

III. Applied and Environmental Microbiology – Session 5

A. Industrial Microbiology

1. Introduction
 - a. History
 - b. Industrial fermentations
2. The Process: Fermentors
3. The Products: Examples
 - a. Amino acids: Lysine and glutamic acid
 - b. Organic acids: Citric acid and acetic acid
 - c. Alcohols: Ethanol and methanol
 - d. Enzymes: Glucose isomerase and proteases
 - e. Antibiotics: Penicillin
 - f. Steroids: Cortisone

B. Food Microbiology

1. MO's as agents of spoilage
2. MO's as agents of disease
3. MO's as producers of food
4. MO's as food

C. Water and Sewage Microbiology

1. Sewage Treatment: What, why and how...
 - a. Primary: Screening and settling
 - b. Secondary: Aerobic digestion
 - c. Tertiary: Stripping
 - d. Quaternary: Chlorination
2. Water Treatment: What, why and how...
 - a. First: Sedimentation/Coagulation
 - b. Second: Sand Filtration
 - c. Third: Filtration
 - d. Fourth: Chlorination (or UV light)
3. Water Quality
 - a. EPA mandate and rules
 - b. Microbiological standards

D. Environmental Microbiology

1. Microbial diversity
2. Microorganisms and nutrient cycling
 3. Biofilms: Microbial growth in nature