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This presentation is used with
Lesson Plan 12: Colony Counting
in the Drinking Water Quality
Testing Trainer Manual.

Available at
www.cawst.org/resources

Colony Counting

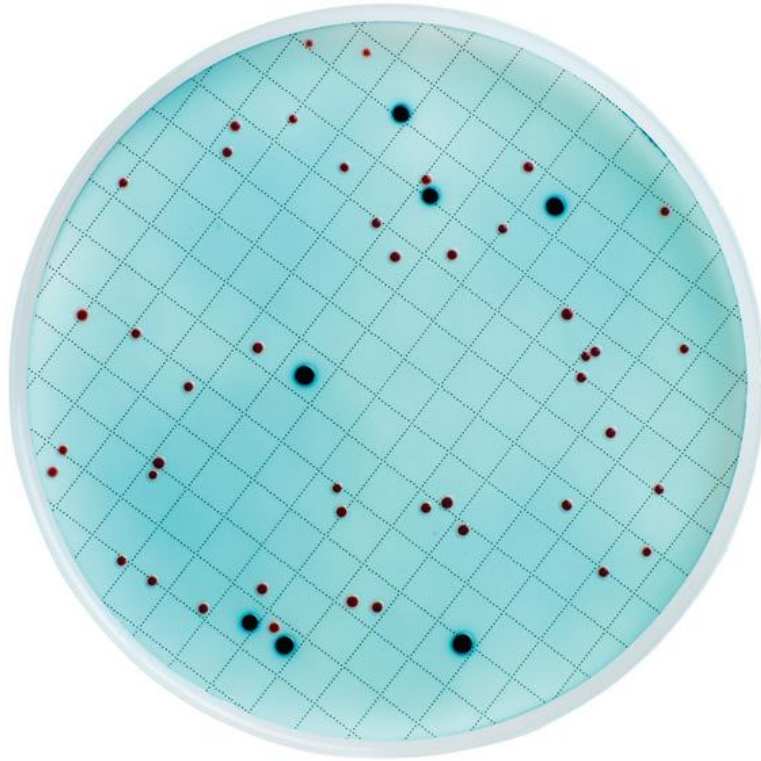


Learning Expectations

1. Count bacterial colonies
2. Discuss error and variation in colony counts

How a Bacterial Colony Forms

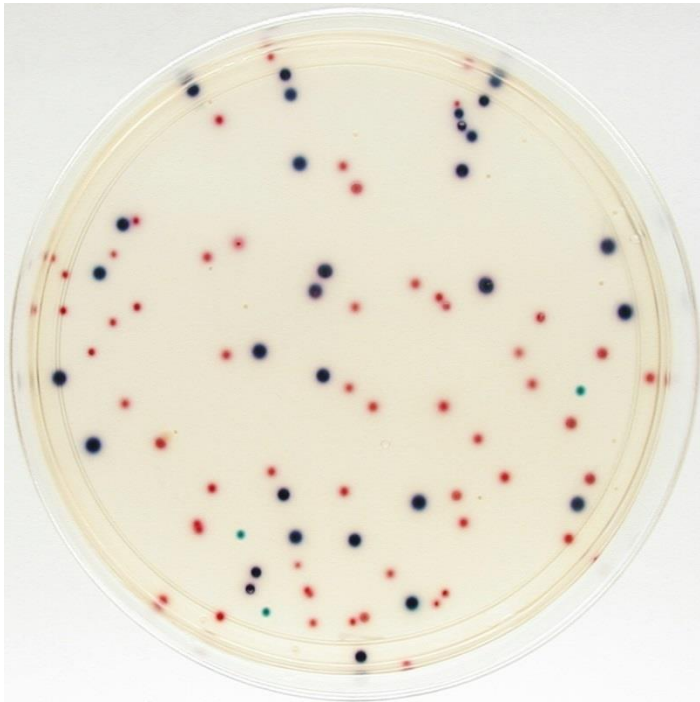
Sample Petri Dish (m-ColiBlue24)



M-ColiBlue 24 colonies in Petri dish
(Credit: Hach)

- m-ColiBlue24 culture media (blue liquid)
- *E. coli* appear as **blue** dots
- General coliform appear as **red** dots
- Total coliforms = blue + red dots

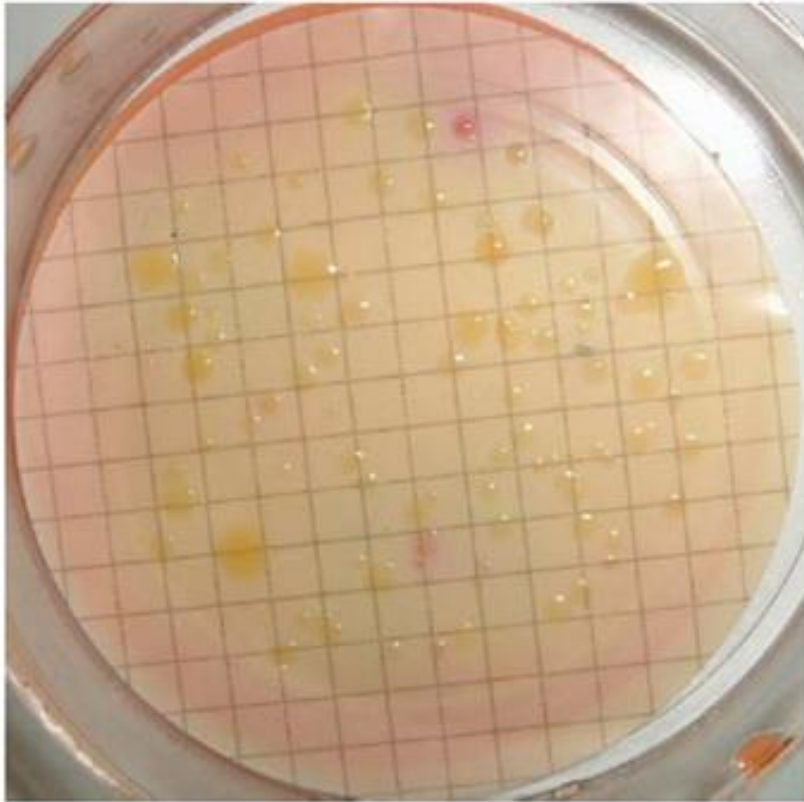
Sample Petri Dish (Coliscan)



Coliscan colonies in Petri dish
(Credit: Micrology Labs)

- Coliscan media (light yellow liquid)
- *E. coli* appear as **dark blue to purple** dots
- General coliforms appear as **pink** dots
- Total coliforms = dark blue/purple + pink dots

Sample Petri Dish (MLSB)



MLSB colonies in Petri dish
(Credit: UK Environment Agency)

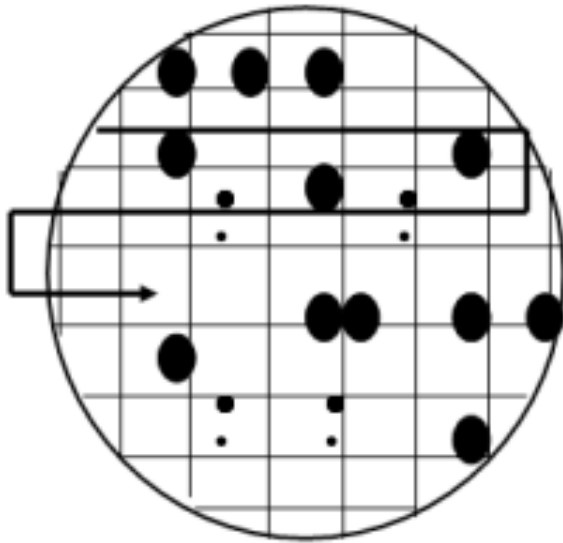
- Membrane Lauryl Sulphate Broth (MLSB) (magenta-red liquid)
- *E. coli* appear as **bright yellow** dots when incubated at 44°C
- General coliforms appear as **bright yellow** dots when incubated at 37°C

How Do We Count the Colonies?

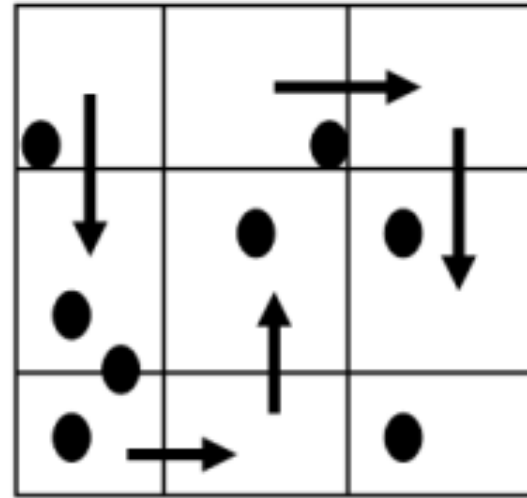
- Use the horizontal grid lines
- Count all colonies of the particular colour you are looking for
- Go from top to bottom/left to right until all grid squares are covered

Colony Counting

Method for Counting Colonies Using a Grid



Count top to bottom by
rows along grid lines



Count top to bottom by
columns along grid lines

Colony Counter or Hand Tally Counter Clicker

- It is helpful to use a hand tally counter clicker for higher colony counts if available



Hand Tally Counter Clicker
Credit: Gadget Plus

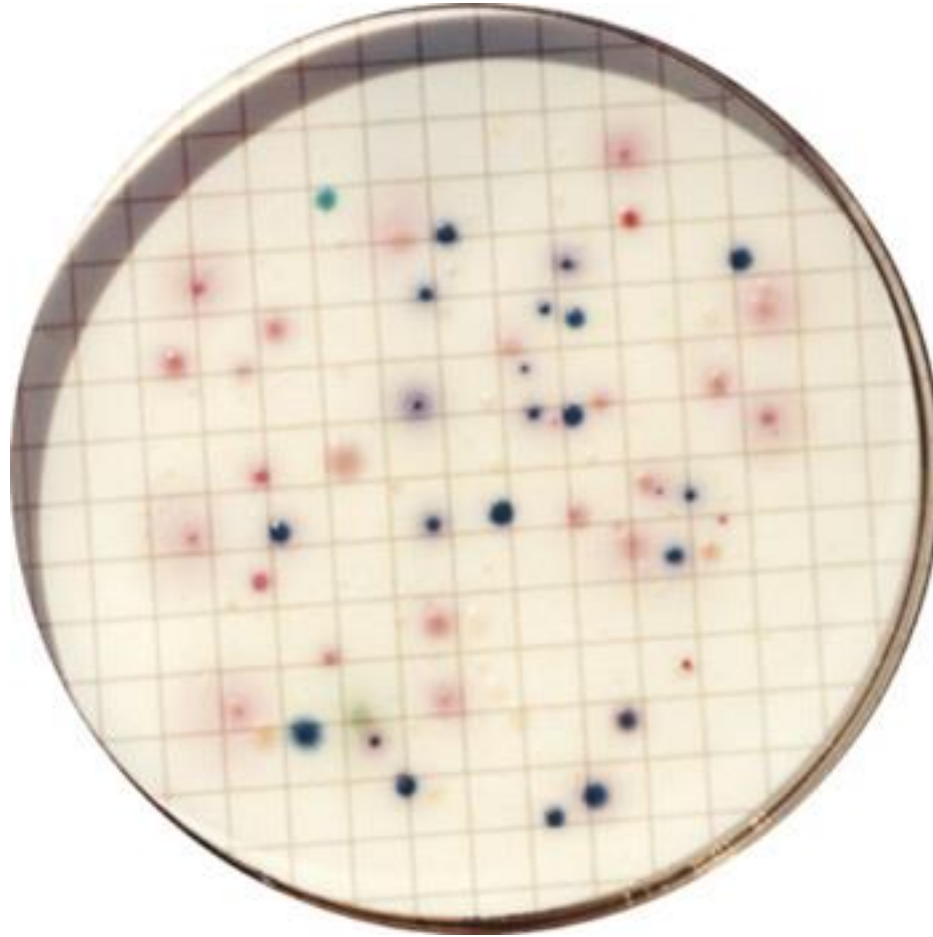
Colony Counting

- Record results as the number of colony forming units (CFU) per 100 mL
 - E.g., 55 CFU/100 mL
- Prefer plates to have between 20 and 80 colonies
- Samples with >200 colonies are considered too numerous to count (TNTC)

Colony Counting Exercise

- In pairs, study the Coliscan Colony Counting Guide
- Count the *E. coli* (dark blue/purple), then count the general coliform (pink) colonies
- Results will be recorded on the flipchart
- Are there any differences in results?
- If yes, discuss the differences in results.

Colony Counting Exercise



Coliscan colonies in Petri dish
(Credit: Micrology Labs)

Colony Counting Exercise

- Answer:
 - **22 *E. coli***
 - **30 general coliforms**

Review

- What colour are fecal coliforms grown on MLSB?
- Answer:
 - **Yellow**