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PFAS Filtration Market by Technology (Water Treatment Systems, Water Treatment Chemicals), Place of Treatment (In-Situ, Ex-Situ), Remediation Technology, Environmental Medium, Contaminant Type, and Region - Global Forecast to 2029

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Abstracts

The PFAS filtration market is projected to reach USD 2.8 billion by 2029, at a CAGR of 7.1% from USD 2.0 billion in 2024. The industrial expansion across various sectors in the US, including manufacturing, semiconductor, and chemical processing, has led to an increased utilization of PFAS-containing substances. For instance, in the manufacturing sector, PFAS compounds are commonly found in products like non-stick coatings, food packaging, and firefighting foams. According to the U.S. Environmental Protection Agency (EPA), the manufacturing industry is one of the primary sources of PFAS contamination, contributing to water pollution through wastewater discharge. Recent data from the EPA indicates that over 1,500 facilities across the United States are known or suspected of using PFAS in their operations, resulting in significant environmental impact.

The semiconductor industry extensively employs PFAS-containing chemicals in various manufacturing processes, such as etching and cleaning agents. Similarly, the chemical processing industry relies on PFAS compounds for their unique properties, using them in applications like lubricants, surfactants, and stain repellents. According to recent data from the EPA and industry reports, the manufacturing sector in the US accounts for a significant portion of PFAS emissions into the environment, with estimates suggesting that thousands of facilities across the country use PFAS-containing substances in their operations. Moreover, the semiconductor industry, which plays a crucial role in technology manufacturing, relies on PFAS chemicals for various processes. The chemical processing industry contributes to PFAS contamination through its use of

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these substances in manufacturing processes and product formulations. As these industries expand, there is a growing need to address the environmental impact of PFAS contamination. Regulatory standards set by agencies such as the EPA and state-level environmental authorities necessitate stringent measures to mitigate PFAS pollution. Consequently, there is an increasing demand for PFAS filtration systems within these industries to comply with regulatory requirements and ensure environmental sustainability. PFAS treatment becomes imperative to prevent the release of these persistent and harmful contaminants into the environment, safeguarding water resources and public health.

“Based on Technology type, water treatment systems segment is expected to be the fastest growing market during the forecast period, in terms of value.”

Water treatment systems for PFAS filtration utilize several advanced technologies to effectively remove these persistent chemicals from water sources. Reverse Osmosis (RO) employs semipermeable membranes to physically block PFAS molecules based on their size and charge, ensuring high removal efficiency. Similarly, High-Pressure Membrane Filtration methods like nanofiltration and ultrafiltration operate on the principle of excluding contaminants through membranes, targeting PFAS effectively. Advanced Oxidation Processes (AOPs), such as ozone or hydrogen peroxide treatments, degrade PFAS molecules into less harmful components through oxidation reactions, though these processes can be complex and costly. Electrochemical Oxidation/Reduction techniques apply electric currents to water, breaking down PFAS molecules into less toxic substances, showcasing potential as a promising yet evolving method. Each of these technologies offers distinct advantages depending on factors like water quality, scale of treatment, and regulatory requirements, highlighting the need for tailored solutions in combating PFAS contamination effectively.

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“Based on remediation technology, activated carbon has the largest market share during the forecast period, in terms of value.”

Activated carbon is pivotal in PFAS filtration due to its exceptional ability to adsorb these persistent chemicals from water. PFAS molecules, known for their hydrophobic nature, are attracted to the porous surface of activated carbon, where they adhere through physical forces such as Van der Waals interactions. This adsorption process effectively traps PFAS contaminants within the carbon structure, removing them from the water stream. Activated carbon filtration systems are widely used across various

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scales, from municipal treatment plants to household filters, offering reliable removal of PFAS like PFOA and PFOS. Moreover, the regenerative nature of activated carbon allows for prolonged use and cost-effectiveness, making it a preferred choice in combating PFAS contamination in drinking water and industrial processes alike.

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“Based on region, Asia Pacific is the fastest growing market for PFAS filtration in 2023, in terms of value.”

The Asia-Pacific region is experiencing rapid growth in PFAS filtration primarily due to several factors. Firstly, industrialization and urbanization across countries in this region have led to increased chemical usage and manufacturing activities, which in turn contribute to higher levels of PFAS contamination in water sources. As awareness of environmental and health risks associated with PFAS grows, there is a greater demand for effective water treatment solutions. Additionally, regulatory frameworks in countries like China, India, and Australia are becoming more stringent regarding water quality standards, necessitating the adoption of advanced filtration technologies like activated carbon and membrane processes for PFAS removal. The region's economic growth has also enabled investment in water infrastructure, including modern filtration technologies, to meet these regulatory requirements and address public health concerns.

In the process of determining and verifying the market size for several segments and subsegments identified through secondary research, extensive primary interviews were conducted. A breakdown of the profiles of the primary interviewees are as follows:

By Company Type: Tier 1 - 35%, Tier 2 - 45%, and Tier 3 - 20%

By Designation: C-Level - 35%, Director Level - 25%, and Others - 40%

By Region: North America - 40%, Europe - 30%, Asia Pacific - 20%, Middle East & Africa-5%, and Latin America-5%

The key players in this market are Veolia (France), AECOM (US), WSP (Canada), Clean Earth (US), Wood (UK), Xylem (US), Jacobs (US), TRC Companies, Inc. (US), Battelle Memorial Institute (US), Cyclopure, Inc. (US).

Research Coverage

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This report segments the PFAS filtration market based on technology, remediation technology, place of treatment, service type, environmental medium, contaminant type, end-use industry, and region, and provides estimations for the overall value of the market across various regions. A detailed analysis of key industry players has been conducted to provide insights into their business overviews, products and services, key strategies, new product launches, expansions, and mergers and acquisitions associated with the PFAS filtration market.

Key benefits of buying this report

This research report focuses on various levels of analysis, including industry analysis (industry trends), market ranking analysis of top players, and company profiles, which together provide an overall view of the competitive landscape, emerging and high-growth segments of the PFAS filtration market, high-growth regions, and market drivers, restraints, opportunities, and challenges.

The report provides insights on the following pointers:

Analysis of key drivers (Increasing regulatory scrutiny and tightening of environmental regulations regarding PFAS contamination, Growing public awareness of the health risks associated with PFAS exposure, The expansion of manufacturing, chemical processing and semiconductor industry), restraints (Expensive and complex remediation process,), opportunities (US PFAS treatment firms have significant potential to expand globally into markets grappling with increasing PFAS contamination, Significant government funding and support for PFAS research, development, and remediation efforts) and challenges (Proper management of treatment residuals generated during PFAS treatment, Addressing emerging PFAS compounds and understanding their potential risks and treatment requirements presents ongoing challenges for the industry.).

Market Penetration: Comprehensive information on the PFAS filtration market offered by top players in the global PFAS filtration market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product launches in the PFAS filtration market.

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Market Development: Comprehensive information about lucrative emerging markets — the report analyzes the markets for PFAS filtration market across regions.

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Competitive Assessment: In-depth assessment of market shares, strategies, products, and manufacturing capabilities of leading players in the PFAS filtration market

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*Details on Business Overview, Products Offered, Recent Developments, MnM View, Right to win, Strategic choices made, Weaknesses and competitive threats might not be captured in case of unlisted companies.

15 APPENDIX

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