Teacher Prep

This activity requires students to have access to at least 5 different disinfectants. Any cleaning agent is appropriate. Choose from our suggestions below:

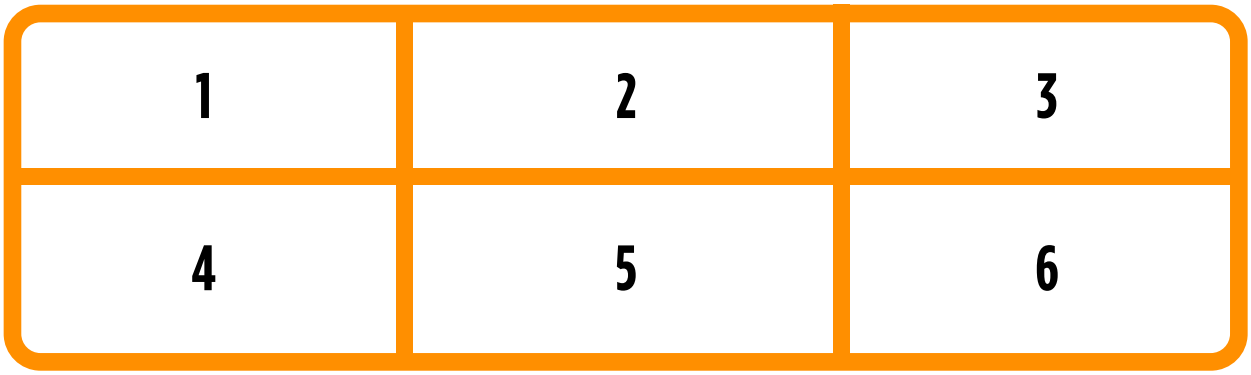
- Hand soap and water mixture
- Dish soap and water mixture
- 1 tsp of bleach mixed with a gallon of water
- Standard counter cleaner
- “Green” counter cleaner
- Disinfectant your school uses
- Vinegar and water mixture

Testing Different Disinfectants

Follow the instructions below to test the effectiveness of different disinfectants.

Step 1: Infecting the Cutting Board

- Each group should collect a cutting board and permanent marker from their teacher.
- Using the permanent marker, divide the cutting board into six sections, numbering each section #1-6 like this:



- Collect a pair of sterile gloves and put them on.
- Take a piece of lunchmeat from your teacher and wipe the piece meat all over the surface of the cutting board.
- Wipe evenly over the entire surface in circular motions.
- Throw away the piece of lunch meat.
- Take off and throw away your gloves.
- Leave the cutting board out over night.

Step 2: Disinfecting the Cutting Board

You will now test the effectiveness of 5 different cleaners to kill bacteria.

- Complete this step the day after infecting your board.
- Grab 6 small plastic cups.
- Use a permanent marker to label each cup with a number 1-6.
  - The cups will match the numbered sections on your cutting board.
- Fill cup 1 with water. Water will serve as the control in this experiment.
- Fill each cup 2-6 with a different disinfectant solution provided by your teacher.
- Fill in the names of the disinfectants on the data table next to the number of the cup you put them in.
- Grab and put on a new pair of gloves.
- Grab a cotton ball and dip it into the water in cup 1.
- Use the cotton ball to clean section 1.
- Do not let your gloves touch the cutting board. If your gloves ever touch the board, you need to throw away your gloves and put on a new pair.
- Do not let the water run into any other section of the cutting board.
- Repeat the process for the other cups.
- Grab one of your numbered cups.
- Grab a new cotton ball and dip it into the cleaning solution.
- Use the cotton ball to clean the section of the cutting board that matches the number of the disinfectant. (Use the disinfectant in cup 2 to clean cutting board section 2. Use detergent 3 to clean section 3 and so on. Do this for all remaining cups.)

- Remove and throw away your gloves.
- Allow your cutting board to dry completely.
- Note: You can continue onto step 3 while the cutting board dries.

Step 3: Testing the Disinfectants

- Collect 6 agar plates from your teacher.
- Use a permanent mark to label the bottom of the plates.
- Label each plate with a number 1-6. These plates will match the spaces on your cutting board.
- Once your cutting board has dried, grab and put on a new pair of gloves.
- Open agar dish 1.
- Grab a new, clean cotton swab.
- Rub the cotton swab all over section 1 of the cutting board.
- Rub the same cotton swab all over plate 1. Then throw away the cotton swab.
- Close plate 1 and use masking tape to seal the dish shut.
- Repeat the process for plates 2-6.
  - Note: Make sure you use a new cotton swab each time.
  - Note: Do not let your gloves touch the cutting board, the agar plate, or the end of the cotton swab that is being rubbed on the cutting board.
  - If your gloves do touch, throw them away and get a new pair.
- Once all 6 plates have been swabbed and sealed, store them where your teacher tells you to.
- Take off and throw away your gloves.
- Allow your dishes to sit for 2-4 days.

Step 4: Collecting and Analyzing Data

- After your dishes have sat for 2-4 days, collect them from where they were stored and bring them to your desk.

- Count the number of colonies (dots of bacteria that have grown) on each plate and record the number on your data table. Also, draw a picture of your plate and write down any other observations you have.
    - Sometimes, a few colonies grow together, making it hard to tell how many are there. Make your best guess and include information about the size of the colonies in your picture or written explanation.

- Be ready to compare your results with other groups.

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Data Table

Plate Number	Disinfectant	Number of Colonies Grown	Drawing of Plate	Other Observations
1	Water			
2				
3				
4				
5				
6				

Step 5: Make a Recommendation

- Based on the data you collected, make a recommendation for the disinfectant that should be used in public kitchens. Be sure to explain why you have made your choice.