Date of Hearing: April 3, 2024

ASSEMBLY COMMITTEE ON EDUCATION
Al Muratsuchi, Chair
AB 2316 (Gabriel) – As Amended March 11, 2024

[This bill was doubled referred to the Assembly Environmental Safety and Toxic Materials Committee and will be heard by that Committee as it relates to issues under its jurisdiction.]

SUBJECT: Pupil nutrition: substances: prohibition

SUMMARY: Prohibits food containing seven specified food dye additives (Blue 1; Blue 2; Green 3; Red 40; Titanium dioxide; Yellow 5; and Yellow 6) from being offered, sold, or otherwise provided to students by school districts, county offices of education (COEs), charter schools and state special schools. Specifically, **this bill**:

1) Prohibits a public school from offering, selling, or otherwise providing any food containing any of the following substances:

    a) Blue 1 (CAS 3844-45-9);

    b) Blue 2 (CAS 860-22-0);

    c) Green 3 (CAS 2353-45-9);

    d) Red 40 (CAS 25956-17-6);

    e) Titanium dioxide (CAS 13463-67-7);

    f) Yellow 5 (CAS 1934-21-0); and

    g) Yellow 6 (CAS 2783-94-0).

2) Defines "Food" to have the same meaning as in Section 109935 of the Health and Safety Code.

3) Defines "Public school" to mean a school operated by a school district or COEs, a charter school, and the state special schools.

4) Prohibits competitive foods and competitive entrees from being sold, from midnight before to 30 minutes after the end of the official schoolday, in elementary, middle, and high schools, from containing:

    a) Blue 1 (CAS 3844-45-9);

    b) Blue 2 (CAS 860-22-0);

    c) Green 3 (CAS 2353-45-9);

d) Red 40 (CAS 25956-17-6);

e) Titanium dioxide (CAS 13463-67-7);

f) Yellow 5 (CAS 1934-21-0); and

g) Yellow 6 (CAS 2783-94-0).

5) Defines "Nutritionally adequate breakfast" and "Nutritionally adequate lunch," for purposes of meal reimbursement, as meals that do not contain any of the following substances:

a) Blue 1 (CAS 3844-45-9);

b) Blue 2 (CAS 860-22-0);

c) Green 3 (CAS 2353-45-9);

d) Red 40 (CAS 25956-17-6);

e) Titanium dioxide (CAS 13463-67-7);

f) Yellow 5 (CAS 1934-21-0); and

g) Yellow 6 (CAS 2783-94-0).

EXISTING LAW:

1) Requires, commencing with the 2022–23 school year, all of the following:

a) A school district, county superintendent of schools, or charter school maintaining kindergarten or any of grades 1 to 12, inclusive, to provide two school meals free of charge during each schoolday to any pupil who requests a meal, without consideration of the pupil's eligibility for a federally funded free or reduced-price meal, with a maximum of one free meal for each meal service period, except when it requires family daycare homes to be reimbursed for 75% of the meals served. Requires the meals provided to be nutritiously adequate meals that qualify for federal reimbursement; and

b) A local educational agency (LEA) that has a reimbursable school breakfast program to not charge any pupil enrolled in transitional kindergarten, kindergarten, or any of grades 1 to 12, inclusive, any amount for any breakfast served to that pupil, and to provide a breakfast free of charge to any pupil who requests one, without consideration of the pupil's eligibility for a federally funded free or reduced-price meal. Requires the meals provided free of charge to be nutritiously adequate, and shall count toward the total of two school meals required to be provided each schoolday. (EC 49501.5)

2) Requires a school district or charter school that offers nonclassroom-based instruction to meet the requirements for any eligible pupil on any schoolday where the pupil is scheduled

for educational activities lasting two or more hours at a schoolsite, resource center, meeting space, or other satellite facility operated by the charter school. (EC 49501.5)

3) Requires a school district or COE to provide the same meal to any free or reduced-price eligible pupils as all other pupils. (EC 49557)

4) Provides that, from midnight before the start of the schoolday to one-half hour after the schoolday, the only food that may be sold to students as competitive foods include individually-sold dairy or whole grain foods, and individually-sold portions of nuts, nut butters, seeds, eggs, cheese packaged for individual sale, fruit, vegetables that have not been deep fried, and legumes. (Education Code (EC) 49431)

5) Requires the *food* described above, if sold outside of a USDA meal program at an *elementary school*, to meet all of the following standards:

   a) Not more than 35% of its total calories shall be from fat. Exempt from this standard are individually sold portions of nuts, nut butters, seeds, eggs, cheese packaged for individual sale, fruit, vegetables that have not been deep fried, or legumes;

   b) Not more than 10% of its total calories shall be from saturated fat. Exempt from these standards are eggs or cheese packaged for individual sale;

   c) Not more than 35% of its total weight shall be composed of sugar, including naturally occurring and added sugar. Exempt from this standard are fruit or vegetables that have not been deep-fried; and

   d) Not more than 200 calories per individual food item. (EC 49431)

6) Requires, at each *middle school or high school*, a competitive *entrée* sold by the district food service department the day, or the day after, it is served on the federal National School Lunch Program (NSLP) or federal School Breakfast Program menu to meet the following standards:

   a) Contains not more than 400 calories per entrée item;

   b) Not more than 35% of its total calories shall be from fat;

   c) Contains less than 0.5 grams of trans fat per serving; and

   d) Is offered in the same or smaller portion sizes as in the federal NSLP or federal School Breakfast Program. (EC 49431.2)

7) Provides that, from midnight before the start of the schoolday to one-half hour after the schoolday at an *elementary or middle school*, only the following *beverages* may be sold:

   a) Fruit-based drinks that are composed of no less than 50% fruit juice and have no added sweetener;

b) Vegetable-based drinks that are composed of no less than 50% vegetable juice and have no added sweetener;

c) Plain water or plain carbonated water; and

d) 1%-fat milk, nonfat milk, soy milk, rice milk, and other similar nondairy milk. (EC 49431.5)

8) Provides that, from midnight before the start of the schoolday to one-half hour after the schoolday, at a *high school*, only the following *beverages* may be sold:

a) Fruit-based drinks that are composed of no less than 50% fruit juice and have no added sweetener;

b) Vegetable-based drinks that are composed of no less than 50% vegetable juice and have no added sweetener;

c) Plain water or plain carbonated water;

d) One-percent-fat milk, nonfat milk, soy milk, rice milk, and other similar nondairy milk;

e) Flavored water or flavored carbonated water with no added sweetener that is labeled to contain less than 5 calories per 8 fluid ounces in a maximum serving size of 20 fluid ounces;

f) Flavored water or flavored carbonated water with no added sweetener that is labeled to contain no more than 40 calories per 8 fluid ounces in a maximum serving size of 12 fluid ounces;

g) Electrolyte replacement beverages that are labeled to contain less than 5 calories per 8 fluid ounces in a maximum serving size of 20 fluid ounces; and

h) Electrolyte replacement beverages that are labeled to contain no more than 40 calories per 8 fluid ounces in a maximum serving size of 12 fluid ounces. (EC 49431.5)

9) Prohibits a school or school district from selling food containing artificial trans-fat to K-12 students, from midnight before the start of the schoolday to one-half hour after the schoolday. (EC 49431.7)

FISCAL EFFECT: Unknown

COMMENTS:

What does this bill do? This bill prohibits food containing seven specified food dye additives (Blue 1; Blue 2; Green 3; Red 40; Titanium dioxide; Yellow 5; and Yellow 6) from being offered, sold, or otherwise provided to students by school districts, COEs, charter schools and state special schools. This prohibition includes all school meals, competitive foods, and any other food offered to students.

Need for the bill. According to the author, "California has a responsibility to protect our students from chemicals that harm children and that can interfere with their ability to learn. It is unacceptable that federal regulators have not stepped up to prevent the serving of school foods with additives that are linked to cancer, hyperactivity, and neurobehavioral harms. This bill will empower schools to better protect the health and wellbeing of our kids and encourage manufacturers to stop using these dangerous additives."

Research on the effects of food dye on children. A 2021 report by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) entitled, "Potential Neurobehavioral Effects of Synthetic Food Dyes in Children," found that consumption of synthetic food dyes can result in hyperactivity and other neurobehavioral problems in some children and that children vary in their sensitivity to synthetic food dyes. The findings of the report include:

> Current federal levels for safe intake of synthetic food dyes may not sufficiently protect children's behavioral health. The levels were established by the US Food and Drug Administration decades ago and do not reflect newer research.
>
> The percentage of American children and adolescents diagnosed with Attention Deficit/Hyperactivity Disorder (ADHD) has increased from an estimated 6.1% to 10.2% during the last 20 years.
>
> The body of evidence from human studies indicates that synthetic food dyes are associated with adverse neurobehavioral outcomes in children and that children vary in their sensitivity to synthetic food dyes. "Challenge studies" placed the children on a dye-free diet for several weeks and measured their behavior. The children were then given food or drinks with dyes added, and measures of their behavior were recorded by a number of standardized methods. These studies demonstrated clearly that some children are likely to be more adversely affected by synthetic food dyes than others. Animal studies indicate synthetic food dyes affect activity, memory and learning, cause changes in the neurotransmitters (chemicals that carry signals from one nerve to the next) in the brain, and cause microscopic changes in brain structure.
>
> Researchers also found that all of the U.S. Food and Drug Administration's (FDA's) Acceptable Daily Intake levels (ADIs) for synthetic food dyes are based on 35- to 70-year-old studies that were not designed to detect the types of behavioral effects that have been observed in children. Comparisons with newer studies indicate that the current ADIs may not adequately protect children from behavioral effects. For some of the dyes, these comparisons indicate that updated levels would be much lower.
>
> OEHHA also collaborated with scientists at UC Berkeley and UC Davis to estimate the levels of exposure to synthetic food dyes by US children of varying ages as well as pregnant women and women of childbearing age. The research team found that children are exposed to multiple dyes in a day, and that the highest exposures are usually from juice drinks and soft drinks. They also found that common exposures to Red No. 3 from a few foods may exceed the existing ADI. If revised ADIs were to be based on newer studies, common exposures to food dyes in foods would exceed the revised guidance.

Below is a chart of several research studies linking the specified food dyes to adverse health effects:

Chemical	Health Risks
Titanium dioxide	• Potential immunotoxicity, inflammation, and neurotoxicity effects (European Food Safety Authority, 2021)
Red 40	• Risks to brain development in children, hyperactivity (Miller, 2022) • Cancer (Kobylewski, 2012) • Mutagenic effects/genotoxicity (Zhang, 2023) • Inflammation(Zhang, 2023)
Yellow 5	• Risks to brain development in children, hyperactivity (Miller, 2022) • Cancer (Kobylewski, 2012)
Yellow 6	• Risks to brain development in children, hyperactivity (Miller, 2022) • Cancer (Kobylewski, 2012)
Blue 1	• Risks to brain development in children, hyperactivity (Miller, 2022) • Cancer (Kobylewski, 2012) • Genotoxic/cytotoxic effects (Kus, 2015)
Blue 2	• Risks to brain development in children, hyperactivity (Miller, 2022) • Cancer (Olas, 2021)
Green 3	• Risks to brain development in children, hyperactivity (Miller, 2022) • Cancer (Kobylewski, 2012) • Neurological effects (van Hooft, 2002)

FDA food dye regulations. The federal law on color additives dates back to 1960 and does not require that approved colors be reassessed. Most of the FDA's acceptable daily intake levels are based on studies 35 to 70 years old and are not capable of detecting the types of behavioral problems measured in recent studies. OEHHA's findings concluded that currently allowed levels are not protective of children's health and need to be much lower.

As an example of the FDA's lack of action regarding food additives and colors, the FDA's approvals/reviews of AB 2316's listed colors are as follows:

- Red Dye No. 40 has not been evaluated for health risks since 1971. Many studies show it may pose a risk to brain development in children, hyperactivity, and even cancer.

- Yellow Dye No. 5 has been approved for use since 1931. The FDA affirmed its use with good manufacturing practices in 1969.

- Yellow Dye No. 6 was approved for use in 1931, and the FDA reaffirmed its use in 1986.

- Blue Dye No. 1 has been approved for use since 1931. Its use was affirmed in 1969.

- Blue Dye No. 2 was last reviewed in 1983.
- Green Dye No. 3 has been allowed for use since 1931 and hasn't been reviewed since 1982.

How many products might this affect in school meals? Using data from the Department of Agriculture's Child Nutrition Food Programs and analysis by the Center for Science in the Public Interest, the Environmental Working Group found that few foods available in schools use the ingredients that AB 2316 would ban. The analysis found that just 4.2% of all school meal products would be affected and just 2.5% of a la carte foods would be affected. The food categories with the highest percentages of affected food items include sweet bakery products, processed fruit, and chips.

Chemical	Health risks	Type of product	Most recent FDA review	Alternatives
Red 40	Behavioral difficulties in children	Cereal, ice cream, drinks, candy, popsicles, cheese-flavored chips, toaster pastries, yogurt, jellies, sprinkles, fruit cups	1971	Anthocyanins, black/purple carrot, elderberry, purple sweet potato, beet
Yellow 5	Behavioral difficulties in children	Cereal, ice cream, drinks, candy, popsicles, cheese-flavored chips, toaster pastries, sprinkles, fruit cups	1969	Annatto, saffron, turmeric, beta-carotene, paprika
Yellow 6	Behavioral difficulties in children	Cereal, ice cream, drinks, candy, popsicles, cheese-flavored chips, toaster pastries, sprinkles, fruit cups	1986	Annatto, saffron, turmeric, beta-carotene, paprika
Blue 1	Behavioral difficulties in children	Cereal, ice cream, drinks, popsicles, candy, sprinkles, yogurt	1969	Spirulina, butterfly pea flower extract, anthocyanin, red cabbage
Blue 2	Behavioral difficulties in children	Cereal, ice cream, drinks, popsicles, candy, sprinkles, yogurt	1983	Spirulina, butterfly pea flower extract, anthocyanin, red cabbage
Green 3	Behavioral difficulties in children	Cereal, ice cream, drinks, popsicles, candy, sprinkles	1982	Spirulina, chlorophyll, matcha
Titanium dioxide (white pigment)	Genotoxicity, immunotoxicity, inflammation	Candy, salad dressing, processed desserts, frosting, cheese, canned soup	1973	Calcium carbonate, rice and corn starches and flours

(Source: Environmental Working Group)

The vast majority of school foods are already made without toxic chemicals linked to behavioral problems. Many students from low-income and under-resourced backgrounds often rely on free meals provided at school, so this bill would help ensure that, at least when it comes to school food, a student's socioeconomic status doesn't determine their access to food free of these toxic chemicals.

How will this impact commodity foods? School districts receive an allocation from the U.S. Department of Food and Agriculture (USDA) to acquire free food directly from the federal government for use in school meals. These USDA foods are commonly referred to as commodity foods. These food items are typically in a whole form of cheese, meat, and vegetables and schools can use their commodity foods to make other food items. For example, many school

districts use commodity cheddar cheese to produce bean and cheese burritos for the school meal program.

It is unclear whether foods such as mozzarella cheese provided through the federal commodity food program contain titanium dioxide. It is unclear how many additional commodity food products contain one of the listed food additives. Given the fact that schools do not have a choice about which commodity foods are made available to them, the ***Committee may wish to consider*** exempting commodity foods from these requirements if it is determined that commodity foods contain these additives.

What are school districts in California doing? According to the Los Angeles Unified School District, "their school menus adhere to the following principles to ensure that every student finds healthy and appealing meal options at school:

1) Offer a variety of menu choices, including a daily vegetarian and vegan option, fresh salad, and sandwich options;
2) Provide only whole grain-rich products;
3) Offer fresh fruits and vegetables daily;
4) Offer only antibiotic free chicken;
5) Participate in Meatless Mondays, where the menu consists of only vegetarian items on Monday;
6) Meals have no more than 30% of total calories from fat, no more than 10% of total calories from saturated fat, and no added trans fats;
7) Meals *contain no artificial colors*, flavors, monosodium glutamate (MSG), nitrates, or sulfites;
8) Use student feedback obtained from student taste-testing of all potential menu items, where only those items with a high student acceptability rating are considered for menu placement."

According to the Tahoe Truckee Unified School District, "We serve fresh and nourishing food every day. We use locally sourced and organic ingredients whenever possible and we avoid highly processed foods, high fructose corn syrup, chemicals, *dyes, and food additives*."

While it is clear that at least these two school districts are eliminating food dyes from their school meal programs, it is unclear if either district has successfully eliminated titanium dioxide as a food colorant.

What are other countries doing? According to the author, food sold in the European Union with six dyes of concern – including AB 2316's listed Yellow No. 5, Yellow No. 6, and Red No. 40 – must be labeled with the warning "May have an adverse effect on activity and attention in children." This labeling requirement was imposed in 2010. Additionally, the European Union prohibits the use of AB 2316's listed Green No. 3 and Titanium Dioxide in food.

Arguments in support. A Voice for Choice Advocacy states, "AVFCA advocates for people's rights to be fully informed about the composition, quality, and short- and long-term health effects of all products that go into people's bodies, such as food, water, air, pharmaceuticals, and cosmetics. We support this measure to prohibit a public school, defined as a school operated by a school district or COE, a charter school, and the state special schools, from offering, selling, or otherwise providing any food containing specified substances, including, among others, red 40 and titanium dioxide."

Arguments in opposition. The Consumer Brands Association states, "Food safety is a paramount concern to our members; however, this measure usurps the comprehensive food safety and approval system for these colorings, would limit the availability of wholesome and healthy foods, and eliminates common opportunities for fundraising for sports teams and student clubs. The United States Federal Government has a comprehensive food safety process that reviews food additives, including food colorings. In addition, California has several laws that require removing chemicals from foods, attaching warning labels, and finding alternatives if those food additives are unsafe. All of these additives have been thoroughly reviewed by the federal and state systems and many international scientific bodies and continue to be deemed safe. FDA continuously monitors information relating to the safety of all food and color additives and maintains data on the safety of all color additives approved in the U.S. Additionally, the U.S. FDA, the European Food Safety Authority (EFSA) and the WHO/FAO Joint Expert Committee on Food Additives (JECFA) have all concluded that the evidence suggesting associations between exposure to FD&C colors and adverse behavior in children and concluded that no causal relationship has been established and no additional risk management is warranted."

Recommended Committee Amendments. Staff recommends the bill be amended to:

1) Clarify that the prohibition of specified food dyes applies to school competitive beverage requirements.

2) Establish an operative data of July 1, 2025.

3) Clarify that the existing exemption for fundraising events shall apply to this measure.

Related legislation. AB 418 (Gabriel), Chapter 328, Statutes of 2023, prohibits a person or entity, commencing January 1, 2027, from manufacturing, selling, delivering, distributing, holding, or offering for sale, in commerce a food product for human consumption that contains any of the following substances: Brominated vegetable oil (BVO); Potassium bromate; Propylparaben; or, Red dye 3.

SB 348 (Skinner), Chapter 600, Statutes of 2023, requires schools to provide students with adequate time to eat following guidelines established by the California Department of Education (CDE); makes various conforming changes to the school meal program to implement the free universal school breakfast and lunch program; and, requires the CDE, in partnership with the California School Nutrition Association (CSNA) to develop guidelines to reduce the sugar and sodium content in school meals if the National School Lunch Program allows more added sugar or sodium than is recommended by the most recent Dietary Guidelines for Americans at any time in the future.

SB 651 (Wieckowski) of the 2021-22 Session would have required food that contains synthetic dyes to have the following label: SAFETY WARNING: Synthetic dyes may cause or worsen behavioral problems in children. This bill was held in the Senate Health Committee.

AB 130 (Committee on Budget), Chapter 44, Statutes of 2021, establishes the California Universal Meals Program with changes to the state meal mandate and new requirements for high poverty schools to apply for a federal provision.

AB 1871 (Bonta) Chapter 480, Statutes of 2018, requires charter schools, commencing with the 2019-20 school year, to provide each low-income pupil with one nutritionally adequate free or reduced-price meal during each schoolday.

SB 138 (McGuire) Chapter 724, Statutes of 2017, requires the CDE, in consultation with the State Department of Health Care Services, to develop and implement a process to use Medi-Cal data to directly certify children whose families meet the income criteria into the school meal program; requires school districts and COEs with high poverty schools and high poverty charter schools currently participating in the breakfast or lunch program to provide breakfast and lunch free of charge to all students at those schools; and, authorizes a school district, COE, or charter school to opt-out due to fiscal hardship.

AB 1169 (McGuire), Chapter 280, Statutes of 2016, makes numerous changes to school nutrition standards for competitive food and beverages to better align with the federal Smart Snacks in Schools regulations.

AB 626 (Skinner), Chapter 706, Statutes of 2013, makes numerous changes to school nutrition standards to conform to the federal Healthy and Hunger Free Kids Act (HHFKA), makes changes relative to the use of cafeteria funds, and deletes obsolete provisions.

SB 490 (Alquist), Chapter 648, Statues of 2007, prohibits schools and school districts, starting July 1, 2009, from making available through vending machines or school food establishments, foods containing artificial trans-fat, as defined, or from using food containing artificial trans-fat in the preparation of a food item served to pupils in grades K-12.

SB 12 (Escutia), Chapter 235, Statutes of 2005, eliminates the pilot program on nutrition standards for competitive foods and instead implements nutrition standards for competitive foods in elementary schools, and extends the standards to secondary schools.

SB 19 (Escutia) Chapter 913, Statutes of 2001, establishes a pilot program for nutrition standards for competitive foods for elementary schools and limits the sale of certain beverages at secondary schools.

REGISTERED SUPPORT / OPPOSITION:

Support

A Voice for Choice Advocacy
Active San Gabriel Valley
Alliance of Nurses for Healthy Environments
American Nurses Association/california
As You Sow
Braid Mission
Breast Cancer Prevention Partners
Center for Environmental Health
Childrens Environmental Health Network
Cleanearth4kids.org
Clearya

Consumer Reports
Development of Court Skills
Eat Real
Ecology Center
Educate. Advocate.
Environmental Health Trust
Environmental Working Group
Facts: Families Advocating for Chemical & Toxics Safety
Friends Committee on Legislation of California
Gmo Science
Grassroots Environmental Education
Green Science Policy Institute
Indivisible Marin
Life Time Foundation
Long Beach Gray Panthers
Lunchassist
Mamavation - Non-toxic Products for Healthy Families
Maternal and Child Health Access
Moms Across America
Moms Advocating Sustainability
Mysafetynest.org
Non-toxic Neighborhoods
Nontoxic Schools
Old World Winery
Pesticide Action Network
Physicians for Social Responsibility - San Francisco Bay Area Chapter
Recolte Energy
Resource Renewal Institute
Russian Riverkeeper
See (social Eco Education)
Sonoma Safe Agriculture Safe Schools (sonoma Sass)
Tahoe Truckee Unified School District
The Feingold Association of The United States
Uve

Opposition

American Bakers Association
American Beverage Association
American Chemistry Council
California Agricultural Teachers Association
California Chamber of Commerce
California Food Producers
California Manufacturers & Technology Association

Consumer Brands Association
Dairy Institute of California
International Association of Color Manufacturers
International Dairy Foods Association
National Automatic Merchandising Association
National Confectioners Association

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