("*trans*" means "across"). Your body doesn't know that this new molecule is something that has never existed in nature before, and when you eat one of these *trans* fatty acids, it gets built into your cell membranes. Because of the chemical rearrangement, the reactions that should happen can't take place. Enzymes and receptors don't work anymore. The more *trans* fatty acids that you are going to have on the cellular level.

All of the margarines, shortenings and even low-*trans*-fat spreads are made with these harmful ingredients. They're used in chips and crackers, and most restaurants use them for cooking fries. Until the early 1980s, fast food outlets and restaurants cooked the fries in tallow, which is a very safe fat, but now they use partially hydrogenated soybean oil.

In the past, when you made desserts for your kids, at least the sugar they contained came with butter, eggs, cream and nuts—all good wholesome foods. Now manufacturers can imitate the butter, eggs, cream and nuts, so all you have is sugar, industrial oils and artificial ingredients in these instant puddings, pastries and other artificial desserts.

Many diseases have been associated with the consumption of *trans* fatty acids—heart disease, cancer, and degeneration of joints and tendons. The only reason that we are eating this stuff is because we have been told that the competing saturated fats and oils—butter, lard, coconut oil, palm oil, tallow and suet—are bad for us and cause heart disease. Such assertions are nothing but industry propaganda.

THE WESTERN PRICE

Weston A. Price, DDS, discovered that as populations adopt processed foods, with each generation the facial structure becomes more and more narrow. Healthy faces should be broad. We are all designed to have perfectly straight teeth and not get cavities. When you are eating real, nutrient-dense foods, you get the complete and perfect expression of the genetic potential. We were given a perfect blueprint. Whether or not the body temple is built according to the blueprint depends, to a great extent, on our wisdom in food choices.

When primitive societies abandoned the traditional diet and began to eat processed foods, the next generation developed narrowed facial structure and many diseases. We know that if you continue this diet for three generations, reproduction ceases. This is the terrible price of the West, the Western Price. Civilization will die out unless we embrace the food ways of our ancestors. That means turning our backs on processed foods and getting back into the kitchen, to prepare real foods-containing healthy fats-for ourselves and our families.

OPTIMAL FOOD PREPARATION—MADE WITH LOVE

Food preparation is actually a sacred activity: According to esoteric lore, "If a woman could see the sparks of light going forth from her fingertips when she is cooking, and the energy that goes into the food she handles, she would realize how much of herself she imbues into the meals that she prepares for her family and friends. It is one of the most important and least understood activities of life that the feelings that go into the preparation of food affect everyone who partakes of it. This activity should be unhurried, peaceful and happy because the energy that flows into that food impacts the energy of the receiver.

"That is why the advanced spiritual teachers of the East never eat food prepared by anyone other than their own *chelas* (disciples). The person preparing the food may be the only one in the household who is spiritually advanced. An active charge of happiness, purity and peace will pour forth into the food from him, and this pours forth into the other members of the family and blesses them."¹⁸

To be healthy, we need to prepare our own food, for ourselves and our families. This doesn't mean you have to spend hours in the kitchen, but you do need to spend *some* time there, preparing food with wisdom and love. If no one in the family has time to prepare food, you need to sit down and rethink how you are spending your time, because this is the only way to get nourishing foods into your children. We can return to good eating practices one mouth at a time, one meal at a time, by preparing our own food and preparing it properly. Δ

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