Food Safety: Bacteria in Shellfish

**Background:** In 2011, several people in the United States became ill from eating raw oysters from Appalachicola Bay, Florida. Had people followed the FDA/USDA recommendations for handling and preparing shellfish, the illnesses would not have occurred. The USDA and FDA recommend that all shellfish be maintained at certain temperatures during transportation and storage and be heated to prescribed temperatures prior to consumption in order to prevent bacterial growth and to kill any bacteria present.

In this activity students will conduct laboratory activities to determine the effectiveness of proper storage and handling in the prevention of bacterial growth in shellfish. Oysters, clams, scallops, or mussels may be used in this study. Proper sterile technique and disposal procedures are essential in conducting this experiment.

**Laboratory Activity**

**Safety Procedures:** Follow sterile technique guidelines for handling micro-organisms. Follow approved disposal of micro-organisms. (See attached handouts and consult your district procedures.)

**Materials:**
- 15 shellfish
- 15 petri dishes and LB agar
- Refrigerator
- Hot plate
- Liter beaker
- Distilled water
- Para-film
- Permanent marker
- Blender
- Shucking knife

**Procedure:**
1. Purchase 15 shellfish, (oysters, clams, scallops or mussels), from a local grocery or fresh fish market.
2. Remove the meat, muscle, from the shell of 5 shellfish that have been stored in the refrigerator.
3. Place the meat into a blender with 100 ml of distilled water.
4. Puree the water and shellfish and spread .5ml onto a plate of LB agar, cover and seal with Para-film. Culture overnight at room temperature.
5. Allow 5 shellfish to sit at room temperature for 2-4 hours and then repeat steps 2-4.
6. Steam the remaining 5 shellfish and remove the meat from the shells.
7. Repeat steps 3 & 4.
8. Compare the bacterial growth of all cultures.
9. Record data.
10. Dispose of cultures according to approved procedure.
11. Create a graph to display data.