PFAS in CPG

Sustainable Alternatives to PFAS-Containing Packaging Materials

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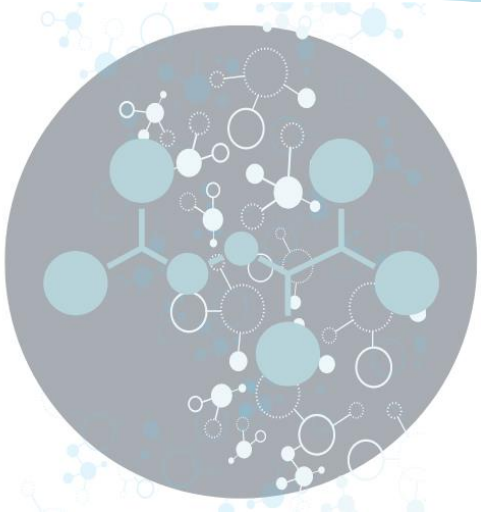
What are some of the technologies being explored for removing **PFAS** from packaging in the CPG industry?

PFAS

PFAS are also known as “forever chemicals” because they do not break down easily in the environment and can accumulate over time. PFAS are used in a wide range of packaging, industrial, and consumer products for their water- and grease-resistant properties. However, concerns about the potential health and environmental impacts of PFAS are growing. Studies have linked exposure to certain PFAS compounds to medical issues such as cancer, developmental problems, and immune system dysfunction.



Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals used in various industries, including the Consumer Packaged Goods (CPG) industry. However, PFAS have been linked to several adverse health effects, raising concerns about their use in food packaging.

Removing PFAS from packaging technologies presents several challenges for the CPG industry:

Finding Suitable Alternatives

Replacing PFAS with viable alternatives that offer comparable functionality is a significant hurdle.
These alternatives need to be:

- **Effective**: Must provide the same level of protection against water, grease, and contamination as PFAS.
- **Safe**: They should not pose any potential health or environmental risks.
- **Cost-effective**: Replacing existing production lines and materials with new alternatives can be expensive.
- **Scalable**: Finding alternatives that can be produced in large enough quantities to meet the demands of the CPG industry is crucial.

Regulatory Landscape

The regulatory landscape surrounding PFAS is constantly evolving, making it challenging for CPG companies to stay compliant. Different countries and regions may have varying regulations regarding the use and disposal of PFAS, adding complexity to the process of finding alternatives.

Consumer Acceptance

Consumers are increasingly concerned about the safety of the products they purchase and the environmental impact of packaging. While many consumers are willing to pay a premium for sustainable packaging options, ensuring widespread acceptance of new PFAS-free alternatives can be challenging.

Technical Challenges

Integrating new, PFAS-free materials into existing packaging lines can require significant modifications and adjustments to production processes. This can lead to disruptions, delays, and increased costs.

Collaboration and Knowledge Sharing

Addressing the challenges of removing PFAS effectively requires collaboration across the CPG industry, including raw material suppliers, packaging manufacturers, and retailers. Sharing knowledge and best practices is crucial to accelerating the development and adoption of viable PFAS alternatives.

Despite these challenges, the CPG industry is actively seeking solutions to remove PFAS from packaging. This includes ongoing research and development efforts to identify suitable alternatives, collaboration with regulatory bodies to establish clear and consistent guidelines, and efforts to educate consumers about the importance of PFAS-free packaging.

PFAS are commonly used as water/grease resistant agents in molded fiber food packaging, which is experiencing high demand globally. While the phase-out of PFAS in this context has posed a significant challenge to the industry, researchers from the Laboratory of Renewable Nanomaterials at the School of Forest Resources at the University of Maine have recently described a cellulose nanofibrils layer applied on the surface of molded fiber objects to replace PFAS in food contact molded materials.

Food Contact Molded Materials

Polylactic acid- (PLA-) based materials have been developed with enhanced properties for reducing PFAS in CPG packaging. Examples include:

- PLA-based composites with bio-plasticizers and active agents such as vitamin E and cold-pressed rosehip seed oil encapsulated into chitosan;
- PLA modified with essential oils, such as cinnamon essential oil (CEO), to create composite fibers with antimicrobial properties;
- PLA-based nanofibers created by electrospinning techniques with improved barrier, mechanical, and thermal properties for active and intelligent packaging;
- PLA-based composites with additives such as nanoclay, polymers, and metal nanoparticles developed to enhance the properties of PLA for food packaging applications.

Choosing the most suitable alternative materials to remove PFAS from CPG packaging depends on various factors like the specific product being packaged, required functionality, cost, scalability, and environmental impact. The CPG industry is continuously exploring and developing new sustainable alternatives to PFAS-containing packaging materials.