

# C

## hapter 12

## The Danger Zone

### Beyond the Obvious

Regardless of whether you are enrolled in a weight-management program or a muscle building program, there are plenty of “**danger zones**” that will inhibit your success. Beyond the obvious such as drugs, alcohol and tobacco, there are several danger zones that are not as obvious.

### Food Processing

Modern technology has given us food processing. Let's take a look at how different types of food processing can affect us.

#### Exposure to Heat

Heat can create an adverse effect on foods. The following are just a few examples of how certain processes can affect the foods we eat.

**Fried Foods** - The longer a food is fried and the higher the temperature -- the more vitamin and mineral potency loss will occur. Frying temperatures usually reach 375° F. **Corn** or **safflower oils** are best because of their higher smoke points of 450° F to 500° F.

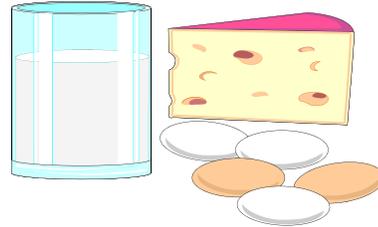


**Canned Foods** - Vitamin and mineral potency losses occur from *blanching*. Then, the foods lose even more nutrients through the *sterilization process*, which involves temperatures of 240° F or higher for 25-40 minutes.

**Frozen Foods** - Many frozen foods are cooked *before* freezing. Higher quality foods are generally sold as fresh. Lower quality foods are generally used in frozen foods.

**Dehydrated Foods** - The damage to food through dehydration is dependent on the *quality* of the product processed. Certain methods of commercial dehydration use temperatures of 300° F.

**Dairy Products** - Many vitamins lose their potency or are destroyed by the **pasteurization** process. The **homogenization** process breaks down the normal-sized fat particles, thus allowing the formation of an enzyme called **xanthine oxidase**. This enzyme then enters the bloodstream and may destroy vital body chemicals that would ordinarily provide protection for the coronary arteries.



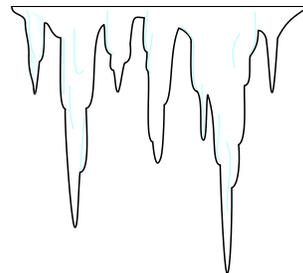
**Exceptions** - Various nutrients have *different degrees of stability* under the conditions of processing and preparation. **Vitamin A** is easily destroyed by *heat* and *light*. **Vitamin C** also is affected by heat. However, it also is affected by contact with certain metals such as *bronze, brass, copper, cold rolled steel, or black iron processing equipment*.

Studies conducted on the canning of foods found that peas and beans lose **75% of certain B vitamins**, and tomatoes lose **80% of their naturally occurring zinc content**.

## Exposure to Cold

Foods exposed to low temperatures also can be adversely affected. For example:

**Frozen Foods** - Freezing may have only *minimal* effect on the vitamin and mineral potency depending on the method used. Also, the food is less effected if it's frozen *shortly* after being harvested. Remember, in most instances, the *higher quality foods are sold fresh*.



**Fresh Fruits and Vegetables** - Sometimes, foods are harvested *before* they are ripe. They are allowed to ripen on the way to market. This may cause a reduction of some *trace minerals*.

**NOTE** Some foods may retain more nutrients because they are frozen shortly after being harvested. A Stanford University study showed that frozen spinach had 212% more Vitamin C than fresh. Frozen brussel sprouts had 27% more Vitamin C than fresh.

**NOTE** During processing, more Vitamin E is lost than any other vitamin. Wheat flour (not the 100% whole wheat flours) loses up to 90% of its Vitamin E value. Rice cereal products may lose up to 70% of their Vitamin E.

## Food Storage

How foods are stored plays a big part in determining how much nutritional value foods when they get to your plate.

**Preservatives** - Preservatives help maintain freshness and prevent spoilage caused by fungi, yeast, molds and bacteria. Preservatives are used to extend shelf life or protect the natural color or flavors of foods.

**Acids/Bases** (alkalis) - These agents provide a tart flavor for many fruit products. They also are used for pickling and making beverages "fizz" using phosphoric acid.

**Antioxidants** - Antioxidants reduce the possibility of rancidity in fats and oils. The most common natural antioxidants are Vitamins C, E, A and Selenium. Artificial antioxidants are BHA and BHT.

**Taste Enhancers** - These agents bring out the flavor of certain foods. MSG (monosodium glutamate) is a good example.

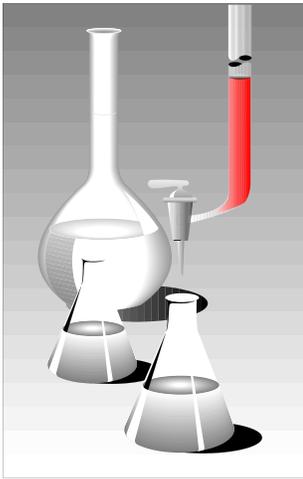
**Improving Agents** - Examples of improving agents include: **Humectants**- which control the humidity of a food. (2) **Anti-Caking Agents**- keep salt and powders free flowing. (3) **Firming and Crisping Agents**-used for processed fruits and vegetables. (4) **Foaming Agents**- for whipped toppings. (5) **Anti-Foaming Agents**- keeps pineapple juice from bubbling over a filled container.

**Emulsifiers** - These help evenly mix small particles of one liquid with another, such as water and oil. Lecithin is a good example.

**NOTE** Keep in mind that you are rarely aware of the quantity of additives you consume.

## Food Additives

**Flavorings** - There are approximately 1,100 to 1,400 **natural** and **synthetic** flavorings available. Scientists are most concerned regarding the *toxicity* of many of the flavorings. Flavorings make food taste better, restore flavor lost in their processing and can improve natural flavors.



**Stabilizers/Gelling Agents/Thickeners** - These are used to keep products in a "set-state" such as jellies, jams and baby foods. They are also used to keep ice cream creamy. They generally improve consistency and will affect the appearance and texture of foods. The more common ones are modified food starch and vegetable gums.

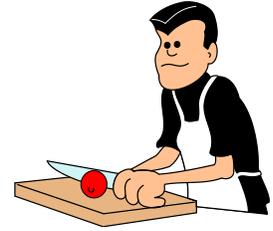
**Colorings** - Ninety percent are artificial and have no nutritional value. Some foods have a tendency to lose their natural color when processed and must be dyed back to make them more appealing to the consumer. An example of this is banana ice cream which is dyed yellow. Cherries are almost always dyed.

**Sweeteners** - The United States' consumption of artificial sweeteners is estimated at approximately **six pounds per person per year**. These are designed to make the foods more palatable.

**Aroma Enhancers** - An example is a yellowish-green liquid-diacetyl which is used in some cottage cheeses to produce an artificial butter aroma.

# Food Preparation

**Washing/Soaking** - Many vitamins are water soluble and will be lost through washing, scrubbing or long periods of soaking. Soaking carrots causes the loss of the natural sugar, all the B vitamins, Vitamins C and D, and all minerals except calcium.



**Dicing/Slicing/Peeling/Shredding** - The smaller you cut fruits and vegetables the more surface is exposed to temperature changes, the air oxidation, and light. Prepare as close to serving time as possible. Shredding for salads causes a 20% loss of Vitamin C and an additional 20% loss if the salad stands for an hour before eating it.

**NOTE:** The skin of fruits and vegetables contains at least 10% of the nutritional content of that food.



**Charcoal** - Pyrobenzines may be produced by the fat dripping on the charcoal. These chemical substances are classified as carcinogens (cancer forming agents).

**Crock-Pot** - Vegetables left in all day or for a long period of time lose a high percentage of their vitamins and minerals, as well as absorbing the fat from the meats. Steam vegetables first and then add them to the pot before serving.

**Boiling** - Stewing and boiling fruits and vegetables result in heavy nutrient losses.

**Steaming** - This is by far the best method for preparing fruits and vegetables. They are subjected to high temperature for only a short period of time.

**Microwave** - Very good method, foods cook fast and therefore have less chance to lose their nutrients.

**Frying** - High heat causes nutrient losses in all types of foods. Meats will lose Vitamin B1 and Pantothenic acid.

**NOTE:** Refrigerate all foods as soon as possible, this will help you retain the potencies of the vitamins and minerals. Whole boiled carrots will retain 90% of their Vitamin C and most of its minerals, but if you slice before cooking you will lose almost all the Vitamin C and niacin content.

## Sugar

- ◆ Sugar requires B vitamins and minerals to enable the body to metabolize it into glucose, yet it contains none of these. Therefore, it must take the nutrients away from other body functions that may need them.
- ◆ Sugar may also increase the rate at which we excrete the mineral calcium, making bones more fragile and may even weaken heart action.
- ◆ Oxalate, contained in chocolate, unites with calcium carrying it through the intestines as an insoluble compound.
- ◆ Theobromine in chocolate may reduce the absorption of protein through the intestinal wall.



**NOTE** High sugar intake reduces the effectiveness of the body's healing mechanism, causing a prolongation in the healing time.

## Smoking



Studies have shown that smokers require approximately 40% more **Vitamin C** intake than non-smokers to achieve adequate blood levels. Every cigarette reduces bodily stores of Vitamin C by approximately 30 mg., which means a pack of cigarettes requires at least a 600 mg. increase in your Vitamin C intake.

## Air Pollution

- ◆ **Smog** - All major cities in the United States have some form of chemical air pollution. This pollution will affect your lung's capacity to deliver oxygen efficiently to the cells of the body. The antioxidants (Vitamins A, C, E, selenium, and beta-carotene) may prove to be effective in combating some of the effects of smog.
- ◆ **Smoke** - Second-hand smoke from cigarettes, cigars and pipes all have a detrimental effect on the oxygen carrying capacity of the red blood cells. Smoke contains carbon monoxide which may adhere to the site on the red blood cell that should be carrying oxygen.

## Birth Control Pills

- ◆ Because of the estrogen content in oral contraceptives, studies have shown that women on the pill have lower than normal blood serum levels of Vitamin B6 and Vitamin C. Daily supplementation should be 50-75 mg. of B6 and 1 000-2000 mg. of Vitamin C. A time release C would be best.

## Caffeine

- ◆ Caffeine is the most widely used drug in the world. It is a potent **stimulant** and may be consumed in a multitude of forms. These include: **coffee, tea, cola drinks, chocolates, cold remedies, pain relievers** and dozens of other over-the-counter **drugs**.
- ◆ Caffeine also is a powerful stimulant to nerve tissues. It affects the higher centers of the brain, producing a wakening effect and a more rapid flow of mental processes. It assists the body in overcoming the sense of fatigue, however, it does not relieve it.



## **CAFFEINE FACTS:**

- ◆ Two cups of coffee will cause an increase in hydrochloric acid (HCL) in the stomach for at least an hour. This is a problem for anyone suffering from an ulcer or over-acidity problem.
- ◆ Caffeine slows the rate of healing of stomach ulcers.
- ◆ One cup of coffee will cause a rise in blood pressure.
- ◆ Caffeine decreases the body's ability to handle stress.
- ◆ In pregnant women, caffeine will enter the fetal circulation in the same concentrations as the mothers. May be related to birth defects.
- ◆ Withdrawal symptoms tend to discourage people from giving up caffeine.
- ◆ Continued use of caffeine may lead to insomnia, nervousness, restlessness and even tremors.
- ◆ Caffeine masks fatigue when the body needs to rest.
- ◆ Caffeine increases respiration rate, urine output and an increase of fatty acids into the bloodstream.