

## Aseptic Technique and Bacteriology Lab Safety

When working with bacteria in the laboratory, safety is a primary concern. Bacteria are found everywhere, on the countertops, in the air, and on your skin. **Aseptic**, or sterile, **technique** is necessary to prevent the contamination of bacteria cultures you are working with and to avoid the further contamination of countertops, the air, and your skin. Aseptic technique is also used in the lab when working with other microorganisms such as viruses and fungi.

Aseptic technique is always used when transferring bacteria from a prepared culture to another growth medium. Bacteria can be transferred to a petri dish in one of two ways. The first method is a **streak**, which is used to produce single, isolated colonies of bacteria. In this technique, a sample from a bacterial culture is drawn across the surface of the agar with a sterile inoculating loop or applicator. Successive streaks are made from the original streak. During **incubation**, the time the bacteria are allowed to grow under specific conditions, each viable but invisible bacterial cell will give rise to an individual – and visible – colony of bacteria containing millions of cells.

The second method is the **spread**, which involves pouring bacteria from a stock culture evenly over the entire surface of the agar. A bacterial spread produces a **bacterial lawn** in which the entire surface of the agar is covered with bacteria. This technique is usually used when a test is being conducted to determine if bacteria will or will not grow under a certain set of conditions.

It is important to plan ahead when working with bacterial cultures in the lab. You must carefully follow sterile technique. If working conditions are not sterile, your results could be incorrect due to contamination. Also, nonsterile conditions could be a risk to your health, especially if you are working with pathogenic (disease causing) bacteria.

### STERILIZATION OF THE WORKING AREA

- Always wash your hands with antibacterial soap. Put on safety goggles, gloves, and a lab apron.
- Before you begin working with the bacteria in the laboratory, you must first sterilize your work area. To do this, spread a disinfectant solution, such as isopropyl alcohol, over the entire work area. Wipe the area clean with paper towels. Throw the paper towels into the laboratory trash can.

### LEARNING HOW TO USE A BUNSEN BURNER

- When using the inoculating loop to transfer bacteria, use a Bunsen burner to sterilize the loop. Compare the parts of a Bunsen burner with the diagram below. Bunsen burners may differ slightly, but they all have the same basic parts. Use the following procedure to light the Bunsen burner.
1. Examine the hose to make sure that it has no holes in it. If it has holes, get a new hose from your teacher.
  2. Fit one end of the hose securely over the gas outlet. If the hose does not fit tightly, get a new hose from the teacher. Fit the other end of the hose to the Bunsen burner.
  3. Partially close the air intake openings at the bottom of the barrel.
  4. Turn the gas on fully at the main outlet.
  5. Hold the igniter about five (5) cm above the top of the barrel. Use the igniter to light the burner.
  6. Adjust the gas valve until the flame extends about eight (8) cm above the barrel.
  7. Adjust the air supply until the flame is steady and has a light blue inner cone.

