

BeautyMatter

TACKLING PFAS CONTAMINATION WITH REGENESIS'S MAUREEN DOOLEY

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Per- and polyfluoroalkyl substances, also known as PFAS, are the latest ingredients to be on the beauty industry's radar. These synthetic chemicals contain carbon-fluorine bonds which resist degradation, hence the nickname "forever chemicals." Due to their stability under intense heat and surfactant qualities, they are used in household items such as cleaning products and non-stick cookware, food processing, electronics, and even the realms of aerospace and automotive industries. They also end up in our drinking water. A study by the University of Notre Dame found high levels of fluorine, a precursor to PFAS, in North American beauty products, specifically waterproof and longwearing makeup products. The health risks of PFAS exposure include negative immune system impact, hormonal interference, increased cholesterol levels, developmental effects, reproductive issues, and a higher likelihood of certain cancers (prostate, kidney, and testicular, for example).

A company hoping to reduce the prevalence of these chemicals is Regenesis, an environmental research mediation expert specializing in technology-based solutions for contaminated groundwater and soil. Maureen Dooley, the company's Vice President Industrial Sector, has over 30 years of experience in the environmental industry and specializes in Regenesis' bioremediation, chemical oxidation, and carbon sorption industrial client remediation programs. The company recently lent its PlumeStop technology, which uses a liquid-activated carbon compound to remove groundwater contaminants, to Allergan, the manufacturer of Botox.

BeautyMatter spoke to Dooley about the company's ambitions to clean up the beauty industry, legislative actions, and the source of contamination.

How prevalent are PFAS in cosmetics products?

According to the Environmental Working Group's (EWG's) research, a variety of PFAS contaminants are *listed* as ingredients in 200 products from 28 different cosmetic and personal care brands. These include lotions, cleansers, nail polish, shaving cream, foundation, concealer, lipstick, eyeliner, eyeshadow, and mascara. Many of these products are household names. However, most other products do not list PFAS as an ingredient even though it may be present when tested. For instance, a recent (2021) study of PFAS occurrence in North American cosmetics published in Environmental Science & Technology Letters found PFAS, also popularly known as "Forever Chemicals," in 28 of 231 samples tested (12%). This testing emphasized high-risk exposure categories like lip, eye, and face products. The cosmetic

categories with the highest percentage of high-fluorine products included foundations (63%), eye products (58%), mascaras (47%), and lip products (55%).

How are these ingredients getting into beauty products? Is it in the formula or leaking in from plastic packaging?

In some cases, PFAS are intentionally added to the formulation of certain cosmetics to make the skin and nails appear shiny, increase water resistance, or help products attain a desired consistency and texture. PFAS can also be unintentionally created by mixing different chemicals containing PFAS precursors.

"Nearly all Americans have PFAS in their blood, and direct exposure to PFAS in cosmetics is mainly targeted toward women."

BY MAUREEN DOOLEY, VICE PRESIDENT INDUSTRIAL SECTOR, REGENESIS

How has Regenesis been tackling PFAS?

Regenesis is the worldwide leader in effectively and sustainably removing PFAS and other harmful chemicals from groundwater to protect drinking water resources and natural environments. PlumeStop is a product developed specifically for this purpose: a patented activated carbon formulation injected directly into the groundwater. It removes PFAS and other contaminants as they pass through a treated aquifer zone, essentially turning the groundwater aquifer materials into an in-ground purifying filter. PlumeStop is a green, highly sustainable solution since it does not employ mechanical systems requiring high energy inputs or the need to burn fossil fuels.

We are currently working on solutions for more than 100 PFAS-contaminated sites worldwide. The number of sites requiring treatment for PFAS will increase dramatically in the coming years as the U.S. Environmental Protection Agency (U.S. EPA) begins to regulate these substances and more facilities test for the presence of these compounds.

How much exposure to them is happening through cosmetics and how much through other external factors?

Nearly all Americans have PFAS in their blood, and direct exposure to PFAS in cosmetics is mainly targeted toward women. The relative exposure to PFAS via cosmetics vs. other exposure routes such as drinking water ingestion and food consumption has not been comprehensively studied. However, manufacturing processes using PFAS contribute to our overall health risk, and as such, we should collectively strive for ways to eliminate

PFAS from industry and our environment. It will happen in time in any case. The speed at which we want to make it happen is up to us.

What would be the most efficient way of removing PFAS from the beauty market?

The **No PFAS in Cosmetics Act (H.R. 3990/S. 2047)** is a bill introduced in Congress that would ban the use of PFAS in cosmetic products. Putting public pressure on Congress and state and local government officials to see this through is probably the most efficient way to ensure these harmful substances are removed from cosmetics. Individual states are also beginning to act, including **California's ban on PFAS in cosmetics** that was recently passed in April 2022.

PFAS exposure is widespread in everyday life, be it through **food packaging**, contaminated groundwater, or the everyday products we use. Sustainable efforts like PlumeStop to tackle this contamination are a beneficial solution for industry and consumers alike. It will not be an overnight matter, but all change has to start somewhere.