

to grow in food. The symptoms of staphylococcal intoxication consist of nausea, vomiting, cramping abdominal pain, and diarrhea. In severe cases, blood and mucus may be found in the stool and vomitus. The chief distinguishing characteristic between food poisoning from toxins and enteric disease from pathogenic bacteria carried in food is the time of onset of symptoms. In staphylococcal intoxication, this is often less than 3 hours after the ingestion of the contaminated food and rarely longer than 6 hours. On the other hand, in bacterial infections a delay of 6 to 24 hours between ingestion of food and onset of symptoms is more likely. The rapidity of onset and uniform distribution of food poisoning symptoms in a group of people make it possible to determine the meal and particular foods in the meal responsible for poisoning.

3. Animal Parasitism

Some of the diseases caused by ingestion of food contaminated with animal parasites are amoebiasis, trichinosis, and tape worm infestation. In the instance of infection with *Endamoeba histolytica* (causative organism of amoebic dysentery), the source and transmission of infection is similar to that of other enteric pathogens, such as *Shigella* and *Salmonella*. The problem is somewhat different for *Trichinella spiralis* and the tapeworms, for in these cases the infectious organisms are present in an animal, for example, swine, beef, fish, before the time of killing. Prevention of disease caused by, and control of, these parasites depend on inspection and selection of food at the time of purchase as well as on proper preparation, since the heat of prolonged cooking will destroy the organisms.

4. Toxic Chemicals

Accidental contamination of foods by toxic chemicals is an additional hazard. Acute poisonings are characterized by sudden onset from a few minutes to two hours after ingestion of the chemical. The more common poisons reported as food-borne are cadmium (from metal-plated utensils), sodium fluoride (from roach powder), and arsenic (from insecticides). Others frequently mentioned are antimony, zinc, lead, and copper.

The recent appearance of compounds such as the aliphatic and aromatic amines as boiler feedwater conditioners may present an additional hazard in the preparation of foods. Wherever steam may come in direct contact with food, the toxicity, type, and quantity of boiler feedwater conditioners should be ascertained. Complete physical separation of the food and steam from the boiler is recommended.

The revised American Standard Minimum Requirements for Sanitation in Places of Employment⁹ states (10.1.1) that: "In all places of employment where employees are permitted to lunch on the premises, an adequate space suitable for that purpose shall be provided for the maximum number of employees who may use such space at one time. Such space shall be separate from any location

where there is exposure to toxic materials." It further states (10.1.3) that: "No employee shall be permitted to store or eat any part of his lunch or eat other food at any time where there is present any toxic material or other substance that may be injurious to health." Item 10.1.4 states that:

"In every establishment where there is exposure to injurious dusts or other toxic materials, a separate lunch room shall be maintained unless it is convenient for the employees to lunch away from the premises. The following number of square feet per person, based on the maximum number of persons using the room at one time, shall be required:

Persons	Sq. ft.
25 and less	8
26-74	7
75-149	6
150-499	5
500 and more	4

B. FOOD HANDLING

The food handler educated in the proper methods of handling foods, glassware, and utensils and in good personal hygiene is a cornerstone of a safe food supply. In food sanitation the health of the food handler is of primary importance, and every effort should be made to exclude from the food establishment any sick or injured employee with a discharging wound or lesion. This does not mean that a system of frequent medical and laboratory examinations of food handlers is recommended. On the contrary, these have been found repeatedly to be too costly when measured in terms of the results achieved. It is believed today that education of the food handler to report promptly any illness is a more effective means of reducing food-borne disease. In many localities health departments are prepared to provide pre-employment or in-service food handler training programs, and a variety of training manuals and visual aid materials are available.²²

In the handling of foods, particularly those previously mentioned as being sources of infection or intoxication, care must be taken to keep them out of the incubation zone; that is, they must be refrigerated at a temperature below 50° F. or kept hot at 150° F. or above. The exception to this rule is that during preparation, serving, or transportation the food may be kept at intermediate temperatures for a period not exceeding two hours. Indicating thermometers of proven accuracy should be installed in all refrigerators. Common deficiencies found in refrigerated food storage are the overloading of the refrigerator, which prevents the free circulation of cold air, and the storage of foods in deep containers, which do not allow the total mass of the food to cool to 50° F. or less within the prescribed two hours. Further provisions for the continual vigilance against possible chemical contamination must be exercised by prohibiting the use of cadmium-plated utensils; the use of galvanized utensils for cooking, and the use in food

²²Sanitary Food Service (Instructors Guide), U. S. Pub. Health Service Publ. No. 90.