TESTING FOR BACTERIAL CONTAMINATION OF FOOD

_Bacteria_ are found just about everywhere, and as long as they maintain their personal space and do not get into areas where they do not belong, they usually cause no difficulties. _E. coli_ is a type of bacterium that lives in our large intestines. There, it causes no harm and actually helps us by assisting with waste processing, vitamin K production and food absorption.

When _E. coli_ or other types of _microorganisms_ leave their normal habitats and establish themselves in an area of the body where they are usually not found, they can cause disease.

Contamination of foods by _E. coli_ or other microorganisms causes illness because the organisms are given the opportunity to enter our blood stream and travel to places they usually do not inhabit. Once there, they can set up housekeeping and will cause infections.

How can we test for microorganisms such as _E. coli_ that might cause contamination of foods? What if we find that the organisms are present in the food - how can we determine the degree of contamination of the food?

The _microbial spoilage_ of food depends upon the chemical composition of the particular food and the types of microorganisms that the food contacts.

Freezing, boiling and secure packaging helps prevent contamination. Improper handling, such as employees returning to the food processing area from the bathroom without washing their hands, can cause serious contamination.

Improper beef processing has apparently caused recent outbreaks of a lethal form of _E. coli_. Animal feces (containing animal forms of _E. coli_) were included in beef processing along with the beef body tissues.

**PART I**

Each member of a two-person team needs to obtain a clean, closed _petri dish_ that contains _nutrient agar_.

Each team needs to select one unknown food solution. Keep the solution closed until it is time to use it.

Observe the location of the Bunsen burner on your lab table. You will use the burner flame to sterilize the opening of your _unknown food solution_ container when you open it and before you close it again.

Mark the outer _bottom_ cover of the petri dish (use tape or grease pencil) with your name.

Petri dishes must be stored upside down in the incubator, to prevent moisture from washing away the organisms growing on the surface of the nutrient agar.

Procedure for preparing a growth plate of the unknown food solution (SAMPLE # ______):

- Turn the petri dish right side up.
- Open the unknown food solution and _flame_ the opening.
• Open the lid of the petri dish only part way - just enough so that you can pour a dime-sized puddle of unknown food solution on the agar surface.

• Close the petri dish.

• Flame the opening of the unknown food solution container and close the container.

• Take the glass elbow (called a spreader) from its container of alcohol, tapping as much alcohol as possible off its surface against the inside wall of its container.

• Carefully flame the elbow and hold it until it cools slightly.

• Open the petri dish just enough to admit the glass elbow.

• Use the sterile elbow to spread the food solution evenly over the surface of the petri dish.

• Close the petri dish.

• Reflame the glass elbow and return it to the alcohol solution.

• Secure the petri dish with several pieces of tape.

• Place upside-down petri dish in incubator.

Next session you will look at the growth of colonies on the surface of the plate to see if our food was contaminated.

**PART II**

Observe the sample plates of *Escherichia coli*, *Serratia marcescens* and *Micrococcus luteus*. Compare the size, shape, height, color and other features of their colonies and record your observations.