CHAPTER 1. SAMPLE PREPARATION FOR MEAT, POULTRY AND PASTEURIZED EGG PRODUCTS

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1.1 Introduction

The purpose for the microbiological examinations of meat and poultry products is to obtain information. This information gathering may follow a qualitative or quantitative analytical format. The format followed is called the sampling plan. Many microorganisms are present in very low numbers and require one or more enrichment steps. If cell injury is anticipated, a non-selective enrichment frequently is used to resuscitate cells, followed by a more selective enrichment.

The analyst must study all records and correspondence before examining the sample. Care must be exercised in maintaining and handling the sample to insure that it is the same one that was collected, that it has not been tampered with, and that its condition is the same as it was at collection. The reserve sample must be stored properly to maintain its integrity in case additional analyses are required.

An analyst must be keenly aware that during all steps of the analysis, it is important to minimize the growth of non-critical microorganisms and to prevent entrance of environmental contaminants. The organism(s) isolated must come from the test sample and not from an outside source. These facts cannot be over-emphasized and can be accomplished only if strict attention is paid to the following rules:

The sampling operation must be well organized, with all supplies and equipment properly positioned before starting.

Ideally, sampling should be done in an area free of air currents following good aseptic procedures.

All work surfaces must be clean and sanitized.

Implements used for sampling must be sterile before use and protected from outside contamination during use.

The outside of the immediate container must be thoroughly sanitized.

Any laboratory person processing samples must be very familiar with aseptic techniques and the principles of sterilization, sanitization and disinfection. The person assigned to the sampling task should know the sampling protocol to be used and have a

reference copy at hand in case questions arise.

1.2 Sanitizing the Work Area

The work area must be clean and free from dust; detergent sanitizers are satisfactory for cleaning. Before work begins, the work area should be cleaned and a sanitizer/disinfectant applied liberally and given time to act. Quaternary ammonium compounds, sodium hypochlorite and phenolic compounds all are suitable for this purpose. The manufacturer's instructions regarding the concentration needed and the time required for the compound to act should be followed.

1.3 Sterilization of Instruments

a. All instruments and containers to be used in the sample analysis must be sterile. Any sterilization procedure may be used that is compatible with the material to be sterilized. Sterilization implies the total destruction of all viable organisms as measured by an appropriate culturing method.

b. An exception can be made, if necessary, when the number of instruments is limited (ie. chisels) and the testing protocol does not include sporeforming microorganisms. In which case, the instruments first are washed with soap and water, rinsed and inspected to be sure there is no organic matter in crevices or hinges, then they may be steamed for 30 minutes in an instrument sterilizer or placed in boiling water for two minutes.

c. Do not dip instruments into alcohol and flame them as a substitute for heat sterilization. It is not a substitution for the methods given above.

1.4 Disinfection of Outer Surface of the Immediate Container

a. The outside covering of the intact immediate container must be decontaminated to the greatest extent possible and particularly in the area where an opening will be made to expose the contents.

b. Hydrogen peroxide, tincture of iodine or 2500 ppm sodium hypochlorite solution may be used for this purpose. Allow time for the disinfectant to act before opening the container. Aseptically remove any residual disinfectant to prevent its entering the container when an opening is made.

1.5 Cutting and Weighing Samples

a. The sample should never be touched with bare hands. During the process of sanitizing the immediate container, the analyst should put on a pair of sterile gloves for handling samples.

b. Sterile instruments should be used for cutting, removing and manipulating all samples.

c. The sample must be taken aseptically according to the sampling protocol and placed in the proper sterile container for the next processing step. The remainder of the sample must be secured with an appropriate sterile closure that will preserve the sterility and integrity of the sample reserve. The sample reserve must be held according to the sampling protocol.

d. If the sample is to be weighed, the balance on which samples are weighed must be placed in an area that is clean and free of strong air currents.

e. If at all possible, the product should be weighed directly into the sterile container that will be used for dilution, mixing, blending and/or stomaching.

f. When weighing is complete, clean and disinfect the area with the same product used initially for disinfecting the work area. All instruments, containers, gloves and other materials that may have been in contact with the product must be incinerated or terminally sterilized before cleaning or disposal.

1.6 Selected References

Block, S. S. (ed.). 1984. Disinfection, Sterilization and Preservation, 3rd Edition. Lea & Febiger, Philadelphia, PA.