

preparation and serving areas of roach powders with sodium fluoride, cyanide metal polish, and so forth.

In view of the widespread custom, especially in the United States, of providing cubed and crushed ice in drinking water and beverages; it is of interest to note two reports on the sanitary quality of such ice.²³ Both studies report that such ice often fails to meet sanitary standards and is contaminated with *Escherichia coli*, clostridia, micrococci, and streptococci. A suggested control method is to provide a chlorine disinfecting solution (approximately 2 p.p.m.) in which the ice is placed.

C. KITCHEN AND KITCHEN EQUIPMENT DESIGN

The Ordinance and Code prepared by the United States Public Health Service²⁴ and adopted by the American Standards Association⁶ as a minimum standard whenever local regulations do not apply to the industrial food-handling establishment provides for certain materials of construction, minimum lighting, and ventilation requirements. The design of kitchens is a problem in materials handling, batch preparation, and small quantity distribution. The designer must provide for the greatest ease in performing a large variety of tasks, usually in too crowded quarters.

It behooves the kitchen designer to provide sufficient space in this important working area that the tasks of preparing food and washing of dishes and utensils may be accomplished in a sanitary manner. Separation of activities—food preparation, baking, and washing—is preferable to combining them in one room. The location of kitchen equipment in relation to ease of cleaning is of great importance. Too often stoves, steam kettles, peelers, and mixers are placed close to walls allowing dirt to accumulate and providing excellent breeding and hiding places for roaches.

Tables and stands should have shelves no less than six inches off the floor. Fixed kitchen equipment should be sealed with impervious material to the wall or, alternatively, kept away from the wall with sufficient space between them to allow for easy cleaning. All work surfaces should be made of impervious, non-corrosive, and easily cleaned material. When wood is used it should remain unpainted and be scrubbed daily. Cutting, peeling, and other mechanical equipment should be designed to eliminate dirt-accumulating crevices and to be readily disassembled for cleaning. Recently a voluntary organization representing the public health profession, business, and industry has published a series of standards for Soda Fountains and Luncheonette Equipment, Food Service Equipment, and

²³ E. W. Moore, E. W. Brown, and E. M. Hall, Sanitation of crushed ice for iced drinks. *J. Am. Pub. Health Assoc.*, 43, 1265-1269 (1953). V. D. Foltz, Sanitary quality of crushed and cubed ice as dispensed to the consumer, *U. S. Pub. Health Repts.*, 68, 949-954 (1953).

²⁴ *Ordinance and Code—Regulating Eating and Drinking Establishments (Recommended)*. U. S. Public Health Service, Washington, 1943.

Spray-Type Dishwashing Machines; others are in the process of preparation.²⁵ These standards are of value in identifying equipment that has been tested to meet exacting sanitation requirements.

D. FOOD VENDING MACHINES

The use of automatic vending machines in the purveying of food has developed rapidly in the past decade. Vending machines are available that serve hot beverages, cold carbonated and noncarbonated beverages, sandwiches, and pastries. A recommended ordinance and code has been published by the Department of Health, Education, and Welfare.²⁶ The following considerations may be used as a guide for the selection of automatic food vending machines.

All surfaces that come in contact with the food should be constructed of smooth, noncorrosive, nontoxic materials. All flexible piping should be non-absorbant, nontoxic, easily cleanable, and remain unharmed when treated with the more common disinfecting agents.

Vending machines purveying perishable foods should be refrigerated. Their design should include an automatic temperature-controlled shut-off that will prevent the machine from operating whenever the temperature in the storage compartment rises above 50° F.

In general, the design of the machine should allow easy accessibility for cleaning and disinfecting all surfaces that come in direct contact with the beverage or food.

Whenever disposable cups are furnished they should be stored in protective devices, and it should be possible to reload them without touching the lips or interior surface of the cups.

The drip receptacles in beverage vending machines should be provided with a float switch that would prevent the machine from operating when the liquid in the receptacle reaches a certain level. The vending area of the machine should be protected from dust, dirt, vermin, and possible mishandling by patrons by means of self-closing gates or pans.

The cleaning of tanks, containers, and other demountable equipment should be done at a central location. Whenever cleaning is accomplished at the vending machine, a portable three-compartment sink should be provided in order to wash, rinse, and disinfect all demountable equipment properly. At such points water and sewer facilities should be provided.

The food and drink for the vending machines should be stored and handled as they would have to be to meet the requirements of food-handling establishments. A good rule is to offer for sale only packaged foods that were prepared at a central commissary. All perishable food should be coded as to place of origin and

²⁵ Soda Fountain and Luncheonette Equipment, Standard No. 1; Food Service Equipment, Standard No. 2; Spray Type Dishwashing Machines, Standard No. 3. National Sanitation Foundation, Ann Arbor, Mich.

²⁶ *The Vending of Foods and Beverages, A Sanitation Ordinance and Code, Recommendations of the Public Health Service*, U. S. Department of Health, Education, and Welfare, 1957.