The Big Four
SPC, LPC, PI, Coliform

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Significance

- Regulatory standard
- Impact on pasteurized product
- Premium programs
- Troubleshooting
In general...

- Many procedural variations, *highly* defined practices
- Method basis: anything present will grow, if it can
- Individual cells (clusters, chains) each form a Colony Forming Unit (CFU)
- CFUs are counted
  - 25-250, 30-300, or?
  - Dilution math is done, e.g. 1:10 dilution, 50 colonies = 500 CFU/mL
  - Might be expressed as log#, e.g. 1000 = 3
  - Precision – two SDs
  - Can be statistically complex
A plate to be counted
One, two, three...uh...?
Now what?
Remember *heterotrophic*
Petrifilm
SPC

- Very common, referenced—NCIMS, PMO
- **Standard Plate Count**
- Also called:
  - APC (Aerobic plate count)
  - HPC (Heterotrophic plate count)
- Plate loop count
- Spiral plate count
- BactoScan FC
- Pour plate vs Petrifilm
SPC

- Growth conditions

- SMA (Standard Methods Agar)
  - Casein digest
  - Yeast extract
  - Sugar (glu)

- Aerobic
  - $32^\circ C \pm 1; \ 48 \text{ hrs} \pm 3$
LPC

- **Lab Pasteurized Count**
- Same as SPC with one exception:
  - Milk is first heated to 145°F for 30 min
- Kills most vegetative cells
- Activates some spores (from where?)
- Doesn’t kill “thermoduric” microbes
- What survives pasteurization?
  - In cheese
  - In UHT milk
  - Shelf life of fluid milk
Can be a big “Swissue”
- Preliminary Incubation count
- Same as SPC with one exception:
  - Incubate milk at 55°F for 18 hrs, then plate
- Growth of cold-lovers (from where?)
- Compared to standard SPC#
Coliform Count

- Think “colon”
- Manure, environment

- Aerobic, facultative anaerobic; gram-, nonspore-forming rods
- Ferment lactose = acid and gas
- 32 or 35°F w/in 48 hrs

- Escherichia, Enterobacter, Klebsiella
Coliform Count

- What’s for dinner?
  - Yeast extract
  - Gelatin digest
  - Lactose (gas)
  - Neutral red (red)
  - Bile salts mixture
  - Crystal violet (caning treatment)
  - Salt
Coliform Count

http://water.me.vccs.edu/courses/env108/lessons.htm
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