

Artificial Food Dyes: A Simple Guide for Consumers¹

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Introduction

Color plays a powerful role in how people perceive and choose foods. Brightly colored cereals, drinks, and snacks are common in grocery stores, and many of these products use artificial dyes to create a consistent and appealing appearance. These color additives do not add nutritional value, but they remain widely used in processed foods, particularly those marketed to children.

In recent years, artificial food dyes have received increased attention from consumers, policymakers, and the media. Differences in how dyes are regulated in the United States compared with other countries, along with state-level policy changes and industry reformulation efforts, have raised questions about whether these additives are necessary or desirable in the food supply. At the same time, mixed and often technical scientific findings have contributed to confusion and concern among families trying to make informed food choices.

This fact sheet is designed for Florida families, educators, and Extension professionals who want clear information about artificial food dyes without unnecessary technical details. It explains what artificial food dyes are, why they are used, how they are regulated and labeled in the United States, and how they differ from naturally derived color alternatives. Rather than promoting avoidance or making health claims, this publication emphasizes awareness of ingredient labeling and informed decision-making. By understanding how food dyes appear on labels and how current regulations work, readers can choose products that best align with their preferences, sensitivities, and household priorities.

What Are Artificial Food Dyes?

Artificial food dyes are man-made color additives used to enhance or standardize the appearance of foods and beverages. While these dyes are sometimes described as synthetic, this publication uses the term *artificial food dyes* consistently, as it aligns with U.S. Food and Drug Administration (FDA) regulatory language and common

consumer label claims such as “no artificial colors.”

Artificial dyes approved for food use in the United States are identified by names such as FD&C Red No. 40, FD&C Yellow No. 5, FD&C Yellow No. 6, FD&C Blue No. 1, FD&C Blue No. 2, and FD&C Green No. 3. The letters “FD&C” indicate approval under the Federal Food, Drug, and Cosmetic Act (FDA 2023). The number that follows is simply an identifier for a specific dye and does not indicate its strength, safety, or quantity.

Artificial dyes are manufactured to deliver a strong, uniform color that remains stable during processing and storage. Before they can be used in food, these dyes must be approved by the FDA for specific applications, and each production batch is tested to confirm identity and purity. This regulatory process is designed to ensure that artificial dyes meet established safety standards when used as intended.

Several artificial food dyes are commonly used in foods sold in the United States and must be listed by name on ingredient labels. Familiarity with these names can help consumers recognize when artificial dyes are present in a product. Table 1 provides examples of artificial food dyes approved for use in the United States and the types of foods in which they most often appear.

Table 1. Common Artificial Food Dyes and Examples of Foods Where They May Appear.

Artificial food dye	Examples of foods and beverages
FD&C Red No. 40	Fruit-flavored drinks, candies, frosting
FD&C Yellow No. 5	Snack foods, gelatin desserts, sports drinks, pickles
FD&C Yellow No. 6	Baked goods, candy, chips, soft drinks
FD&C Blue No.1	Ice pops, candies, dessert toppings
FD&C Blue No. 2	Candies, beverages, pet foods
FD&C Green No. 3	Mint-flavored foods, desserts

Why Are Artificial Food Dyes Used in Foods?

Food manufacturers use artificial dyes primarily to improve visual appeal and product consistency. Color strongly influences consumer expectations, especially for brightly colored foods such as candies, breakfast cereals, beverages, and desserts (Laureati et al. 2022; Nguyen et al. 2015; Silva et al. 2025). Artificial dyes allow manufacturers to produce foods with consistent color regardless of variation in ingredients, season, or processing conditions.

Artificial dyes are also valued for their performance and cost. They are highly concentrated, meaning only small amounts are needed to achieve intense color. They tend to remain stable under conditions such as heating, freezing, and long-term storage (Barciela et al. 2023). These properties make artificial dyes easier to use than many naturally derived colors, which can fade, change hue, or break down under similar conditions.

Why Are Natural Colors Not Always Used Instead?

Natural colors come from plant, animal, or mineral sources such as beet juice, turmeric, annatto, spirulina, or butterfly pea flower. Many consumers prefer these ingredients because they come from familiar sources, and food manufacturers increasingly use them in response to demand for simpler or more recognizable ingredient lists.

However, natural colors present practical challenges. Many plant-based pigments are sensitive to heat, light, and acidity. For example, pigments found in berries can appear purple or fade in dairy foods during processing because changes in acidity, heat exposure, or interactions with proteins affect color appearance (Li et al. 2021; Ścibisz and Ziarno 2023; Vidana Gamage et al. 2022). Some natural colors are available as powders or dried juice solids, which reduce additional moisture. However, these forms may still be less stable than artificial dyes and can affect flavor, texture, cost, or product appearance depending on the food.

Because of these limitations, manufacturers must balance consumer preferences with food quality, safety, cost, and supply reliability when selecting color additives.

How Are Artificial Food Dyes Regulated and Labeled in the United States?

In the United States, artificial food dyes are regulated by the FDA. Before a new artificial dye can be used in food, manufacturers must submit a petition that includes detailed information about the dye's chemical identity, manufacturing process, intended uses, purity specifications, and safety data. If approved, the dye is listed in federal regulations with specific conditions for use.

Once approved, each batch of an FD&C dye must undergo FDA certification to confirm that it meets purity and quality standards before it can be sold. This batch-by-batch oversight distinguishes many artificial dyes from natural colors, which are regulated differently.

When artificial dyes are used in foods, they must appear on the ingredient list by their specific FD&C name, regardless of the amount present. US regulations currently do not require warning statements for foods containing artificial dyes, relying instead on ingredient disclosure to inform consumers.

What Is the Current Status of FD&C Red No. 3?

FD&C Red No. 3, also known as erythrosine, has received particular regulatory attention. In January 2025, the FDA issued a decision to ban Red No. 3 from foods and orally ingested drugs (FDA 2025a). This action was based on studies showing thyroid tumors in male rodents exposed to high doses of the dye (Borzelleca et al. 1987) and on legal requirements that prohibit the use of food color additives found to cause cancer in animals, regardless of relevance to typical human exposure. Food manufacturers have until January 2027 to remove Red No. 3 from food products. This dye has been banned from cosmetics since 1990.

How Does US Regulation Compare with Other Countries?

Countries take different approaches to regulating artificial food dyes. In the European Union and the United Kingdom, foods containing certain artificial dyes must carry a statement indicating that the product “may have an adverse effect on activity and attention in children”

(Lehto et al. 2017; Sridhar 2025). These policies have encouraged many manufacturers to replace artificial dyes with natural colors in products sold in those markets.

In the United States, regulatory action has historically focused on ingredient labeling rather than warning statements or broad bans. More recently, however, some states have adopted additional measures. California has passed laws restricting specific artificial dyes in public school meals starting in 2028 (California AB-2316, 2024) and banning the sale of foods containing Red No. 3 beginning in 2027 (California AB-418, 2023). Texas has enacted legislation requiring warning labels on foods containing certain additives that are restricted in other countries, although these laws do not prohibit sales (Sanzo 2025). At the federal level, the FDA and the U.S. Department of Health and Human Services announced a voluntary initiative in 2025 encouraging the food industry to phase out petroleum-based artificial dyes, though this initiative is not a formal ban (FDA 2025b).

Are There Health Concerns Associated with Artificial Food Dyes?

Research examining the potential health effects of artificial food dyes has produced mixed and largely inconclusive results. Many studies rely on animal models or use exposure levels far higher than those typically consumed by humans. Because artificial dyes do not provide nutritional benefits and are not essential ingredients, some families choose to limit them based on personal values or preferences rather than confirmed health risks. This fact sheet does not make medical recommendations but aims to support informed decision-making.

How Can Consumers Make Informed Choices About Food Dyes?

Consumers who wish to reduce or avoid artificial food dyes can start by reading ingredient lists, where these dyes must be clearly listed by name. Consumers who prefer naturally derived ingredients can also look for products labeled “no artificial colors” or “colored with vegetable juice.” It is also important to understand that terms such as “clean label” or “cleaner label” are not legally defined. These phrases generally refer to shorter ingredient lists; the absence of artificial colors or additives does not guarantee nutritional quality or safety.

Conclusion

Artificial food dyes have long been used to enhance the appearance of many processed foods, particularly those marketed to children. While scientific evidence regarding health effects remains uncertain, regulatory scrutiny and consumer interest have increased. For Florida families, educators, and Extension professionals, understanding how artificial food dyes are regulated and labeled can support informed, value-based food choices. Reading ingredient lists and recognizing dye names allows consumers to decide whether products with or without artificial colors best fit their preferences and needs.

To learn more, explore the following resources:

- FDA [Color Additives](#) Overview
- [Center for Science in the Public Interest \(CSPI\)](#)
- [UF/IFAS Extension Expanded Food and Nutrition Education Program](#)

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