

Report to the Legislature on the Findings of the Synthetic Microfiber Working Group

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Introduction

Microfibers are the most prevalent type of microplastics in the environment and have been found in surface water, soil, biota and atmospheric samples ¹. Researchers are looking at the sources of microfibers and their effect on human health and the environment. While there is much work to be done to gain a more complete understanding of the impact, the legislature has asked the Department of Energy and Environmental Protection (“the department”) to establish a working group to look at ways to create consumer awareness of this emerging issue and recommend practices to reduce or eliminate synthetic microfiber pollution.

The department convened a working group which had two in-person meetings in September and November of 2018. The following report is a result of the department’s thorough assessment of the input of the varied stakeholders and a review of the current research.

I. Establishment of the Working Group

During the 2018 session, the Connecticut legislature passed Public Act 18-181 which required the department to convene a working group to establish a consumer awareness and education program on synthetic microfiber pollution. The act itself listed several organizations to be included in the working group including:

- (1) The Sustainable Apparel Coalition
- (2) the American Apparel and Footwear Association,
- (3) the American Apparel and Producer's Network,
- (4) Fashion Group International,

¹ University of Toronto, 2018

- (5) the National Retail Federation,
- (6) the Council of Fashion Designers of America,
- (7) Fashion Business, Inc., and
- (8) the Outdoor Industry Association.

The department invited several other stakeholders with interest and expertise in synthetic microfiber pollution and water pollution. The list of working group members is indicated in **Attachment A**.

The working group met in Hartford on September 18th and November 14th, 2018. The meetings allowed for in-person participation or remote participation and were open to the public. The agendas and minutes are included as Attachment B. The department established a website on synthetic microfiber pollution which included a description of the issue, links to the Public Act, presentations given at the first meeting, and links to articles on synthetic microfiber pollution.

II. Developing a Consumer Awareness and Education Program

The working group discussed a number of ideas for creating a consumer awareness and education program. The components of this program include:

- a. A description, in layman's terms, of how synthetic microfibers are shed from clothing and are dispersed into the state's waterways.
- b. Best practices for consumers to eliminate and reduce the disbursement of microfibers from clothing into the waterways of the state
- c. Information on efforts that members of the apparel industry, including but not limited to, brand labels, are undertaking to reduce or eliminate synthetic microfiber pollution.

- d. Other components of an awareness program.

a. How Synthetic Microfibers Are Shed from Clothing and are Dispersed into the State's Waterways.

Working group members generally agreed that synthetic microfiber pollution is an emerging issue for which there is little general awareness on the part of the public. An effective approach to educating the public on this issue is to explain its relationship with the more publicized issue of plastics pollution in the ocean.

Members of the working group discussed both “long form” and “short form” strategies for reaching the public. Long form strategies would include traditional media such as newspaper and television stories publicizing research on synthetic microfiber pollution, especially if it is conducted locally. Consumers could also learn about synthetic microfiber pollution through national media including television documentaries that provide more in-depth analysis and context. Short form strategies include social media campaign and similar internet based communication.

The working group agreed that any statement meant to educate the public about how synthetic microfibers end up in our waterways should be concise, informative and accurate while avoiding legalistic or scientifically confusing language. The statement should provide direction to the public on what steps to take to reduce or eliminate their contribution of synthetic microfibers to the state's waterways. The group generally agreed that while it is important to mention that all clothing sheds fibers, synthetic fibers are of greater concern than natural fibers because of the potential impact to waterways and aquatic eco systems when plastic microfibers are introduced. The consensus of the group concurred that while synthetic microfibers are shed

constantly through normal wear and use and clothes drying, and from sources other than clothing, that the awareness campaign should focus on the washing of clothes because it is a known route for dispersement directly to waterways and ties in to steps consumers can take to reduce shedding.

b. Best Practices for Reducing and Eliminating Synthetic Microfiber Pollution

The working group discussed various best management practices for the public to utilize to reduce its contribution of synthetic microfibers to waterways in Connecticut. The best management practices were divided into two foci: a) laundering techniques and b) technological devices.

a. Laundering Practices

The department researched laundering practices purported to lessen the amount of microfiber shedding. There was discussion in the group concerning whether or not these practices were effective. Some of the practices included:

- Using a liquid detergent instead of a powder
- Avoid high ph detergents,
- Wash at a lower temperature,
- Wash for shorter cycles, and
- Washing less frequently,

Researchers from the University of Toronto, who participated in the working group, stated that the laundering practices may not reduce microfiber shedding. They believed further study is needed to determine if laundering practices are effective enough to be promoted to the

public. The researchers referenced studies that showed that older garments shed 1.8 times more than newer garments and that front loading washing machines were associated with less shedding than top loading washing machines.

b. Technological devices

The working group discussed three technologies for removing synthetic microfiber from washing machine effluent; the Guppy Friend, the Cora Ball, and an external filter.

The [Guppy Friend](#) is described by its manufacturer as a “washing bag” that filters microfibers from washing machine effluent. The clothing is placed into a mesh bag and then into the washing machine. The fibers are then removed from the bag after washing and placed in the trash. The bag also is designed to limit the amount of shedding by protecting the clothing from the agitation in the washing machine. The Guppy Friend is available through Patagonia which has been selling the bags at their stores and on their website. The bag reduces microfibers by roughly 80%. The Guppy Friend retails for \$30.

The group did not have any objections to promoting the use of the Guppy Friend as a practice for consumers to reduce their contribution of microfibers to waterways.

The [Cora Ball](#), sold online by the Rozalia Project, is a sphere that is placed in the washing machine and catches microfibers on its ridged surface which are then clumped together and can be removed by the user. The Coral Ball removes about 30% of available microfibers. The Coral Ball costs about \$30.

The working group discussed the Cora Ball and there were no objections to promoting its use to the consumer as a step they can take to reduce microfiber pollution.

There are three known washing machine filters for sale to the public that remove microfibers and are externally connected to the washing machine. They are marketed as removing microfibers as a means of maintaining a septic system as well as releases to the environment. The filters remove virtually all microfiber but must be maintained by the user. The filter essentially works as a lint trap for the washing machine in addition to the dryer. These filters are the most effective technology, removing virtually 100% of microfibers.

The working group discussed the external filters and there were no objections to supporting the use of external filters as a step a consumer can take reduce microfiber pollution.

c. Efforts of members of the apparel industry, including brand labels, are taking to reduce microfibers

The apparel industry was represented in the working group by the American Apparel and Footwear Association (AAFA), the Outdoor Industry Association (OIA) and Patagonia. REI participated remotely and through email correspondence with the department.

The industry representatives in the working group indicated they are engaged in a number of initiatives regarding microfiber pollution. These initiatives include:

- **Supporting research.** Patagonia has partnered with the Bren School at the University of California Santa Barbara to look at how synthetic microfibers enter the environment and its impact on eco-systems. REI has partnered with the Vancouver Aquarium on a similar study. AAFA indicated they “have held environmental-focused and microfiber-specific meetings for members to bring in researchers and brands to talk about their work on microfibers.”

- **Promote technologies that reduce microfiber pollution.** Patagonia indicated they offer the Guppy Friend washing bag for sale in their stores and online. They also promote the washing machine filters.

- **Product Re-engineering**

Manufacturers indicated there is research going on concerning ways to introduce an environmentally harmless treatment to fibers that would lessen or eliminate shedding.

- **Establishing Testing Standards for Shedding**

Patagonia indicated they are involved in establishing a standard testing protocol to measure shedding of microfibers in the washing machine. Currently there is no standard testing protocol for determining the amount of shedding of microfibers. Establishing a standard for shedding would allow the industry to identify and label low-shedding garments. Consumers could use this information to guide their purchasing.

- **Brand Labels**

The department is not aware of any manufacturer that is currently labeling garments to inform the consumer about microfiber shedding or pollution or that supports labeling for that purpose. The AAFA and Patagonia indicated they did not support labeling but rather informing their customers through their website and in store conversations.

d. Other components of a Consumer Awareness and Education Program

The working group discussed a number of strategies to create a public awareness and education program on synthetic microfibers, including:

1. Developing a K-12 Curriculum

The working group supported including synthetic microfibers as a part of a larger curriculum on plastics in the ocean. There are a number of initiatives to develop school based

learning on plastics including Project Wet, a national curriculum based on water issues. The working group heard from Sue Quincy, Environmental Education Specialist, about how curriculum are developed and current projects where a discussion of synthetic microfiber pollution would be a logical fit. The first step in developing a curriculum is identifying the funding to support it.

The working group supported including a section on microfiber pollution in current efforts to develop classroom activities and lessons on the larger issue of plastic pollution in the ocean.

2. Social media campaign

The working group discussed how a social media campaign could help to create awareness on synthetic microfiber pollution. There are many ways to reach a consumer, some are more detailed such as documentaries and news accounts. However, the group saw value in a social media campaign that engaged the consumer briefly and frequently that would entice him/her to learn more or leave an image that may encourage further action at a later point. A social media campaign may be unique and specific to a stakeholder such as a manufacturer, aquarium or science center, or may be coordinated among various stakeholders to provide a consistent message.

3. Working with Mystic and Norwalk Aquariums to Develop Educational Displays

The Mystic and Norwalk Aquariums, in partnership with the University of Connecticut and other state universities, provide an opportunity to do original research on synthetic microfiber, promote that research to its patrons, and develop displays and exhibits that incorporate synthetic microfiber with existing research and outreach. The working group

supported the work of the aquariums and other nature and science centers in creating awareness about microfiber pollution to its visitors.

4. Point of sale information

Retailers that sell garments containing synthetic fibers have the opportunity to educate their customers through personal interactions and point of sale information. Patagonia indicated they engage customers in this conversation in their retail stores and also provide the Guppy Friend for sale. There are other manufacturers of fleece and synthetic garments that have a similar opportunity to interact with their customers.

III. Recommendations for Legislation

It is only relatively recently that the researchers detected synthetic microfibers in the ocean and state waterways². Further research has determined that these microfibers come from a variety of sources in different amounts. The science is clear that one route of this pollution is through the shedding of fibers when we wash our clothes. Where the science is unclear is in the human health and ecosystem impact. Research is ongoing and will eventually answer the questions which direct the appropriate actions we need to undertake. The discussions of the working group made it clear that the time is now to create consumer awareness and take actions to reduce synthetic microfiber pollution.

Public Act 18-181 asks the department, through this report, to make recommendations for legislation concerning, a) a consumer education and awareness campaign and b) the reduction of microfibers in the state's waterways.

² Browne, 2011

a) Creating a consumer education and awareness campaign

While there are existing educational programs for creating awareness about the issue of plastics in the ocean, there is currently little specifically about synthetic microfiber pollution. Much of what was discussed in the working group could be implemented without legislation, such as curriculum development associated with Project Wet, Mystic and Norwalk Aquariums exhibits, and social media campaigns. Publicizing the research conducted by UCONN, Southern Connecticut State University and other in state institutions will create consumer awareness without needing legislation.

The legislature may want to look at point of sale information. Currently Patagonia is the only manufacturer that the department is aware of that is educating its customers at the point of sale. The information provided to customers should inform them about the shedding of microfibers and the steps they can take to reduce microfibers from being released to our state waterways.

New funding sources will be needed for research and public education campaigns. In the spirit of stewardship, manufacturers can contribute financially to further research, especially pertaining to Connecticut waterways and Long Island Sound, promoting that research, developing curriculum, and providing point of sale information to the customers.

b) Reduction of Microfibers in the state

Consumers, clothing manufacturers, and washing machine manufacturers should all play a role in reducing or eliminating synthetic microfiber pollution. Addressing this problem should start with pollution prevention as the highest priority while also looking at strategies for preventing microfibers from reaching our state's watercourses.

The working group agreed that trying to capture microfibers at waste water treatment plants (Publicly Owned Treatment Works or POTW) was not economically or technologically practical. The science is clear that while most of the microfibers are contained in the sludge, some is released through the treated effluent into adjacent streams and rivers. There is no current technology at POTWs for filtering out these microfibers. Eliminating the microfibers closer to the point of generation would ultimately be more effective.

Consumers – Consumers can wash clothes only as needed, select higher quality garments that shed less, use existing technologies such as the Guppy Friend, Cora Ball and external filters. They need to be made aware of the issue of microfiber pollution and given the information that can inform their choices both in purchasing and care for their clothing.

Clothing Manufacturers – Clothing manufacturers can continue supporting research including developing a standard testing protocol for determining shedding rates, environmentally safe additives to clothing to decrease or eliminate shedding, and providing point of sale information to the consumer.

Appliance Manufacturers – Once the consumer has been made aware of the problem, and has taken steps to reduce microfiber pollution, and the manufacturer has taken steps to lessen shedding from clothing, there is still a need to capture the remaining microfibers. Neither of the preliminary steps will result in an immediate and complete elimination of microfiber pollution. The final best chance to remove microfibers is through an internal filter in the washing machine. Although most commercially available washing machines do not have an integrated filter, the technology exists. Appliance manufacturers should consider offering an option of an internal filter on a washing machine that captures microfibers. If the consumer awareness campaign is

successful, they may create a demand for such a washing machine and an internal filter may become a standard feature.

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