Official Recipe for Preparing Off-Flavors of Milk
North Carolina FFA Association
Milk Quality and Products CDE

- **One may achieve various intensities by diluting the sample with high-quality <u>pasteurized/homogenized milk</u> intended for table use.**
- **<u>The goal is to get students to be able to detect the slightest variation from normal fresh pasteurized/homogenized milk with no defect.</u>**
- **For tasting, samples should be tempered at 60°F (16°C).**
- **For more detailed information, see <u>Judging, Identifying, and Scoring Dairy Products</u> by Jan L. Allen, Vocational Agriculture Service, University of Illinois at Urbana-Champaign.**

Acid	Add 1 to 1.5 ounces of fresh cultured buttermilk to a quart of fresh pasteurized/homogenized milk.	Prepared 24 to 48 hours prior to use.
Bitter	Add 1 (NoDoz®) or similar brand caffeine tablet to about 1 oz. of water and let it dissolve for 30 minutes. Then you add the "caffeine solution" to a quart of fresh pasteurized/homogenized milk.	**Note:** One may increase the (NoDoz®) or similar brand caffeine tablets in the solution to begin with or add the "caffeine solution" to a smaller volume of water to help students get the taste.
Feed	Add 1/2 ounce (1 tablespoon or 15.0 ml) of molasses and mix with one quart of pasteurized/homogenized milk.	**Important: There are ways to do this with roughages, but for the sake of simplicity we are using molasses.**
Flat/Watery	Add 4 to 6 ounces of distilled water to a quart of fresh pasteurized/homogenized milk.	Good quality tap water will work but may have some additional flavors. You may wish to use approximately 10% volume for the quart of milk.
Foreign	Add 1-teaspoon (5 to 6 ml of 2-fold or double) vanilla extract per quart of milk.	
Garlic/Onion	Add about 0.2 grams of garlic or onion salt or 3 drops of garlic or onion extract to a quart of pasteurized/homogenized milk.	**Optional:** Use garlic powder or cut up onion. If cut up onion is used, filter through a coffee filter or cheesecloth and allow sitting for 30 minutes.
Malty	Add ½ ounce (15 grams) Grape Nuts® or Grape Nuts Flakes® breakfast cereal to 3 ounces (about 100 ml) of milk <u>and</u> allow to sit for 20 to 30 minutes to create a stock solution. This stock solution should then be strained through cheesecloth, a coffee filter, etc. (in a funnel) into another container. *Add 1 ounce of the stock solution to a quart of milk.*	Add 1 to 1.5 teaspoons (5 – 7 ml) of unflavored malted milk powder (available at some grocery stores) to a quart of pasteurized/homogenized milk.
Oxidized	Expose one quart of pasteurized/homogenized milk in a clear glass or plastic (polyethylene) milk container to direct sunlight for 30 minutes to one hour. **Note:** <u>This is the most common form of oxidized milk found in homogenized milk.</u> **Do not use a container that is colored (yellow)** and keep the milk cool by placing in ice. Samples prepared in this way will probably develop the generic (metal-induced) off flavor within 36 to 48 hours after light exposure.	Metal-induced oxidized samples may be prepared by preparing 100 ml of 1 percent $CuSO_4.5H_2O$ as a "stock copper solution" and keep refrigerated. Add 0.5 to 1 ml of the "stock copper solution" to a quart of pasteurized/homogenized milk. **Note:** Prepare 24 to 48 hours prior to use.
Rancid	Add ½ ounce (15 grams) of blue cheese to a quart of pasteurized/homogenized milk and allow it to sit for 30 minutes.	Filter for the final sample using coffee filter or cheesecloth and funnel.
Salty	Add common table salt to a quart of fresh pasteurized/homogenized milk.	Determine the degree of saltiness by the amount of salt added to the milk.
NO DEFECT	Use fresh pasteurized/homogenized milk that has not been exposed to any of the treatments named.	