



# Food Safety & Nutrition

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## Color Additives and Safety

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What do you think blue margarine and green ketchup taste like? From the color we would think maybe blueberry-flavored butter and broccoli-flavored ketchup. And we might be right. Processors add color to products to make them attractive and appetizing, or to give us clues that help us identify the product or predict how it may taste. Pale green candy is expected to taste like mint, for example, and yellow candy as lemon.

But how safe are these colors that people eat, put on their skin, or -- in the case of colored contact lenses -- stick in their eyes?

“Very safe,” says John E. Bailey, acting director of the U.S. Food and Drug Administration’s Office of Cosmetics and Colors. Bailey says some consumers believe color additives can cause health problems or even be hazardous. This notion stems from persistent public attitude about colors banned in the past. Bailey emphasizes “I think we can say with assurance that today’s colors are safe if used properly and that consumers need not be worried.”

Color additives have long been a part of human culture. Archaeologists date cosmetic colors as far back as 5000 B.C. Food was once colored with natural dyes. Beets, peppers, grape skins, saffron, and even some insects have been used as color additives. But, by the 19th century, colors derived from minerals came into use. Sometimes, these additives caused serious health problems. Lead chromate and copper sulfate once were used to tint candy and pickles. Other early color additives contained traces of arsenic and other poisons.

A process of monitoring and controlling color additive use has been in force for more than a century. By law, the industry must prove the safety of colors it sells. FDA ensures that colors on the market are safe for the intended purposes and do not cover up product inferiority or otherwise deceive consumers.

Color additives come in two forms: straight colors and lakes. Straight colors, in many cases, are water-soluble dyes. Lakes are generally insoluble in water, and are used in products where leaching or ‘bleeding’ of color would pose problems, such as in cookie filling, coated tablets, candies and chewing gum.

The FDA permits colors in two categories: colors that come from petroleum and coal sources which are certified by batch and colors that come from plant, animal, or mineral sources such as fruit juice or carmine which are exempt from batch certification. FDA requires domestic and foreign certifiable color manufacturers to submit samples taken from every batch of color produced. Every batch is tested, because each may be a little different from the one before it. It is like baking a cake – even though you follow a recipe closely, the cake may turn out just a little different each time.

Although FDA certifies the colors as generally safe for humans, some people have minor adverse reactions to them. One commonly used additive that affects some people is FD&C Yellow No. 5. It is listed as tartrazine on medicine labels and found widely in beverages, desserts, processed vegetables, drugs, cosmetics, and many other products. FDA certifies more than 2 million pounds of it yearly.

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An FDA advisory committee has concluded that Yellow No. 5 may cause itching or hives in a fraction of the population. This skin reaction is not usually serious, says Linda Tollefson, an FDA epidemiologist. "Reactions are classified as hypersensitive and are not true allergic reactions, which would be more severe." All products containing Yellow No. 5 are required to list its presence on their labels so consumers sensitive to the dye can avoid it.

In 1960, the Delaney anti-cancer clause was added as an amendment to the Food, Drug, and Cosmetic Act of 1938. The clause prohibits marketing any color additive the agency has found to cause cancer in animals or humans, regardless of the amount.

Red Dye No. 3 was one product cited under that law. The risk of Red No. 3 is estimated to be no larger than one in 100,000 over a 70-year lifetime of consumption. By comparison, the overall risk from natural disasters (such as earthquakes and hurricanes) is close to 7 in 100,000 and for manmade disasters (such as railroad accident and major air crashes), the risk is close to six in 100,000.

A few exemptions were granted, however. Red No. 3 may be found in products such as maraschino cherries, bubble gum, baked goods, and all sorts of snack foods and candy.

Consumers can rest assured that colors that remain in use are among the most scrutinized of all food ingredients. Next time you spread colored margarine on your toast or take a pill that is blue, consider that those colors have been studied and restudied, sometimes dozens of times. What you as a consumer will want to do is avoid consuming huge quantities of any one color additive. Like anything we consume or use, remember to practice moderation.

For more information or food safety questions contact the WSU Extension office at 360-397-6060.

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