

Annie Hayes 52 Farmer's Lane

New Leaf panel proposals have changed. Polyvinylfluoride as a hydrophobic coating persists as does a lack of verifiable documentation that the polysilicon used for their semiconductors is not processed with forced labor.

Our right to health safety and welfare requires rigorous science, testing and documentation as you, the Planning Board, have evidenced in your public pursuit of understanding chemical vulnerabilities of battery storage, potential for toxic runoff into our aquifer from panel coatings and leachate, and harm after decommissioning in the dumping/leaching here and anywhere else. The issue of human rights and the United States Forced Labor Prevention Act to prevent import of materials and products by forced labor is clear and must also be considered in approval of all projects.

The destruction of the natural world for siting is at the fore in these projects. That destruction is preventable and only by standing against it do citizens believe proper siting can occur. Solar and wind, conservation and down growth, meaning less consumption, decreased population, housing without clearcutting-so much remains unimplemented as the natural world is ravaged.

The natural world is our refuge and has always provided us with the essentials of life that are life itself.

http://climatecasechart.com/wp-content/uploads/sites/16/case-documents/2020/20200313_docket-CDV-2020-307_complaint.pdf

[Sixteen Kids Are Fighting the Climate Crisis in Court](#) May 2023
Rolling Stone,
[Youth lawsuit challenging Montana's pro-fossil fuel policies is heading to trial | AP News](#)

Massachusetts Constitution

Article VII.

Government is instituted for the common good; for the protection, safety, prosperity and happiness of the people; and not for the profit, honor, or private interest of any one man, family, or class of men: Therefore the people alone have an incontestable, unalienable, and indefeasible right to institute government; and to reform, alter, or totally change the same, when their protection, safety, prosperity and happiness require it.

[Societal Cost of 'Forever Chemicals' Estimated at Over \\$17,000,000,000,000](#)

"Why are we allowing this?" asked one group. "\$17.5 TRILLION in societal cost so that industry can make billions."

JULIA CONLEY

May 12, 2023

An upcoming report by Sweden-based organization ChemSec will detail the costs of the continued use of so-called "[forever chemicals](#)" which go overlooked by their manufacturers—the "societal" price that individuals and governments pay as the chemicals remain in the environment long after they are used in a range of products.

Factoring in soil and water remediation, monitoring of pollution, and healthcare costs associated with a number of health problems linked to per- and polyfluorinated substances ([PFAS](#)), the cost to society of using the chemicals totals [about \\$17.5 trillion](#) every year.

ChemSec has worked with investment firms to pressure companies to eliminate the use of PFAS, which have earned the nickname "forever chemicals" because they do not naturally degrade and have been detected in [breastmilk](#), [wildlife](#), and [drinking water](#) samples.

[The Microplastics And PFAS Connection](#) “Recent developments in toxicology, coupled with significant political pressure, have put PFAS on the fast-track for regulation in drinking water and wastewater. While co-occurrence is well-known for a variety of contaminants like triclosan and triclocarban, the connection between microplastics and PFAS has

not been studied in much detail despite being linked together in multiple ways. Not only can some PFAS occur as microplastics such as polyvinyl fluoride (PVF) and polytetrafluorethylene (PTFE), it is also used as a coating on synthetic textiles and plastic components that then break down to fiber- or particle-based macro-, meso-, or microplastics. Moreover, non-PFAS microplastics can involve PFAS at certain stages in their production process, for example polyvinyl chloride (PVC).”

Yes, I have presented this before, but it warrants rereading in light of more recent focus on microplastics and PFAS co-contamination enhancement.

Polyvinylfluoride contamination from hydrophobic coating on solar panels is presented with proposed panels from New Leaf

As well as RWE, now owner of Fearingg Hill solar development.

<https://ijc.org/en/microplastics-are-potential-vector-chemical-contaminants> International Joint Commission- Microplastics-PFAS and other contaminants. 2020

“This [team](#) deployed three microplastic types (polyethylene, polypropylene and polyester) at two locations. After one- and three-month durations, the team retrieved the materials and analyzed them for more than 85 different POPs.

Some materials were found to have adsorbed pollutants in large amounts: up to 280 times background water levels for PAHs and 380 times background water levels for some PCBS.

In addition to legacy pollutants, the team also found concentrations of PFAS associated with some of their materials that were 259 times the background concentrations. This was quite surprising since the team found that microplastics in laboratory water alone concentrate PFAS at only one-fifth of background levels. This difference of adsorption in the laboratory and the field is most likely due to biological materials enhancing the adsorption of PFAS in the environment.”

Wareham Planning Board

In order to test for toxic leaching and PFAS chemicals we have to know what tests, by whom, have been made by the proponent and the precise Make and Model of the definitive module to be installed. Multiple proponents including New Leaf, here reviewed, have recently stated “ It doesn’t matter if we can’t get the panels

we originally intended. We don't know what we're putting in until construction begins."

A scientific, verifiable protocol to assess panels is essential as well as the cost of their decommissioning.

[Meeting EPA's new standards for PFAS in drinking water will be costly and take time, say industry leaders](#) WGBH

"Lowering that to four is definitely going to trigger violations for a lot more communities across the entire country," said Kirsten King, executive director of the New England Water Works Association. "And that's simply because PFAS is absolutely everywhere."

Installing systems to filter out those chemicals is no small feat, said Don Bunker, the New England Water Works Association's deputy director.

"We're talking probably in the millions of dollars [per facility], depending on the size and depending on what already exists," Bunker said. "Depending on the size of the utility, we can be talking filters that are 10 to 12 feet diameter, 20 feet tall, and you may need six of them. It's a building. It's not just a couple of things under your sink. And so that's going to take time to design, permit install, get up and running."

Related Stories

[EPA's move to limit 'forever chemicals' would go beyond Massachusetts' existing regulations](#)

[Massachusetts Attorney General files suit against PFAS manufacturers](#)

[Elevated PFAS levels in fish at Mass. parks prompt new consumption advisories](#)

[Mass. firefighters sue equipment providers over PFAS](#)

And with water systems around the country needing to upgrade or install filtration systems at the same time, there are likely to be significant supply chain challenges on the necessary equipment, Bunker said.”

No PFAS CLAIMS with Dr. Anctil’s claim as basis.
Annick Anctil is in the U. Michigan Engineering Dept., heavily funded by Dow Chemical also in Midland Michigan, with faculty/scientist interchange. Her statement about the lack of PFAS in solar panels and public confusion about “benign” Tedlar may read as a white washing for a Dow-Dupont PV coating that is Polyvinyl Fluoride, a Polymer PFAS.

VB<https://graham.umich.edu/media/pubs/Facts-about-solar-panels--PFAS-contamination-47485.pdf>

Benign products that don’t pollute our land and air and water (microparticles are also airborne) is, for example, this non fluorinated polymer hydrophobic panel coating

<https://ieeexplore.ieee.org/document/9938738>

“ As many hydrophobic coatings are fluorinated, this study evaluates the effectiveness of fluorine-free coatings as an alternative due to the environmental and biological risks posed by fluorine containing materials.”

[Skip to Main Content](#)

[Institutional Sign In](#)



[All Books](#)[Conferences](#)[Courses](#)[Journals & Magazines](#)[Standards](#)[Authors](#)[Citations](#)

[Conferences](#) > [2022 IEEE 49th Photovoltaics ...](#)

Comparing Fluorinated and Non-Fluorinated Anti-Soiling Coatings for Solar Panel Cover Glass

Publisher: IEEE

[Cite This](#)

[PDF](#)

[Luke O. Jones](#); [Adam M. Law](#); [Gary Critchlow](#); [John M. Walls](#)

Abstract:

Dust, dirt, debris, and biological matter collect on the surface of solar panel cover glass and attenuate the light entering the solar cell, reducing electricity generation and power output. Hydrophobic coatings are a passive anti-soiling method that utilizes low surface energy materials to force liquid droplets to

cohere together which create a 'self-cleaning' effect. As many hydrophobic coatings are fluorinated, this study evaluates the effectiveness of fluorine-free coatings as an alternative due to the environmental and biological risks posed by fluorine containing materials. A fluoroalkylsilane-based coating and a polydimethylsiloxane-based coating was deposited on soda-lime glass slides and exposed to 400 hours of UV and damp heat accelerated ageing tests. The two coatings were shown to be resistant to the accelerated aging, with the fluorine-free coating marginally outperforming the fluorinated coating. For both coatings, little reduction in optical transmittance was observed, and each coating retained their hydrophobic properties in water contact angle tests. Surface chemical characterisation using X-ray photoelectron spectroscopy showed that the fluorinated coating was in the starting phase of degradation with carbonyl and methyl groups replacing trifluoromethyl groups, reducing fluorine surface content, and reducing the effectiveness as an anti-soiling coating.

BEARS REPEATING- Both the Royal Chemistry Society and the American Chemical Society view PFAS as a class because of all having the commonality "of high persistence, accumulation potential and/or hazards (known and potential)."

PolyVinyl Fluoride is among the listed PFAS from the “ © Royal Society of Chemistry 2021. Registered charity number 207890. Industry/Application area Key properties - Typically used PFAS*
Table of PFAS

Table 1:

Coated fabrics and films for buildings/roofs, front/backside films for solar applications ETFE, PTFE, PVDF PCTFE, PVF front/backside films for solar applications ETFE, PTFE, PVDF PCTFE, PV “ films for photovoltaics, coatings for windmill blades PVDF, Fluoroionomers (PFSA), THV, ETFE ECTFE, PTFE, FEP PVF” Polyvinylfluoride=Dupont TEDLAR

[Fluoropolymers: The Right Material for the Right Application](#)

John Wiley & Sons

<https://chemistry-europe.onlinelibrary.wiley.com> › doi

Jul 16, 2018 – **Poly(vinyl fluoride)** (Tedlar® PVF marketed by DuPont) or PVDF are two examples that have already commercially available.

[Scientific Basis for Managing PFAS as a Chemical Class | Environmental Science & Technology Letters](#), 2020 American

Chemical Society, 157 citations



Abstract This commentary presents a scientific basis for managing as one chemical class the thousands of chemicals known as PFAS (per- and polyfluoroalkyl substances). The class includes perfluoroalkyl acids, perfluoroalkylether acids, and their precursors; **fluoropolymers** and perfluoropolyethers; and other PFAS. The basis for the class approach is presented in relation to their physicochemical, environmental, and toxicological properties. Specifically, the high persistence, accumulation potential, and/or hazards (known and potential) of PFAS studied to date warrant treating all PFAS as a single class. Examples are provided of how

some PFAS are being regulated and how some businesses are avoiding all PFAS in their products and purchasing decisions. We conclude with options for how governments and industry can apply the class-based approach, emphasizing the importance of eliminating non-essential uses of PFAS, and further developing safer alternatives and methods to remove existing PFAS from the environment.