



Culinary Foundations I

*Class 4: Measurements; Recipes; Shallow Fry, Deep Fry;
Fats & Oils*

Measuring Ingredients

- ▶ **Accurate measurements are important**
 - ▶ Control Costs
 - ▶ Ensure Quality & Quantity Consistency
 - ▶ Used for Food Prep and Portioning

Ingredient Measurement Conventions

▶ Count

- ▶ “each” “bunch” “cloves” “heads” “dozen”
- ▶ Convenient-not very accurate (ex. “a clove of garlic” How big?)

▶ Volume

- ▶ Space occupied by solid, liquid, or gas
- ▶ More suited for liquid measures-less precise than weight

▶ Weight

- ▶ Mass or heaviness
- ▶ Most accurate-Preferred where precision is needed (ex. standardized recipes, baking, recipe development, dietetic cooking, large quantities, etc.)

Measuring Equipment

- ▶ Nested or Dry Measuring Cups
- ▶ Graduated or Liquid Measuring Cups
- ▶ Measuring Spoons
- ▶ Ladles
- ▶ Portion Scoops or “Dishers”
- ▶ Scales
 - ▶ Spring Scale
 - ▶ Digital Scale
 - ▶ Balance-Beam Scale

Liquid Measures

- ▶ Ounces (*Fluid Ounces*), Cups, Pints, Quarts & Gallons (*fl.oz, c., pts., qts., gal.*)
- ▶ Milliliters, Deciliters, Liters (*ml., dl., l.*)



Dry Measures

- ▶ Cups, Teaspoons, Tablespoons, “Dash” or “Pinch”
 - ▶ *Teaspoons and tablespoons may be used for dry or wet measures.*
- ▶ “Scoop and Sweep” vs. “Spoon and Sweep”



Scales



Portioning

- ▶ Ladles, Scoops and Dishers
- ▶ Disher # = approx. Number of Scoops per Quart.
- ▶ A “#30 = 1 ounce



Your Easiest Measuring Spoon



Your Easiest Measuring Spoon



Weight vs. Volume

- ▶ 1 Cup of Water=8 ounces
- ▶ 1 Cup of Flour = about 4.5 ounces
 - ▶ Depends on type, and compactness
- ▶ 1 Cup of Sugar = about 7 ounces
- ▶ 1 Cup Honey=about 12 ounces



Cooking Convention

By Convention, Water, Liquids and Fats, Weight = Volume

2 Cups Water, Butter or Oil = 16 ounces

“A pint is a pound the world around.”



“When isn’t a pint “a pound the world around?”

- ▶ A “Pint” in the UK is actually 20 oz.
- ▶ When you buy a “pint” of Haagen-Dazs, it weighs 14 oz.



Standard Measurements

- ▶ Teaspoon = tsp.
- ▶ Tablespoon = Tbsp.
- ▶ Ounce = oz.
- ▶ Cup = c.
- ▶ Pint = pt.
- ▶ Quart = qt.
- ▶ Gallon = gal.
- ▶ Pound = #
- ▶ Gram = g.
- ▶ Kilo(gram) = kg.
- ▶ Milliliter = ml.
- ▶ Liter = l.
- ▶ 3 tsp. = 1 Tbsp.
- ▶ 2 Tbsp. = 1 oz.
- ▶ 8 oz. = 1 cup
- ▶ 16 oz. = 1#
- ▶ 2 c. = 1 pt.
- ▶ 2 pt. = 1 qt.
- ▶ 4 qt. = 1 gal.
- ▶ 1000 g. = 1 kg.
- ▶ 1000 ml = 1 l.

Gallon, Quarts, Pints & Cups



Common Conversions

▶ 1 oz. = 29.6 ml (30 ml)

▶ 16 oz. = 1 # = 454 g.

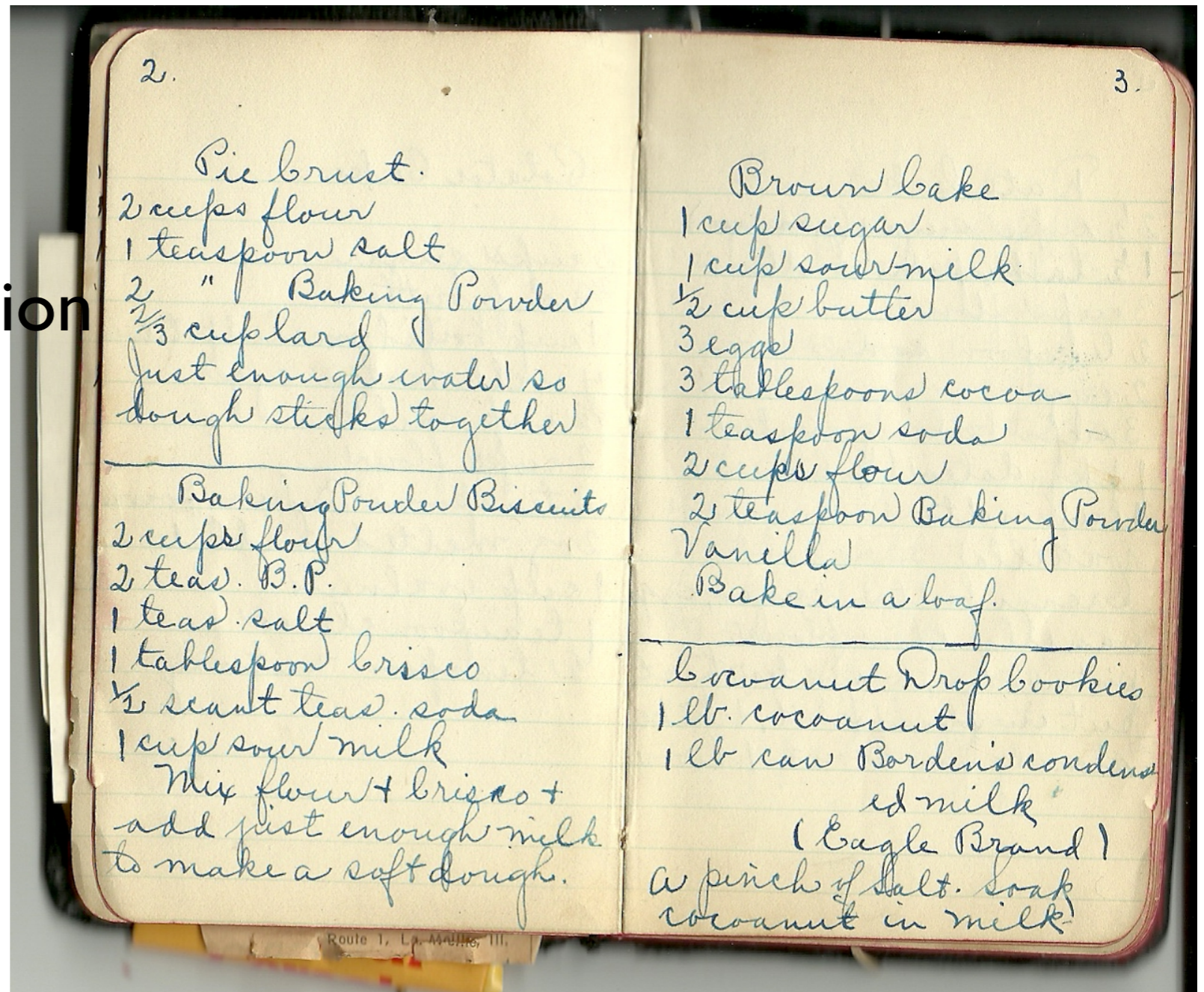


Recipes

- ▶ Recipes (or *formulas*) are tools for training and managing food costs.
- ▶ Recipes
 - ▶ Can Be Limited by Language
 - ▶ Often Contain Errors
 - ▶ Do Not Replace Mise En Place
 - ▶ Should be Used as a Guide

Components (*minimum*) of a Recipe

- ▶ Name of Item
- ▶ Servings or Yield
- ▶ List of Ingredients
- ▶ Method of Preparation



In Class Assignment: 5 Minutes

- ▶ Everyone take out a piece of paper and write a recipe for “Buttered Toast”
- ▶ Discuss the nuances necessary for writing this recipe.

In Class Assignment: 5 Minutes

- ▶ What type of bread did you use?
- ▶ How thick was it cut?
- ▶ How was it toasted?
- ▶ What color did you toast it to?
- ▶ Did you use softened butter?

“Standardized” Recipes

- ▶ *Are recipes associated with a foodservice operation's menu.*
- ▶ Used for Training
- ▶ Ensure Consistent Quality & Quantity
- ▶ Monitor Work Efficiency and Reduces Waste
- ▶ Helps Wait Staff to Understand Menu Items

Frying

- ▶ High-Temperature Cooking Food in a Fat or Oil
- ▶ Fried Food is Crisp and Browned and/or Caramelized
- ▶ Techniques vary with Amount of Fat/Oil
- ▶ Techniques include Sauté, Shallow or Pan-Fry and Deep Fry



Deep Frying

- ▶ Completely Submerging Foods in Hot Fat or Oil
- ▶ “GB & D” (Golden Brown & Delicious)
- ▶ Most Items are Breaded or Battered
- ▶ Thick Cut Potatoes...Blanched First
- ▶ Use High Quality Fat...High Smoke Point
 - ▶ A saturated fat (hydrogenated or animal fat)
 - ▶ Not a salad oil!
- ▶ Recovery Time

Deep Frying con' t

- ▶ Frying Temperature 325° to 375°
- ▶ Cut Foods to a Uniform Size
- ▶ Season before Coating
- ▶ AND Season Immediately after Frying
- ▶ Have Landing Area-Absorb Excess Oil
- ▶ Serve Immediately & Hot
 - ▶ Fried foods do not hold well

Deep Frying con' t

- ▶ Swimming Method OR
- ▶ Basket Method
- ▶ Season before Coating
- ▶ AND Season Immediately after Frying
- ▶ Apply Coatings Immediately Prior Frying
- ▶ Allow for Recovery Time
- ▶ “Oven-Fried” is not deep fried

Batters and Breading

- ▶ **Standard Breading Procedure**
 - ▶ Coat with Starch (Flour)
 - ▶ Coat with Egg Wash
 - ▶ Coat with Breading
 - ▶ Bread Crumbs
 - ▶ Cracker Meal
 - ▶ More Flour
 - ▶ Corn Meal

Batters and Breading, con' t.

- ▶ **Batters**
 - ▶ Starch & Liquid
 - ▶ Optional Leavener
 - ▶ Beer Batter
 - ▶ Tempura
 - ▶ Soda Water

Standard Breading Procedure

- ▶ Product (Trimmed and Seasoned)
- ▶ Starch (Flour or Corn Starch)
- ▶ Egg Wash (4 oz. Water or Milk per 2 Whole Eggs)
- ▶ Coating
- ▶ Holding (before Frying)
- ▶ Drain & Hold (after Frying)

Fats



Fats: Functions

- ▶ Vital Nutrient
- ▶ Carries Fat Soluble Flavors
- ▶ Taste (Butter)
- ▶ Tenderizer (Marbling in Meat)
- ▶ Heat Conductor (Oil in Sautéing)
- ▶ Starch Separation (In Roux and Batters)
- ▶ Sealing (Basting)
- ▶ Lubrication (Coating pans)
- ▶ Moisture Retention
- ▶ Leavening (Puff-Pastry)

Oils

- ▶ Oils are fats that are liquid at room temperature



Oils, con' t

- ▶ Vegetable Oils (Corn)
- ▶ Seed Oils (Canola)
- ▶ Nut Oils (Peanut)
- ▶ Olive Oils
- ▶ Flavored Oils



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Moroccan Argan Oil

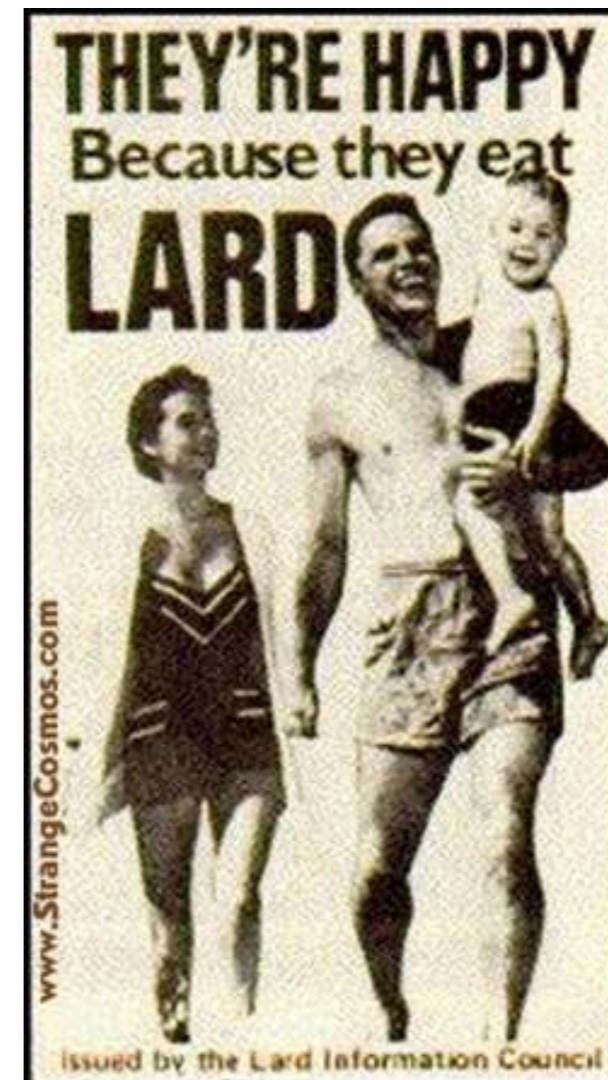
- ▶ Used by some Chefs and “Foodies” also in some cosmetics.
- ▶ Traditionally harvested by the Berbers via goats that ate the seeds, and then excreted them, collected and pressed.
- ▶ Mostly done by machines now.

*(Kopi luwak coffee is “harvested” in the same way...via Civets in Sumatra...\$300/pound)



Animal Cooking Fats

- ▶ Butter
- ▶ Lard (Rendered Pork Fat)
- ▶ Bacon Fat
- ▶ Schmaltz (Chicken Fat)
- ▶ Tallow (Rendered Suet)
- ▶ Duck Fat
- ▶ Horse Fat



Shortening and Margarine

- ▶ Shortening
 - ▶ Hydrogenated Vegetable Fat
 - ▶ Solid at Room Temperature
 - ▶ Uncolored, Unsalted
- ▶ Margarine (*Today*)
 - ▶ Usually Colored and Salted
 - ▶ Used for Spreads



Margarine Act of 1886

- ▶ Raised the price of margarine through the use of taxes in an attempt to protect dairy farmers.
- ▶ Bootleggers were jailed for Smuggling Margarine!
- ▶ Act was repealed WWII
- ▶ Other laws prevented manufacturers from using yellow-food coloring



Margarine Bootlegger Charles Wille
sent Leavenworth Federal Penitentiary

Rancidity

- ▶ When fats spoil, especially when exposed to light and air.
- ▶ Off Flavors and Odor

Smoke Point and Flash Point

- ▶ Smoke Point is the Temperature at which a fat begins to break-down and smoke.
 - ▶ Extra-Virgin Olive Oil 250°F
 - ▶ Butter 260°F
 - ▶ Butter Clarified 335°-380°F
 - ▶ Canola Oil 430°F/448°F
 - ▶ Peanut Oil 450°
- ▶ Smoke/Flash Point is Lowered by Old, Dirty and Degraded Oil
- ▶ Flash Point is the Temperature at which a fat may ignite.

Smoke Point and Flash Point

- 1 Flavor of an oil comes from small amounts of other compounds suspended in the fats that make-up the oil.
- 2 These additional compounds affect the smoke point of the oil and sensitivity to oxidation.
- 3 Ergo, more flavor...lower smoke point and greater susceptibility to oxidation.
- 4 Or, Highly-Refined oils are clearer, less flavor and have higher smoke points, etc.

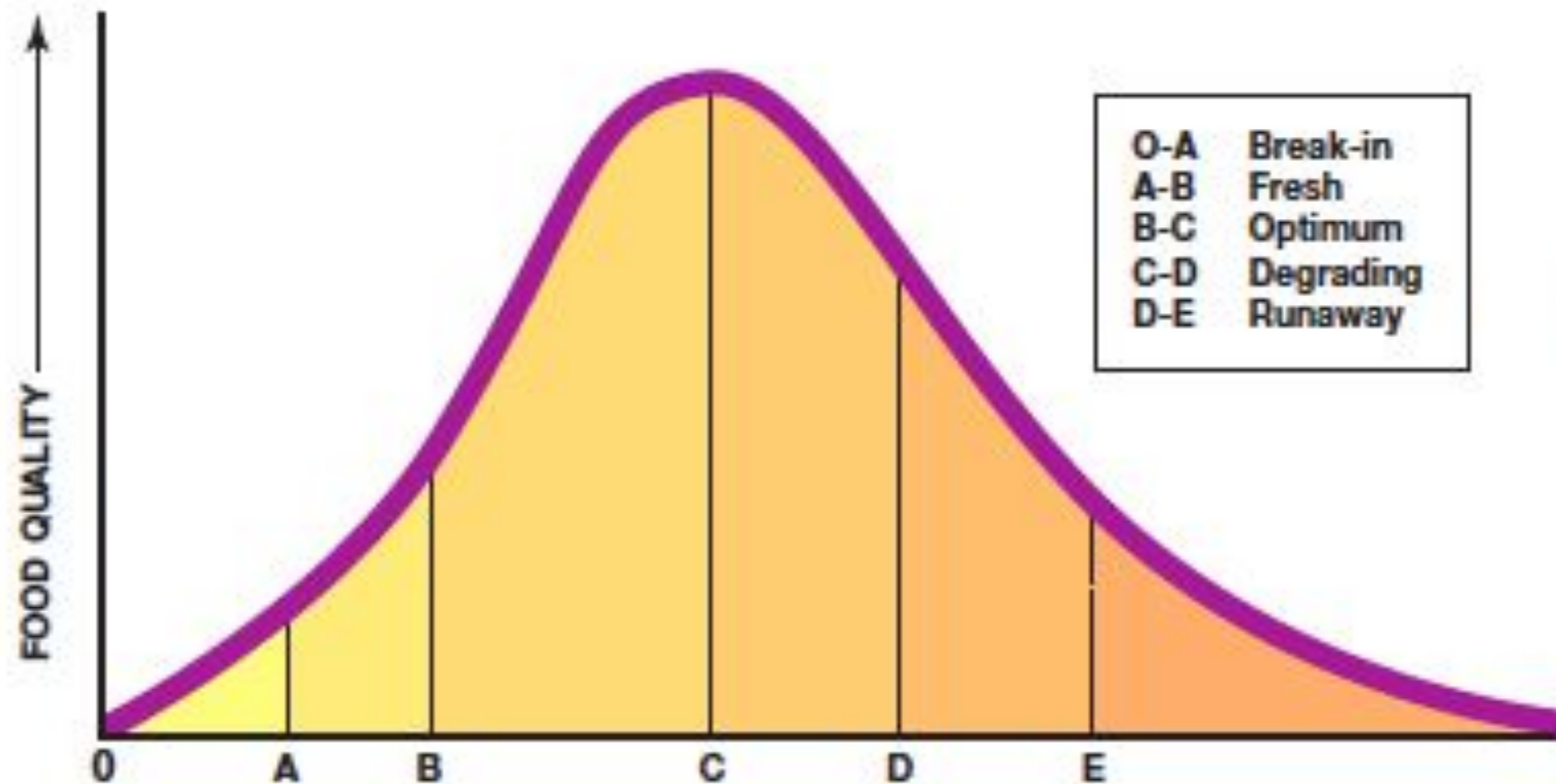
Factors Affecting Oil Degradation

- ▶ Combining different fats and oils
- ▶ Presence of foreign properties (batter)
- ▶ Over-heated oil
- ▶ Presence of salt
- ▶ Number of times oil is used
- ▶ Length of time oil is heated
- ▶ Storage of oil (exposure to oxygen, light, temperature)

Signs of Deteriorated Oil

- ▶ Dark Oil; Oil darkens with use because the oil and food molecules burn when subjected to high/prolonged heat.
- ▶ Viscosity Changes: Thickens with use.
- ▶ Sediment at the bottom of the fryer or are suspended in the oil.
- ▶ Smoke appears before the temperature reaches 375°F
- ▶ Rancid or "off" smells. It should be discarded.

The 5-Stages of Fryer Oil Quality



Bad Oil



Good Oil



Health Effects of Fried Foods

- ▶ Fried Foods Generally Have More Saturated Fats
- ▶ Increased Cholesterol Level-Increase Cardio-Vascular Disease
- ▶ Fried Starches = Increase Acryl amide, a Carcinogen
 - ▶ *No Increase in cancer rates have been linked with fried foods...yet.
 - ▶ Frying foods at lower temperature (under a vacuum) reduces the amount acryl amide.
- ▶ More Fat...More Calories
- ▶ Trans-Fats...Raise LDL' s *and* Lowers HDL' s
 - ▶ *Not a dietary Fat*
 - ▶ *Increases the Risk of Coronary Artery Disease*

Other Issues with Deep Frying

- ▶ Cost of Oil
- ▶ Storage of Used Oil
- ▶ Disposal of Oil
- ▶ Environmental Impact
- ▶ Recycling Cooking Oil
- ▶ Allergies to Nut Oils or to the Products Fried in Oils

The Perfect French Fry (*Do this in Lab*)

- ▶ McDonalds!?
- ▶ Size: 1/4"
- ▶ Potato: Russet
- ▶ Par-cooked:
 - ▶ Blanched 10 minutes in boiling water and *vinegar* (2 quarts water, 2 tbsps vinegar)
 - ▶ And, 50 seconds in 360°F oil, then frozen
 - ▶ Final Fry at 360°F for 3½ minutes
 - ▶ Season and Serve Hot



The Perfect Potato Chip (*Do this in Lab*)

- ▶ Lays!?
- ▶ Size: 1/16"
- ▶ Potato: Russet
- ▶ Par-cooked:
 - ▶ Blanched 3 minutes in boiling water and *vinegar* (2 quarts water, 2 tbsp vinegar)
 - ▶ Dry
 - ▶ Final Fry at 325°F for 5 minutes
 - ▶ Season and Serve Hot



Class 4 Lab

Mise en Place

Knife Skills

Breading/Batter Procedure

Shallow and Deep-Fry Procedure

Fried Chicken (Shallow-Fried)

Beer Battered Cod (Deep-Fried)

Fried Okra

Hushpuppies

French Fries

Beignets