



THE FOOD PROCESSING INDUSTRY

INTRODUCTION

Facilities in the food processing industry are as diverse as the foods we eat, yet they have many features in common. Perhaps the most evident of these features is the need to strictly control environmental factors, including temperature, humidity and cleanliness. Controlling these factors helps food products keep their intended appearance, smell and flavor, and guards against potentially harmful bacteria and other pathogens.

Hazards throughout the food processing industry are also diverse, yet shared. The hazards common to many food processing facilities include those associated with:

- Automated processing equipment
- Combustible oils
- Conveyors
- Explosive dusts
- Flammable liquids and gases
- Fuel-fired equipment
- Refrigeration equipment
- Storage

The level of environmental control required in food processing facilities makes them extremely susceptible to large losses from contamination. An incident that would result in very minor damage in most other industries can result in very serious damage in the food industry.

A study published in the NFPA *Fire Protection Handbook* on fire incidents in the food processing industry in the USA between 1994–1998 shows that the largest number of fire losses occurred in grain mill products manufacturing facilities, slaughterhouses, and bakeries. The major causes are cooking equipment and open flames.

A number of large fire losses occurred in the nineties in various European countries in food related processing facilities. The main contributing factor to these large losses was the use of non-listed sandwich panel walls with combustible core in non-sprinklered facilities. The main causes were hot work and electrical installations.

Achieving effective loss prevention in a food processing facility requires use of non-combustible or Listed construction materials, properly arranging and protecting processing hazards wherever they occur. It also requires implementing management programs for loss prevention and control in accordance with *OVERVIEW* that take into account the high susceptibility of food products to contamination.

TYPES OF FOOD PROCESSING FACILITIES

No classification scheme accommodates all food processing facilities perfectly. However, the products these facilities make may be broadly categorized as staple foods, condiments or beverages.

Some of the food processing facilities listed below are discussed in more detail in subsequent sections of GAP.17.23. For additional information on the food processing industry, see the NFPA National Fire Codes, *Fire Protection Handbook* and *Industrial Fire Hazards Handbook*.

Examples of the types of facilities in each of these categories are listed in the following sections.

Staple Foods

These are basic but nutritious foods. Processing facilities that make food staples include:

- Bakeries (GAP.17.23.1.1)
 - Bread
 - Cakes
 - Cookies
 - Doughnuts
 - Pastry
- Canneries
- Cereal Manufacturers
- Corn Mills
- Dairies
 - Cheese
 - Cream
 - Ice Cream
 - Milk
 - Other Dairy Products
- Fried Food Processors (GAP.17.23.1.6)
 - Cheese Curls
 - Corn Chips
 - French Fries
 - Potato Chips
 - Pretzels
 - Other Fried Foods
- Frozen Food Processors
- Fruit Ripening Facilities
- Grain/Flour Mills
- Margarine Manufacturers
- Meat and Seafood Processors
- Roasting Facilities
 - Coffee Beans
 - Peanuts
 - Other Roasted Products
- Starch Manufacturers
 - Corn Starch
 - Potato Starch
 - Other Starches
- Vegetable Oil Manufacturers (GAP.17.23.1.14)

Condiments

The food processing facilities that make condiments include:

- Cocoa Manufacturers
- Confectioneries
- Dry Spice Grinders
- Flavor Extract Manufacturers
- Molasses Processors
- Sugar Mills and Refineries (GAP.17.23.2.6)
- Vinegar Distilleries

Combinations of condiments or combinations of food staples and condiments are used to make other condiments. Examples of condiments made from combinations of condiments are syrups, frosting and candy. Examples of condiments made from combinations of condiments and food staples are ketchup, relish and mayonnaise.

Beverages

The food processing facilities that make beverages include:

- Breweries (GAP.17.23.3.1)
- Distilleries (GAP.17.23.3.2)
- Fruit Juice Manufacturers
- Soft Drink Manufacturers
- Wineries

Note that dairy beverages are listed under food staples.