CHAPTER 3

PLANT FACILITY

3.1 GROUNDS (FDA 128.3)

The sanitation of the outside grounds of a plant can have a significant effect on the sanitation inside the plant. Food products, as they are processed or handled in the plant, may become exposed to the outside elements through loading docks, doorways, open windows, and the passage of workers and visitors in and out of the plant.

a. Maintenance. A disorderly, haphazard accumulation of useless materials, such as plant refuse, discarded equipment, scrap metal, and lumber, provides a refuge and breeding place for flies, rats, and other vermin.

Suitable containers or facilities must be provided for routine accumulation of such materials. Appropriate routine removal of the useless materials is also essential. In addition, all outside grounds should be policed periodically, and vegetation should be kept under control.

b. Burning of Waste Materials. Outside burning of plant refuse, such as paper towels, cartons, labeling materials, and office waste, should be done in appropriate incineration facilities so ash, smoke, and partially burned materials will not be carried by the wind into the plant and around the docks. Indiscriminate ground surface burning of refuse should not be permitted.

c. Roadway Surfaces. All roadways and railroad sidings on plant grounds should be paved or otherwise rendered dust proof to prevent product contamination by blowing dust.

d. Outside Storage. When useful materials and equipment are stored on the outside grounds, the materials and equipment should be placed in an orderly manner on elevated racks at least 12 inches high. This will permit the routine cleanup of waste and debris from all ground surfaces.

e. Drainage. Surface and runoff water is usually contaminated and, if allowed to accumulate in pools or puddles, may produce offensive odors and serve as a breeding place for insects. The plant grounds should promote the quick runoff of all water around the plant and on the grounds.

3.2 PLANTS

a. General Maintenance. Buildings, fixtures, and other physical facilities of the plant shall be maintained in a sanitary condition.

b. Plant Construction. Plant buildings and structures should be designed and constructed to facilitate maintenance and sanitary operations.

(1) Fixtures, Ducts, and Pipes. Fixtures, including ducts, pipes, and conveyor lines, suspended over working areas should not permit drips, condensate, dirt, metal fragments, glass, or other foreign materials to contaminate foods, raw materials, packaging materials, or equipment. Space over such working areas should be substantially free of possible contamination sources.

(2) Floors. Floors are ideal places in which food may lodge, decompose, and support the growth of insects or the development of undesirable organisms. Floors should be maintained to eliminate all open cracks and crevices. Wet spots or areas present a safety hazard and permit tracking contaminants from one place to another. Depressions or low areas that would accumulate moisture should be corrected.

Containers used for holding reclaimed product and holding floor sweepings, dirty product, and trash should be labeled accordingly to ensure the quality of the product is maintained.

(3) Walls and Ceilings. Walls and ceilings can be a source of product contamination as scale and loose paint are ideal breeding places for insects. Walls and ceilings must be maintained free of scaling and loose paint, dust, and condensate.

(4) Lighting. Effective cleanup procedures, sanitary processing and handling of products, as well as sanitary practices in all areas of the plant are difficult unless adequate lighting is available. Such lighting must be provided to all areas where food or food ingredients are processed, examined, or stored; where equipment and utensils are washed; and to

hand-washing areas, dressing and locker rooms, and toilet rooms. The overall intensity of artificial illumination in workrooms should not be less than 20-foot candles when measured at the work surface area. The illumination should not be less than 50-foot candles when measured at the work surface areas at all places where product or container inspections or examinations are made by the inspector.

Since broken glass is a serious contaminant, light bulbs, fixtures, skylights, or other glass suspended over food in any stage of preparation should be of the safety type or otherwise protected to prevent food contamination in case of breakage.

(5) Screens, Insect Control, and Rodent Proofing. The presence of birds, dogs, cats, and vermin creates a serious sanitation problem in a food processing plant. The plant must provide adequate screening and other protection to exclude birds, dogs, cats, and vermin (including, but not limited to, insects and rodents). Efforts to control the entry of pests must afford safe egress and not impair life safety.

All windows, doorways, and other openings that could admit insects or rodents should be equipped with effective insect and rodent screens or barriers. Air curtains or plastic strip doors may be used in some openings as barriers to pests. Effectively designed and installed "fly chaser" fans and ducts should be provided over doorways in outside walls of food handling areas used for shipping or receiving.

(6) Ventilation. Objectionable vapors, odors, dust, smoke, etc., can be absorbed by exposed products. Adequate and properly designed ventilation facilities and equipment are closely related to good plant sanitation.

Fresh air intakes should be located so that air is not contaminated with odors, dust, smoke, etc. Ventilators or exhaust fans should be of sufficient capacity and located so that they promptly remove objectionable odors and vapors.

c. Animal and Vermin Control. All insects and rodents are capable of transmitting a

number of diseases to man through contamination of food. Their presence in a plant creates a potential public health hazard. The only way to guard against this is by effective vermin control. Elimination and destruction of insects and rodents in and around plants are vital to good sanitation. Two principles should be followed: Prevent their breeding and prevent their entrance into the plant.

In most instances, the owners of adjoining properties and the local health authorities will cooperate in developing a program for insect and rodent control. The management should be encouraged to obtain such cooperation.

(1) Any place that will afford food, water, and a hiding place is a potential source of pests. The most common places are trash piles, piles of product spillage, and garbage dumps.

(2) Buildings and equipment that harbor pests should be repaired or replaced so as to eliminate breeding and hiding places. Walls, floors, and ceilings that have been tunneled by rodents should be repaired or replaced with rodent-proof material, such as concrete or brick. Tunnels may be blocked with glass, metal, or other rodent-proof material. An 18-inch space, painted white, should be left along walls to aid in a good pest control and inspection program.

(3) Stone and brick walls should have the joints pointed up flush and smooth; and all cracks, crevices, and openings around pipes, etc., should be sealed tight. Walls, ceilings, and partitions should be of tight-fitting material to prevent insects and other pests from entering and hiding.

(4) Floor drain strainers should be in good repair and should remain in place so as to prevent the entrance of rats through drainage lines.

(5) Dry storage rooms should be kept neat and clean. The stored material should be arranged so that as the supplies are moved the areas can be thoroughly cleaned. Most dry stores can be placed on racks having a clearance of at least 12 inches from the floor and be arranged so the

floor beneath the racks can be readily cleaned. If racks are not used, the dry stores should be closely piled to eliminate any possibility of runways or harborage for rodents. All openings that may admit rodents, birds, flies, and other pests should be effectively screened.

If pests do gain entrance to plants, this is an indication that the preventive measures have not been entirely successful and the management and inspectors should determine where preventive methods have failed and act to prevent a recurrence.

(6) Pesticide/rodenticides should be used as a last resort. Because these chemicals may contaminate food, they should be regulated, stored properly, and only used by certified personnel.

It takes ingenuity to cope with all of the various kinds of insects and rodents. The goal of complete eradication of pests in plants is definitely possible and should be attained.

3.3 EQUIPMENT AND UTENSILS (FDA 128.4)

Since there is extensive contact of product with equipment surfaces, this is a prime area for potential hazards to product sanitation and cleanliness.

a. Equipment. Equipment should be constructed, installed, and maintained so that it can be easily kept clean. All surfaces contacting the product must be free of scale, oil, grease, or other foreign substances. Surfaces should be nonporous and free from pits or rough spots, crevices, seams, or joints in which food may lodge, decompose, and support the growth of organisms.

b. Utensils. All utensils and sampling equipment used in processing and handling of food products must be thoroughly washed or cleaned prior to use each day. Utensils must be constructed and maintained so that they are easily kept clean. Also, utensils should not be placed on unclean surfaces while in use. In addition, all utensils should be thoroughly washed and cleaned if for any reason they became contaminated during use.

Utensils constructed of certain types of materials, such as copper, bronze, or brass, should not be used in processing operations or for sampling or storage of samples of oils, shortenings, or margarine. In addition, due to the high risk of chipping, utensils made of enamelware or porcelain are not acceptable for use in the handling, processing, or sampling of products.

c. Sanitation of Equipment and Utensils. There are some general precautions that should be observed by plant management to ensure the proper sanitation of equipment and utensils.

(1) The building, rooms, equipment, and other physical facilities of the plant should be kept in good repair and be maintained in an orderly sanitary condition at all times.

(2) Cleaning operations are to be conducted to minimize the danger of contamination of food and food-contact surfaces.

(3) Properly located facilities and equipment for cleaning equipment and utensils should be provided.

(4) When an inspector determines that any equipment or utensils are unclean, these should not be used again until properly cleaned.

(5) Sanitizing agents must not be used as a substitute for thorough and effective cleaning. Sanitizing residues must be removed from edible product equipment and utensils by thoroughly rinsing with clean water before the equipment or utensils are used again for handling products.

(6) Supplies which might contact edible products must be handled and stored under sanitary condition. Adequate measures should be taken to prevent dust collection, contamination from footwear, insects, rodents, or other sources.

(7) Staples from metal stitching machines represent a source of potential contamination of food products from bits and pieces of the metal staples. Operation of machines near open containers or in close proximity to the processing lines should not be permitted if there is any possibility of product contamination. In addition, metal-stapled cartons and wire-bound boxes should be opened with great care if they are in the vicinity of open containers or the processing line.

d. Storage and Handling of Cleaned Portable Equipment and Utensils. Processing and sampling equipment and utensils, after cleaning, should be stored and maintained in such a manner as to be protected from any sources of contamination. If there is any question as to the cleanliness of these items, they should be rewashed and cleaned prior to their use.

3.4 SANITARY FACILITIES AND CONTROLS (FDA 128.5)

a. Potable Water. An adequate supply of fresh, clean water is of primary importance in sanitation programs and plant operations. The first requirement is that the water supply in the plant be "potable." This simply means drinkable or safe for human consumption without further treatment, such as boiling or adding chemicals.

Potability requirements consist of the following general considerations:

(1) Physical Characteristics. Water should contain no impurity which would cause offense to the sense of sight, taste, or smell.

(2) Microbiological Quality. Water should not contain any microorganisms that would be a potential threat to human health.

(3) Chemical Characteristics. Water should not contain any chemical

impurities in concentrations which may be hazardous to the health of consumers.

(4) Radioactivity. Exposure of humans to radiation is harmful; therefore, water should not contain radioactive materials.

b. Nonpotable Water Supply. At a minimum, the plant water supply must pass the tests prescribed for potability in the "Drinking Water Standards" issued by the Public Health Service of Health and Human Services. Water from any source not approved and certified as potable shall be deemed nonpotable.

In some plants, the supply of potable water is limited and costly and a nonpotable supply from a river, lake, or unapproved well is made available. This water may be used in certain restricted areas, but special attention must be given that no cross connection exists between the potable and nonpotable water supplies. Nonpotable water is permitted only in those parts of the plant where no edible product is handled or prepared. Then it is only for limited purposes, such as on ammonia condensers not connected with the potable water supply, in connection with washing equipment used for other than production of edible products, and in sewer lines for moving heavy solids in the sewage.

Nonpotable water is not permitted for washing floors or other areas or equipment involved in moving materials to and from edible product departments.

In all cases, nonpotable water lines shall be clearly identified and shall not be cross connected with the potable water supply lines.

Arrangements can be made for emergency fire-fighting connections between the potable and nonpotable systems, but a complete break in the piping must routinely exist. Valves alone cannot be used as the means of separations, as they may leak or be opened accidentally. In each case, such emergency fire-fighting connections must be approved by local authorities.

c. Reuse of Water. There are certain situations where potable water may be reused for the identical, original purpose within a plant. Reuse of water may be approved for such purposes as in vapor lines leading from deodorizers used in preparation of shortening and similar edible products and in equipment used for chilling of canned products.

All pipelines, reservoirs, tanks, cooling towers, and like equipment employed in handling the reused water must be constructed and installed so as to facilitate their cleaning and inspection. Supply lines for potable water must be installed so as to prevent back siphonage. (Back siphonage is the backflow of used, contaminated, or polluted water from a plumbing fixture, equipment, or other source into a water supply pipe due to a negative pressure in such pipe or supply system.)

Complete draining and disposal of the reused water, effective cleaning of the equipment, and renewal with fresh potable water must be accomplished frequently enough to ensure an acceptable supply of water for the purpose intended.

d. Sewage Disposal. The sewage disposal facilities utilized by the plant must be acceptable to the local authorities having jurisdiction over such matters. If the inspector suspects that the sewage disposal facilities are not acceptable for any reason, he or she should check with the local authorities responsible for the approval of the plant's sewage system to determine that the system has been approved.

e. Plumbing. Plumbing is a particularly important consideration in food plants. If plumbing is improperly installed or maintained, a variety of public health hazards, such as cross connections, back siphonage, drainage system stoppage, or overhead leakage may occur. Any of these conditions can result in serious contamination of the water supply, product, equipment, or utensils or create obnoxious odors or other nuisances.

In general, all plumbing should be sized, installed, and maintained in accordance with applicable State and local plumbing laws, ordinances, and regulations. If an inspector suspects that any part of the plumbing system does not meet with local requirements, the plant management should be requested to furnish evidence that the questionable system meets all local requirements.

f. Toilet Facilities. Toilet facilities shall meet the requirements of the Occupational Safety and Health Act of 1970 and the FDA's Good Manufacturing Practice Regulations of 1969 (21 CFR, Part 128). The facilities shall be maintained in a sanitary condition and kept in good repair at all times. Toilet rooms shall be so constructed that they do not open directly into rooms or areas where ingredients or products are handled, processed, or stored. Entrance through an intervening dressing room or ventilated toilet room vestibule is permissible. Toilet rooms and vestibules must have self-closing doors completely filling the openings.

Adequate ventilation of toilet rooms is also critical because of the possibility of objectionable odors entering production areas. Toilet rooms without air conditioning should be effectively ventilated mechanically by means of an exhaust fan with a duct conveying the foul air to the outside. Conveniently located wall-mounted tissue dispensers must be provided and maintained so they remain functional and contain an adequate supply of tissue. It is important that tissue be available without the user being required to handle the tissue roll.

Rigid standards of sanitation must be maintained in toilet rooms. Special attention must be given to ensure that toilets and urinals are clean and functional at all times. Blockage of toilets or urinals dictates immediate attention by plant management. If the floors become contaminated with human wastes, the entire room must be declared unfit for use until repairs are made and a thorough cleaning and sanitizing of the floor is accomplished.

When making an inspection of toilet facilities, arrangements should be made with plant management for entrance and examination of the toilet facilities used by the opposite sex.

Signs shall be posted directing employees to wash their hands with cleaning soap or detergent immediately after using toilets.

g. Hand-Washing Facilities. Hands often become soiled in the performance of routine duties in and about the plant, so convenient location of hand-washing facilities is desirable.

Pedal-operated, hand-washing facilities are desirable so that touching knobs or levers that have been contaminated by unwashed hands is not required. Facilities must have tepid water and soap for hand washing, sanitary towel service or suitable drying devices, and, where appropriate, easily cleanable waste receptacles.

h. Rubbish Disposal. In food processing plants, control and disposal of wastes is a major concern. In most instances, the plant's waste represents most of the contaminants and filth that the sanitation program has eliminated from actual or potential contact with edible products. It is essential that this material be disposed of in a manner that does not pose a further threat to edible products or human health. Disposal of trash by burning should be performed according to local ordinances only.

In addition, plant wastes by their very nature have a high nuisance potential. Rubbish, such as used paper towels, cartons, office waste, labeling materials, floor sweepings, etc., frequently can be a sanitation problem. Suitable containers or trash cans, with tight-fitting lids, shall be conveniently located throughout the plant. These should be emptied frequently so that the accumulation of rubbish prior to its removal does not cause a sanitation problem.