Environmental Monitoring of a Lab Surface
Standard Operating Procedure

Laboratory: Bioresearch
Location: RM 169
SOP prepared by: R. Sanders
Last Revision: 5/24/24

General: An Environmental Monitoring Program is a systematic way of testing the food production environment, including all food contact surfaces, for potential contamination, such as pathogens, to verify the effectiveness of your food safety programs. Environmental Monitoring Programs for food safety also facilitate compliance with regulatory requirements set by agencies like the FDA and USDA to help maintain product quality and brand reputation. The purpose of this protocol is to provide a standardized test to ensure the safety of lab stations in a food science facility.

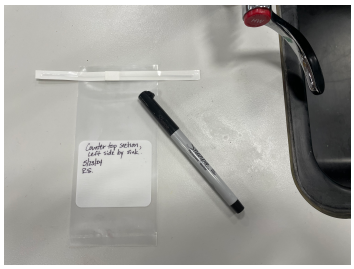
Safety: Gloves

Materials:

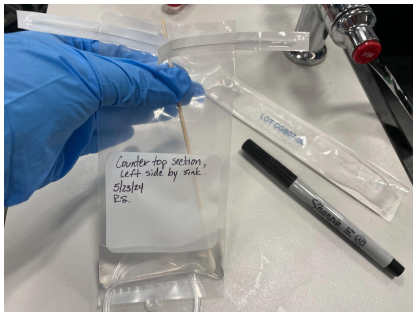
Distilled water	Aerobic Petrifilm Count Plates
Whirl Pak Bags	Sterile Swabs
Incubator	Micropipetter (P-1000) and Tip (or Disposable Pipettes)
Graduated Cylinder	10% Bleach

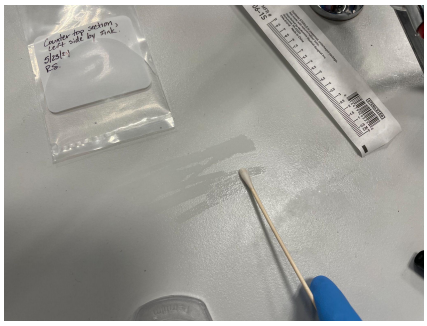
Procedure:

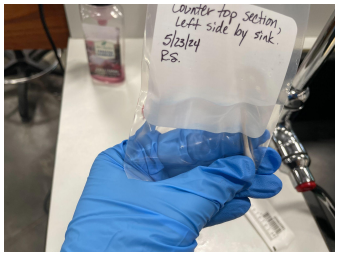
1. Label each whirl pak bag with location, date, and initials with a sharpie.

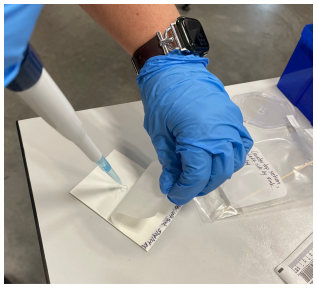
a. 

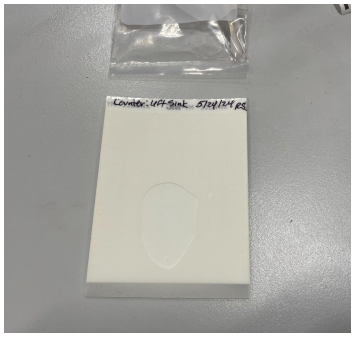
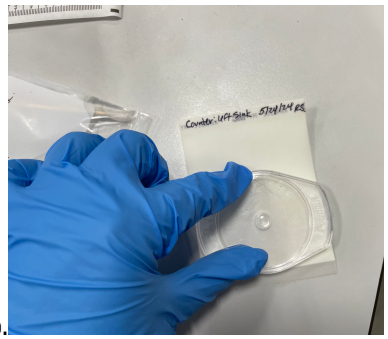
2. Add 10mL of distilled water into a sterile whirl pak bag.
3. Repeat steps 1-2 for each location assigned to be tested.
4. Using a sterile swab, dip cotton swab tip into the whirl pak of distilled water then swab a 5cm^2 lab surface area and replace the swab tip into the appropriately labeled bag. (Wear gloves to avoid contamination.). Repeat this step for each assigned area in the lab.

a. 

b. 

5. Seal the bag and homogenize the bag for 30 seconds.
   a. 

6. Label each petrifilm plate with swabbed location, date and initials.
7. Using a P-1000 Micropipetter, extract 1mL of the solution from the corresponding swabbed location. Lift the plastic cover on the petrifilms and pipet the 1mL solution in the middle of the film and slowly lower the plastic cover over the liquid. Make sure to not touch the underneath of the petrifilm.
   a. 

8. Allow the petrifilm to sit for 1 minute after plating before using a plate spreader to apply slight pressure on top of the plastic cover to remove all air bubbles captured under the film.
   a. 
   b. 

9. Stack no more than 20 petrifilm plates together and place in an incubator at 35° Celsius for 24-48 hours.
10. Clean and sanitize the workstation after plating using a 10% bleach solution.

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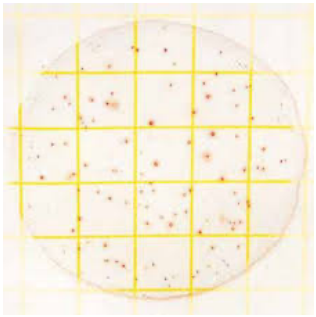
11. A red indicator dye is in the gelling agent which produces red colonies that provide better contrast for easier colony counting. To calculate results: # of Red/Violet Colonies on Plate x Volume of Solution in Whirl Pak Bag = Total CFUs per Area Sampled. Count all colonies regardless of size or color intensity and record each in a data table.
    a. 

    Example Calculation:
    100 colonies counted x 10mL = 1000 CFUs/5cm^2

    Total CFUs =

12. Disinfect each plate by pipetting 1 mL of a 10% bleach solution onto the plate before disposing in the trash can.