SNS COLLEGE OF TECHNOLOGY

UNIT-I

CHARACTERIZATION OF FOOD HAZARDS:

Hazard characterization considers the dose levels at which no adverse effects occur in order to establish a dietary exposure from all sources that is acceptable (intentionally used chemicals) or tolerable (contaminants and naturally occurring chemicals).

BIOLOGICAL HAZARDS:

The first hazard category, biological or microbiological, can be further divided into three types: bacterial, viral, and parasitic (protozoa and worms). Many HACCP programs are designed specifically around the microbiological hazards. Archer and K venberg (1985) and Todd (1989) estimated that the incidence of foodborne illness ranges from 12.6 to 81 million cases per year with a cost of 1.9 to 8.4 billion dollars. HACCP programs address this food safety problem by assisting in the production of safe wholesome foods. Excellent references exist on biological hazards (Cliver 1990), foodborne pathogenic bacteria (Doyle 8,1989; Riemann and Bryan 1979), viruses (Cliver 1988), and parasitic protozoa and worms (Healy et a1. 1984; Jackson 1990). Table 3-1 lists hazardous bacteria, viruses, and parasitic protozoa and worms, which include the microorganisms of concern in HACCP programs. The International Commission of Microbiological Specifications for Food (ICMSF 1986) attempted to group some of these hazardous microorganisms according to severity of risk.

CHEMICAL HAZARDS:

Webster defines a chemical as any substance used in or obtained by a chemical process or processes. All food products are made up of chemicals, and all chemicals can be toxic at some dosage level. However, a number of chemicals are not allowed in food and others have established allowable limits. A summary of most of the chemical hazards in foods has been compiled (Bryan 1984). The two types of chemical hazards in foods are naturally occurring and added chemicals. Both may

potentially cause chemical intoxications if excessive levels are present in a food.

PHYSICAL HAZARDS:

Physical hazards are often described as extraneous matter or foreign objects and include any physical matter not normally found in food which may cause illness (including psychological trauma) or injury to an individual (Corlett 1991). The FDA maintains a passive surveillance system known as the Complaint Reporting System for the reporting of consumer complaints related to food items. A total of 10,923 complaints regarding food items consumed during the period October 1, 1988, through September 30, 1989, were reported to the FDA Complaint Reporting System (Hyman, Klontz and Tollefson 1991). The largest single category (2,726 complaints) involved the presence of foreign objects in food and accounted for 25% of all complaints. Of all reported foreign object complaints, 387 (14%) resulted in illness or injury. The most common foreign object in those reports was glass. Table 3-6 lists the most frequently implicated food types involved in foreign object complaints. One reason physical hazards are the most often reported complaint is that foreign objects provide tangible evidence of a product deficiency. Regulatory action may be initiated when agencies find adulterated foods or foods that are manufactured, packed or held under conditions whereby they may have become contaminated or rendered injurious to health. Thus, although the discovery of filth in a product may not itself present an unacceptable heath risk, the conditions of manufacture, packaging, or storage that permitted its entry present an unacceptable health risk. Food processors must therefore be aware of product adulteration by physical substances and address their control in a HACCP program.

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