

## *Foiling Spoilage*

The kit titled "Foiling Spoilage" is available from Carolina Biological (1-800-334-5551), (SB-15-4662) \$40.00. The following descriptions are ready to use as labels on on your "Foiling Spoilage" display. Simply cut the the descriptions apart.

***Bacillus cereus*** is common soil bacterium. It causes spoilage of cooked meats, poultry, raw and cooked vegetables, and dessert dishes. It can also cause gastroenteritis.

***Micrococcus luteus*** is common in soil, dust, water, and on the skin of humans and other animals. Its yellow pigment is characteristic of the species, as is its relatively slow growth.

***Pseudomonas fluorescens*** is common in soil and water. It is associated with the spoilage of eggs, cured meats, fish, and milk. It often produces a diffusible fluorescent pigment that can be noted on decaying meats and fish.

***Penicillium chrysogenum*** is found in air, water and soil. It causes the spoilage of many foods, but it is also extremely useful to mankind. It is the most effective commercial producer of the antibiotic penicillin.

***Rhizopus stolonifer*** is the common (black) bread mold. It also causes mold on some vegetables such as sweet potatoes. Its spores are common air contaminants. It is used commercially in the production of steroids.

***Saccharomyces cerevisiae*** the breadmaking yeast, is found in soil, milk, animal wastes, and on the surfaces of fruits and flowers. It causes the spoilage of foods with a high sugar content.

### *Microbe Growth Inhibitors...Preservatives*

***Benzoic acid*** was the first chemical preservative allowed in foods by the FDA, and it is still used widely in highly acidic foods such as ciders, salad dressings, soft drinks, margarine, and syrups. Sodium benzoate is more soluble so is used more often. Most bacteria are inhibited solely by the low pH of benzoic acid, but molds and yeasts are not.

***Propionic acid*** and its salts are effective against molds but have little or no effect on bacteria and yeasts. Since yeasts are not affected, propionates can be used in baked goods to prevent mold growth without inhibiting the yeast's leavening ability. Wrapping paper and tubs for margarine are treated with propionic acid.

***Sorbic acid*** inhibits yeasts and molds more than it does bacteria. Sorbic acid is used because its inhibitory effect is selective; it inhibits undesirable microbes while not affecting other beneficial ones. For examples mold growth on cheeses can be retarded without inhibiting the molds necessary for maturing the cheese.

***Sodium nitrite*** is not an organic acid, yet is used as a color stabilizer and spoilage inhibitor in cured meats such as frankfurters and lunchmeats. Nitrites are particularly effective in inhibiting *Clostridium botulinum*.

### *Nutrient Agar*

#### *Bacteria*

Bacillus cereus, Bacteria

Micrococcus luteus, Bacteria

Pseudomonas fluorescens, Bacteria

#### *Fungi*

Penicillium chrysogenum, Fungi

Rhizopus stolonifer, Fungi

Saccharomyces cerevisiae, Fungi