
THIRD READING

Bill No: AB 1628
Author: McKinnor (D), et al.
Amended: 9/8/23 in Senate
Vote: 21

SENATE ENVIRONMENTAL QUALITY COMMITTEE: 5-2, 7/12/23
AYES: Allen, Gonzalez, Hurtado, Menjivar, Skinner
NOES: Dahle, Nguyen

SENATE APPROPRIATIONS COMMITTEE: 5-2, 9/1/23
AYES: Portantino, Ashby, Bradford, Wahab, Wiener
NOES: Jones, Seyarto

ASSEMBLY FLOOR: 63-14, 5/31/23 - See last page for vote

SUBJECT: Microfiber filtration

SOURCE: Author

DIGEST: This bill requires that new washing machines sold in California for residential or state use contain a microfiber filtration-system and informational label by January 1, 2029. This provision will be enforced with a civil penalty up to \$10,000 for a first violation and \$30,000 for each subsequent violation.

Senate Floor Amendments of 9/8/23 remove the provision requiring the State Water Resources Control Board to conduct and submit a report to the Legislature that describes the best available control technologies to remove microfibers generated during commercial laundry operations by January 1, 2026.

ANALYSIS:

Existing law:

- 1) Establishes the California Integrated Waste Management Act of 1989 (IWMA), administered by the Department of Resources Recycling and Recovery

(CalRecycle), to regulate the disposal, management, and recycling of solid waste. Establishes under the IWMA a state policy goal that at least 75% of solid waste be source reduced, recycled, or composted by 2020. (Public Resources Code (PRC) §§ 40000 et. seq.)

- 2) Requires, under the Porter-Cologne Water Quality Control Act, that State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards implement a program to control discharges of preproduction plastic (i.e. resins and colors for plastics). Directs the State Water Board to address the discharges of this plastic from these point and nonpoint sources. (WC § 1336)
- 3) Enacts the Plastic Microbeads Nuisance Prevention Law and which, among other things:
 - a) Prohibits the sale of personal care products that contain plastic microbeads on and after January 1, 2020. (PRC § 42360 et seq.)
 - b) Requires, on or before December 31, 2024, the California Ocean Protection Council (OPC) to adopt and implement a Statewide Microplastics Strategy related to microplastic materials that pose an emerging concern for ocean health; specifies that the goal of the Statewide Microplastics Strategy is to increase understanding of the scale and risks of microplastics on the marine environment and to identify proposed solutions to address the impacts of microplastics. (PRC § 35635(b))
 - c) Requires the State Water Board to adopt a definition of microplastics in drinking water by July 1, 2020, adopt a standard methodology to test drinking water for microplastics, and adopt testing and reporting requirements. (Health & Safety Code § 116376)

This bill:

- 1) Requires that new washing machines sold in California for retail and state use contain a microfiber filtration-system by January 1, 2029.
- 2) Defines a microfiber filtration system to mean a system that is embedded in or sold with the washing machine and has a mesh size 100 micrometers or smaller.
- 3) Requires that washing machines with microfiber filtration systems have a conspicuous label announcing that fact.

- 4) Establishes enforcement for these provisions authorizing the Attorney General, city attorney, county counsel, or district attorney to enforce a civil penalty up to \$10,000 for a first violation and \$30,000 for each subsequent violation.
- 5) Makes related findings and declarations.

Background

- 1) *Prevalence and Impacts of Microplastics.* Microplastics, defined as small plastic particles with a diameter less than 5mm, have become a subject of increasing environmental concern. Because microplastics are so small, they can travel in water, air, and in the bodies of living organisms. As a result, microplastics are ubiquitous in the environment and are found in some of the most remote areas on earth, including arctic sea ice, the deep ocean, mountain peaks in national parks, and human embryos. Of particular concern for living organisms, microplastic's small size allows them to bioaccumulate up the food chain. Plastics in water, for instance, can be consumed by fish and shellfish and become part of their tissue. The fish and shellfish can in turn be eaten by humans or other animals: with each step up the food web, the concentration of microplastics accumulates.

Microplastics can also act as vectors for pollutants such as pesticides and heavy metals, effectively “piggybacking” these harmful pollutants wherever the microplastics go, including into the living tissues of plants, animals, and humans.

Current studies have found microplastics in human lungs, brains, and placentas. The effect of these microplastics on human health are still being studied, but numerous studies have shown that microplastics increase risk of cancer and disrupt hormone pathways in lab rats.

- 2) *Textiles as Sources of Microplastics.* Microplastics can be either manufactured (e.g., microbeads in personal care products) or can result when plastics deteriorate into small pieces. In 2021, global plastics production was estimated at 390.7 million metric tons, a four percent increase from the previous year. The United Nations Environment Programme reports that only nine percent of all plastic ever made has been recycled. Any plastic that is not reused or recycled will eventually break down into microplastics: given the high volume of plastic, there is a huge amount of microplastics in the environment that originate from a vast array of sources.

According to the Environmental Protection Agency (EPA), microfibers are the most prevalent type of microplastics. Numerous studies demonstrate that microfibers are the most commonly encountered microplastics in a range of different ecosystems including wastewater, storm water runoff, rivers, lakes, estuaries, marine waters, and wildlife.

One major source of microfibers is textiles. About 60 percent of clothing is made entirely or in part of plastic, which includes polyester, acrylic and nylon textiles. These synthetic textiles shed microfibers in their daily wear and tear. Washing machines in particular are a major contributing source of microfibers. One study found that a single garment can produce more than 1,900 fibers per wash. A recent modeling study estimated that in 2019, washing clothing generated up to 2.2 kilotons of synthetic microfibers in California. The study concluded that without interventions, annual synthetic microfiber emissions to California's natural environments are expected to increase to 2.6 kilotons by 2026, but that "removing microfibers from washing machine effluent before they enter wastewater systems is crucial for reducing overall emissions to natural environments."

Another California-based study conducted in 2021 found that microfibers were the predominant type of microplastics in wastewater in San Francisco Bay.

- 3) *The Flow of Microfibers*. Microfibers can be introduced into wastewater through washing machine effluent. However, they can be removed at wastewater treatment plants. Wastewater agencies estimate that approximately 95% of microfibers from the state's water are removed at processing plants. While at first glance this may seem like a "problem-solved" situation, this is not the end of the road for microfibers. According to a recent study by the Nature Conservancy, biosolids captured during water treatment may be spread on agricultural land as fertilizer. These biosolids contain rich nutrients for agricultural areas, but also contain the microfibers and microplastics that had been removed at the treatment facility. As a result, microfibers from washing machines effluent and other sources in the waste water stream, still end up back in the environment.
- 4) *Filters for Fibers*. The OPC and United States Environmental Protection Agency (US EPA), supported by evidence in the scientific literature, recommend washing machine filters as an effective strategy for capturing microfibers before they enter wastewater effluent and the environment. There are three different types of filters that can be used during laundering to capture microfibers:

- a) In-drum filters: these filters are separate devices that consumers can use in the wash drum with each load of laundry. For example, some garment manufacturers, such as Patagonia and Reformation, have sold their products with a washing bag developed to capture microfiber fragments when they are put through the wash.
- b) In-line filters: these filters are separate devices from the machine, typically sold after-market and affixed to the drain line. Several in-line filtration systems are currently available for purchase, including the Filtrol and LUV-R.
- c) Built-in filters: these filters are built into the washing machine during manufacturing. These are not yet widely available in the United States.

Numerous peer-reviewed studies have tested the efficacy of microfiber filters and found that they can capture up to 78% of microfibers. One study deployed Filtrol in-line filters with a mesh size of 100 μm mesh—the same mesh size required by AB 1628—into 10% of households in a small town. The researchers found that after installation of this filter, there was a significant decrease in the amount of microfibers at the one local wastewater treatment plant in town.

The Association of Home Appliance Manufacturers (AHAM)—which represents manufacturers of major, portable, and floor care home appliances, as well as suppliers to the industry—conducted its own study on in-line microfiber filtration systems. AHAM hired the National Sanitation Foundation (NSF) International (an independent, not-for-profit organization that develops consensus national standards, and provides product inspection, testing, and certification) to test the efficacy of a Filtrol system with a 200 μm mesh, as well as a pool filter with a 100 μm mesh. The test design involved installation of the filtration system on to a washing machine drain line, with an additional, much smaller-mesh filter (5 μm) installed downstream from the filtration system. The smaller filter was used to assess the filtration system's efficacy, by catching material that passed through the filtration system. NSF International found that fabric softener collected on the inside of the filtration system, which AHAM states contributed to clogging and dripping issues. NSF International also reported that the Filtrol only caught an average of 26 percent of the total material captured, which AHAM states is a sign of the system's ineffectiveness. However, it is important to note that NSF International did not measure the actual microfiber content of material captured by the filters, so it is unknown

how much of the material that passed through the filtration system was made up of microfibers, versus other materials such as fabric softener.

- 2) *Filters in France.* In 2020, France, as part of its sweeping Circular Economy Law, mandated that all new washing machines sold in the country from Jan 1, 2025 onward, include a mesh filter to capture microfibers. The law covers both household and professional washing machines. Manufacturers which implement a filter before the intended due date are eligible to receive a bonus. This new legislation makes France the first country to address the growing issue of microfiber pollution.

Comments

- 1) *Purpose of Bill.* According to the author, “AB 1628 is an important step in helping to reduce the amount of microfibers from ending up in our freshwater systems, oceans, and agricultural lands. California has always led in reducing plastic pollution and must continue to lead by requiring microfiber filters on all new washing machines by 2029.”
- 2) *What do I do with this?* If microfibers are collected via mesh filters at washing machines at homes and laundromats, then consumers and businesses play an important role in removing these microfibers from the ecosystem. However, many consumers may not be aware that their clothing results in microfibers, what the implications of those microfibers in the environment may be, or how to properly dispose of microfiber waste. Because AB 1628 relies on consumers to be active participants in getting microfibers out of the wastewater system by cleaning the filters and properly disposing of the microfiber waste, the measure should also consider how to educate consumers on this role.

Currently, this bill requires that washing machines with microfiber filters also use a conspicuous label noting the presence of the microfiber filter, that the filter needs to be cleaned out, and that the material should be disposed of in the waste bin. While this label captures the operational essentials, it does not communicate the environmental impacts of the microfibers if they are not cleared out of the wastewater system, or warn users about what might happen to the washing machine and system if they do not clean out the filter. In addition, businesses like laundromats that would need to incorporate filter cleaning into their daily operations might benefit from more formal information or training materials, like a manual, factsheet, or training video.

- 3) *Filters: Relatively Easy to Enforce.* AB 1628 relies on a specific technology solution (100micrometer filters) to solve a big policy problem –microfiber

pollution from textiles in wastewater. Some argue that it is not the role of the state to prescribe specific technology solutions to policy problems. However, there are considerations that make washing machine filters a strong candidate to address microfibers in wastewater. Firstly, as described in the background section, mesh microfiber filters have been shown to be effective. In addition, requiring that washing machines sold in the state have filters is a relatively straightforward requirement for manufacturers to follow and a relatively simple requirement to enforce.

FISCAL EFFECT: Appropriation: No Fiscal Com.: Yes Local: No

According to the Senate Appropriations Committee:

- To the extent that washing machines offered for sale in the state after January 1, 2029, cost more than those that state entities would otherwise purchase, this bill could increase state procurement costs by an unknown amount, potentially in the hundreds of thousands of dollars in the aggregate.
- To the extent that the microfiber filtration systems require additional staff time to change or remove filters and dispose of waste, potential ongoing costs of an unknown but likely minor amount due to increased workload.
- To the extent that this bill results in the assessment of civil penalties, unknown potential increases in revenues resulting from civil penalty collections.

SUPPORT: (Verified 9/8/23)

5 Gyres Institute
 Active San Gabriel Valley
 American Circular Textiles Group
 Audubon California
 Azul
 Blue Ocean Warriors
 Breast Cancer Prevention Partners
 California Association of Sanitation Agencies
 California Coastkeeper Alliance
 California Environmental Voters
 California Product Stewardship Council
 Californians Against Waste
 CALPIRG
 Center for Oceanic Awareness, Research, and Education
 Clean Water Action

Cleanearth4kids.org
Climate Action Santa Monica
Elders Climate Action, NorCal and SoCal Chapters
Environmental Working Group
Fort Ord Environmental Justice Network
Friends Committee on Legislation of California
Friends of the Earth
Habits of Waste
Heal the Bay
Human Rights Watch Student Task Force
LA Waterkeeper
Los Angeles County Sanitation Districts
Mikearens.com
Monterey Bay Aquarium
National Stewardship Action Council
Northern California Recycling Association
Ocean Conservancy
Oceana
Pacific Marine Mammal Center
Paddle Out Plastic
Patagonia
Plastic Free Future
Plastic Free Restaurants
Plastic Oceans International
Plastic Pollution Coalition, a Project of Earth Island Institute
Resource Conservation District of Greater San Diego County
San Diego Audubon Society
San Francisco Bay Physicians for Social Responsibility
Save Our Shores
Seangle Indonesia
Seventh Generation Advisors
Shark Stewards
Sierra Club California
Sierra Club Loma Prieta Chapter
Social Compassion in Legislation
Solano County Democratic Central Committee
Supercircle
Surfrider Foundation
Surfrider Foundation Los Angeles Chapter
Sustainable Ocean Alliance Tanzania

Team Marine
The Nature Conservancy
Turtle Island Restoration Network
Wildcoast
Wishtoyo Chumash Foundation
Zero Waste USA
Numerous scientists

OPPOSITION: (Verified 9/8/23)

Association of Home Appliance Manufacturers

ARGUMENTS IN SUPPORT: The Nature Conservancy, California Product Stewardship Coalition, and a broad coalition of environmental organizations write in support of the bill: “Washing clothing is one of the primary pathways by which these microfibers are generated and enter the environment - a single load of laundry can release up to 18 million microfibers! A recent study also estimated that up to 4.85 million pounds of microfibers enter California’s lands and waters each year from washing machines, which is only projected to increase.

“Interventions are needed to address microfiber pollution across the full lifecycle of textiles. In addition to exploring upstream textile redesign and infrastructure solutions to reduce the generation of microfibers, we need near-term solutions to effectively capture microfibers before they enter the environment. Fortunately, washing machine filter technology has already proven to be an effective solution. These filters are affordable and have demonstrated their efficacy to capture up to 90 percent of microfibers in laboratory and field trials. There are no significant technical or financial barriers to applying these filters to new washing machines, in fact, microfiber filtration technology is already built into washing machines from major brands like Panasonic, Hitachi, Sharp, and Toshiba.”

ARGUMENTS IN OPPOSITION: The Association of Home Appliance Manufacturers (AHAM) writes in opposition to this bill, including arguments that:

The bill should allow more solutions than a “filtration system with a mesh size of not greater than 100 micrometers.” This requires a mesh filter, which restricts the technological solutions that manufacturers may pursue. No law should prejudge what a solution is and should give engineers the freedom to innovate and be creative to overcome this very challenging engineering problem. Performance, not design, requirements should be used.

The bill should designate a regulatory agency to oversee the implementation of this law to provide guidance and regulations based on a public and technical record before and during the implementation phase. Enacting an essentially one sentence requirement into law with no guidance, no oversight, and no regulatory agency to address the complications that will arise is inappropriate.

Commercial clothes washers are used and maintained much differently than a residential washer. These washers are usually in large building or laundromats so requiring a filter at the machine level is inefficient and ineffective since they are used by people who do not own the appliance and there would be more efficient methods to address this matter at the building than product by product.”

ASSEMBLY FLOOR: 63-14, 5/31/23

AYES: Addis, Aguiar-Curry, Alvarez, Arambula, Bains, Bauer-Kahan, Bennett, Berman, Boerner, Bonta, Bryan, Calderon, Juan Carrillo, Wendy Carrillo, Cervantes, Connolly, Mike Fong, Friedman, Gabriel, Garcia, Gipson, Grayson, Haney, Hart, Holden, Irwin, Jackson, Jones-Sawyer, Kalra, Lee, Low, Lowenthal, Maienschein, McCarty, McKinnor, Muratsuchi, Stephanie Nguyen, Ortega, Pacheco, Papan, Pellerin, Petrie-Norris, Quirk-Silva, Ramos, Reyes, Luz Rivas, Robert Rivas, Rodriguez, Blanca Rubio, Santiago, Schiavo, Soria, Ting, Valencia, Villapudua, Waldron, Ward, Weber, Wicks, Wilson, Wood, Zbur, Rendon

NOES: Chen, Megan Dahle, Davies, Essayli, Flora, Vince Fong, Gallagher, Hoover, Mathis, Jim Patterson, Joe Patterson, Sanchez, Ta, Wallis

NO VOTE RECORDED: Alanis, Dixon, Lackey

Prepared by: Brynn Cook / E.Q. / (916) 651-4108
9/11/23 12:50:03

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