SUSTAINABLE PFAS ACTION NETWORK

PFAS in the Semiconductor Industry

Perfluoroalkyl & polyfluoroalkyl substances (PFAS) are a diverse group of synthetic compounds distinguished by their versatility, strength, and durability, setting them apart from other chemicals. There are perhaps as many as 700 commercially active substances that may be considered PFAS. However, not all PFAS compounds are the same - they contain unique properties and characteristics that yield distinct environmental and health profiles. PFAS compounds are highly differentiated, and while some may require limitations or prohibitions from certain uses, others have well-established profiles and do not pose unreasonable risks to human health or the environment when used appropriately.

The U.S. semiconductor industry utilizes PFAS compounds to manufacture revolutionary technologies that underpin our digital society. Small quantities of PFAS chemicals facilitate patterning capabilities that would otherwise be impossible to achieve. Their solubility characteristics, low surface energy, low refractive index, and usage as electrical insulators make PFAS compounds an irreplaceable part of modern societal advancement. Key applications include:

- **FACTORY INFRASTRUCTURE:** PFAS compounds are found in tubing, gaskets, containers and filters. Fluorinated gases are critical for cleaning and refrigeration applications. In addition, facilities equipment depends on PFAS compounds in lubricants to ensure safe and reliable operations under extreme conditions.
- **MEDICAL PRODUCTS:** Medical devices including ventilators, digital healthcare services, and medical imaging devices rely on semiconductor technology.
- **ELECTRIC VEHICLES:** Semiconductor technology is at the heart of our electric vehicle transition, prolonging battery life and supporting functionality and accessibility.
- **PERSONAL DEVICES:** Semiconductor technology allows us to work remotely and communicate with family and friends across the globe with fast electric conductivity.
- **NATIONAL DEFENSE:** Semiconductor technology is at the heart of national defense applications – ensuring leading-edge technology can be developed within secure supply chains.

While industry stakeholders continue to aggressively explore alternative chemistries, **there are no alternatives** to manufacturing semiconductor technology without PFAS compounds. It would take an estimated 15 years to effectively deploy any discovered feasible alternatives into the manufacturing process.

U.S. SEMICONDUCTOR ECONOMIC IMPACT*

In total, semiconductor manufacturing and related activity helps contribute just shy of ***1 million jobs*** and over ***$173 billion*** toward GDP.

DRIVING SCIENCE-BASED MANAGEMENT POLICIES

Creating regulations that treat all PFAS compounds the same, or impose blanket restrictions on uses, would have devastating economic and safety consequences for U.S. semiconductor manufacturing. Sustainable management of PFAS compounds enables continued economic advancement when using a **science- and risk-based approach** to effectively administer regulations that protect human health and the environment.

**Quantifying the Economic Contribution of Key Industries which use PFAS as Vital Inputs, Inforum, Feb. 6, 2023*