



Food Coloring

Food Chemistry II

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Introduction: Food Coloring

- A dye or pigment permitted for use in foods
(Merriam-Webster Dictionary)
- A digestible substance used to give color to food
(The Free Dictionary by Farlex)
- Is any dye, pigment or substance that imparts color when it is added to food or drink
(Wikipedia)



Where it is Used

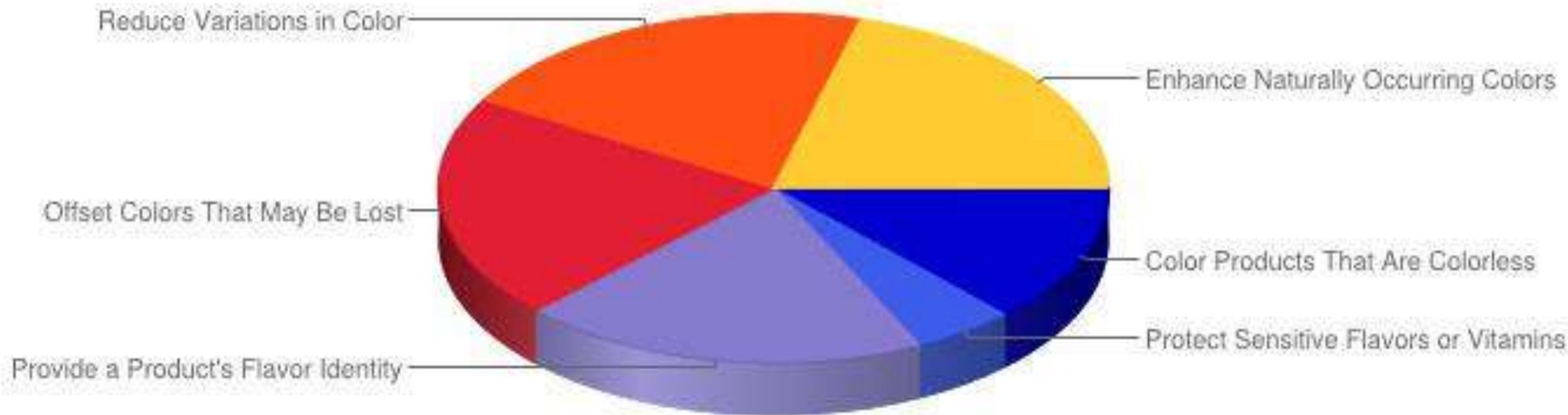
- Both in commercial food production and in domestic cooking
 - safety and general availability
- Non-food applications
 - cosmetics, pharmaceuticals, home craft projects and medical devices



Uses of Food Colouring

- To offset colour loss
 - due to exposure to light, air, extreme temperature, moisture and storage conditions
- To correct natural variations in colour
- To enhance colours that occur naturally
- To provide colour to colourless and “fun” foods
- To make food more attractive, appetizing and informative
- To allow consumers to identify products on sight

What is the most common reason your company uses natural coloring in applications?



DDW survey of 97 food industry technologists at IFT Food Expo 2012



Forms of Food Colouring

Liquid
Powder
Gel
Paste



The background of the slide features three laboratory beakers. The leftmost beaker contains a vibrant green liquid. The middle beaker contains a bright blue liquid. The rightmost beaker contains a deep red liquid. The beakers are partially filled and have measurement markings on them. The text is overlaid on white rectangular boxes.

Two General Types

- Natural food dyes
- Artificial food dyes



Types of Food Colouring

- Artificial Food Dyes
- Restricted Artificial Food Dyes
- Natural Food Colourings
- Banned Artificial Food Colouring

The background of the slide features a collection of laboratory glassware, including several test tubes and pipettes. The test tubes are filled with liquids of various colors: red, orange, yellow, and blue. The pipettes have blue and white caps. The entire scene is set against a light, slightly blurred background, creating a scientific and laboratory-like atmosphere.

Artificial Food Dyes

- These are food dyes approved for use in food by the United States Food and Drug Administration (FDA)
- There technically 7 Artificial Food Dyes
 - Brilliant Blue FCF
 - Indigotine – dark blue
 - Fast Green FCF – blueish green
 - Allura Red AC
 - Erythrosine – pink
 - Tartrazine – yellow
 - Sunset Yellow FCF - orange

Restricted Artificial Food Colouring

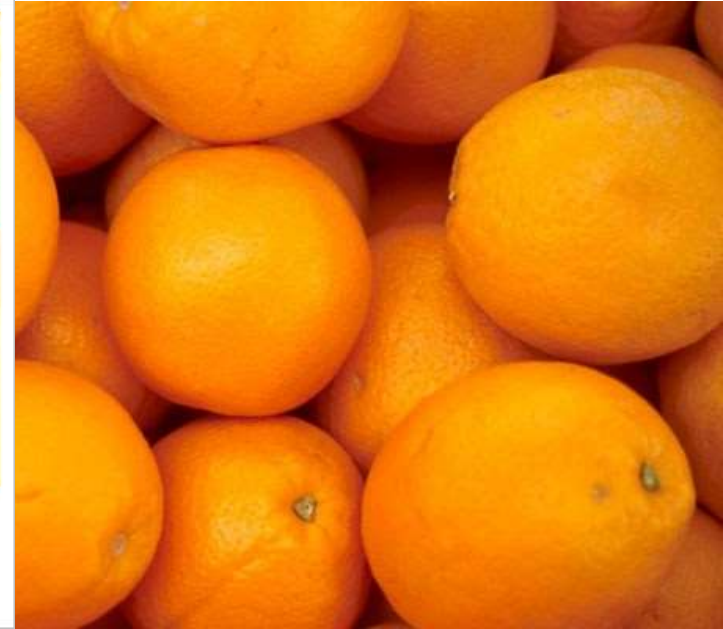
- There two artificial dyes that are only approved for external food colouring
 - Orange B – colouring that is only allowed in the casings of hot dogs and sausages
 - Citrus Red Number 2 – is only allowed for colouring the skins of oranges



FD&C ORANGE B
ACID ORANGE 137
CI 19235



FD&C CITRUS RED NO. 2
SOLVENT RED 80
CI 12156



Natural Food Colouring

- These are colourings approved for use in all types of food
- Although there are other natural colourings that are only approved for certain uses
 - Synthetic Iron Oxide
 - only allowed in sausage casings
 - Ferrous Gluconate and Ferrous Lactate
 - only allowed in ripe olives



Carmel



Annatto

– a reddish-orange dye from Achiote seeds

Beet Powder



Cochineal extract
– red dye from the cochineal insect



Beta-carotene
– red-orange pigment from plants

Toasted and partially de-fatted cottonseed flour



Fruit Juice

Vegetable Juice

Carrot Oil



Paprika



Riboflavin



Saffron



Titanium Dioxide


Tomato lycopene



Turmeric

Banned Artificial Food Colouring

- These food colouring is no longer safe for human consumption
 - Red Number 2, 4 and 32
 - Orange Number 1 and 2
 - Yellow Number 1, 2, 3 and 4
 - Violet Number 1



Strawberry Gelatin

Sugar, Gelatin, Adipic Acid (for tartness), Disodium Phosphate, Sodium Citrate (control acidity), Fumaric Acid (for tartness),


Red 40



Orange Soft Drink

Carbonated water, High fructose corn syrup and/or sugar, Citric acid, Sodium benzoate, Modified food starch, Natural and Artificial flavors, Caffeine, Glycerol ester of wood rosin, Ascorbic acid,


Red 40
Yellow 6



Pickles

Cucumbers, Water, Distilled Vinegar, Salt, Calcium Chloride, Sodium Benzoate, Polysorbate 80, Natural Flavors,

Yellow 5



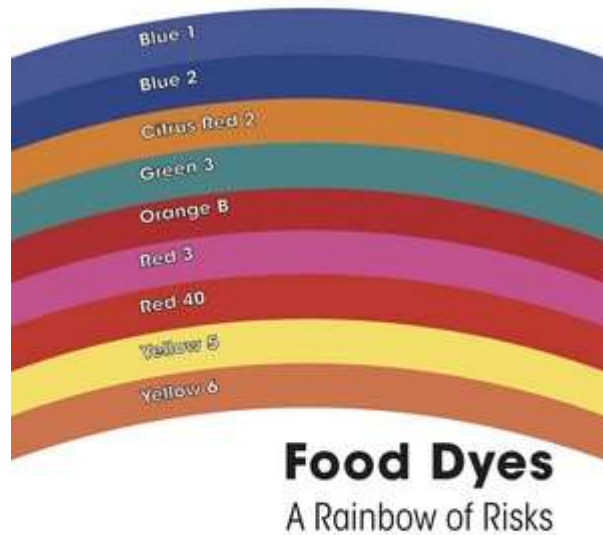
Berry Ice Cream

Water, Liquid Sugar, Raspberry Puree, Blueberry Puree, Pectin, Corn Syrup, Corn Syrup Solids, Blueberry Juice Concentrate, Blackberry Juice Concentrate, Pectin, Carob Bean Gum, Concentrated Lemon Juice,

Elderberry Juice

Controversy on Food Colouring

- Some FDA-approved food colourings pose certain risks to health. Research has linked Erythosine to thyroid cancer in rats. The cochineal insect extract rarely causes sever allergic reactions.



Dangers of Food Dyes

Linked To:

- Cancer
- ADHD
- Allergies
- Hypersensitivity
- Asthma
- Hyperactivity



Possible Health Benefits

- Brilliant Blue FCF could help in the healing of spinal injuries. Researchers have found that injecting the dye into rats who have just suffered spinal injuries reduces the chances of paralysis. It prevents the body from sending a chemical to the site of the injury which is known for causing further damage to nerve tissue.