

Acute	Chronic	Legal and policy	Market	Technology	Reputational
Physical risk		Transition risk			

## 3M Incurs \$10.5 Billion Liability for Polluting Waterways with ‘Forever Chemicals’

3M’s liability in the US for damages caused by “forever chemicals” serves as a prime example of the financial risk facing a company improperly managing its impacts on nature. The multinational conglomerate, while not admitting liability, reached a tentative \$10.5 billion settlement with US municipal water authorities in June 2023 to resolve water pollution claims resulting from its introduction of harmful substances, also known as PFAS, into watercourses to the detriment of human and environmental health. Liability for remediations and other solutions could total \$25 billion.

**53%** Share of gross value added in the direct operations of chemical companies that is moderately or highly dependent on nature

**66%** Decline in 3M’s share price from high in January 2018 to October 2023, in part due to liability concerns

**\$10.5 billion** Settlement by 3M to resolve claims of water pollution, possibly rising to \$12.5 billion

### Manifestation of nature risk

3M Co. (NYSE: MMM) is a US-headquartered diversified technology company operating across 70 countries that derives 40% of its revenue from specialty chemicals. These include PFAS, a group of synthetic chemicals used to make coatings and items that resist heat, water and oils, and feature in a myriad products from adhesives to cookware and firefighting foams. Dubbed “forever chemicals” as they do not easily break down, PFAS manufactured by 3M and its peers have contaminated the natural environment, particularly soils and groundwater, since the 1950s.

The EPA describes these per- and polyfluoroalkyl substances as persistent, bio-accumulative and toxic, with pollutants linked to environmental damage and negative human health impacts, such as cancer and infertility. Chemical waste has been found in high concentrations around multiple 3M facilities in the US, including its 1,750-acre factory in Minnesota, where the state claims there is a 100-square-mile underground plume of leaked PFAS.

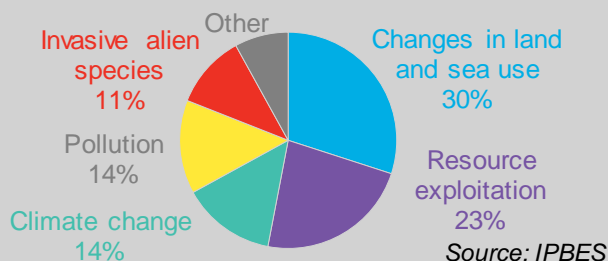
### 3M’s Minnesota headquarters



Source: Bloomberg

### Drivers of nature loss

Five drivers account for over 90% of nature’s decline relative to pre-industrial levels:



Companies with exposure to these drivers have higher nature-related transition risks, as they are the most vulnerable to shifting regulation and customer preferences.

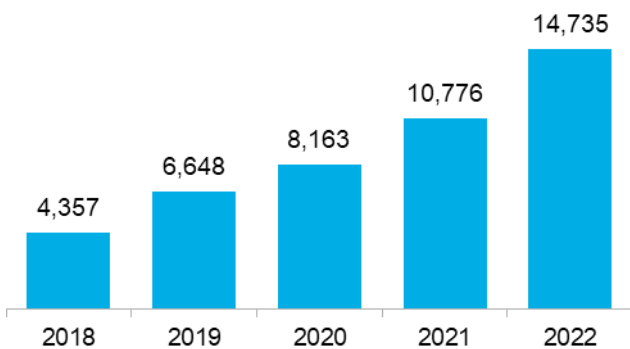
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According to retired 3M toxicologist John Butenhoff, in a pre-trial video deposition taken in 2023, 3M is more than likely the source of PFAS contamination around the globe, including in air, water, soil, humans, and various animals. The Minnesota plant is the largest point source of this pollution, though the company operates 70 chemical facilities throughout the US, according to Bloomberg asset mapping data. The US Environmental Protection Agency (EPA) has called PFAS an “urgent public health and environmental issue”. The company admits no wrongdoing and says the chemicals pose no significant threat to public health and welfare, according to [Bloomberg News](#).

In addition to environmental damage in the US, the emission of PFAS into ambient air surrounding production facilities led Belgian authorities to repeatedly halt 3M’s operations in the country through 2021 to 2023, asserting that the airborne particles eventually enter groundwater, negatively impacting ecosystem health.

## Managing nature risk

### Cumulative number of PFAS chemicals listed with the US EPA



Source: US Environmental Protection Agency, BloombergNEF.

Recognizing the harmful environmental impacts of PFAS, the EPA formulated an action plan to tackle the crisis, creating new rules to enhance measurement, reporting and enforcement. In March 2021, the agency announced it would more stringently regulate the two most harmful PFAS chemicals in watercourses – called

PFOA and PFOS – with Congress later introducing dozens of bills to monitor the scope of contamination, ban non-essential uses of the substances, address ongoing contamination, and clean up legacy pollution. After [intensive lobbying](#) from the chemicals industry, only three of the 50 bills have passed the Senate.

### Three categories of PFAS chemicals

Category	Definition	PFAS example
<u>Non-essential</u>	Uses that are not essential for health and safety	Consumer textiles, cosmetics, ski waxes
<u>Substitutable</u>	Regarded essential, but alternatives have been developed	Firefighting foams, floor coverings
<u>Essential</u>	Uses considered essential because they are necessary for health or safety	Medical devices, protective clothing

Source: Global PFAS Science Panel, BloombergNEF.

Despite some categories of the chemicals being deemed essential, 3M has pledged to exit PFAS manufacturing by the end of 2025, acknowledging in a [press release](#) the shifting regulatory landscape and changing stakeholder expectations.

### Financial and reputational impacts on 3M

In June 2023, 3M settled lawsuits brought by US water authorities in 2018 for an estimated \$10.5 billion to \$12.5 billion, to be paid to various municipalities over 13 years. According to [Bloomberg Intelligence](#), 3M’s liability risk could total \$25 billion, the lion’s share of which will contribute to the restoration of natural resources and water treatment.

The US Chamber of Commerce estimates that a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) designation – which provides a federal “Superfund” to clean up uncontrolled environmental pollution – could create costs of \$17 billion for non-water authority sites for 3M. This supports the prediction that \$10 billion is unlikely to be the final remediation tally. As part of the claim, the state of Minnesota settled its lawsuit against 3M for

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\$850 million for damaging natural and ecological resources, and contaminating drinking water.

Prior to US authorities bringing the claim for damages, 3M shares had peaked at \$258 in January 2018, before dropping to \$178 later that year, though it is difficult to separate demand-side impacts from the fallout of the settlement. However, the company's shares fell further as more lawsuits emerged and, at the time of writing, were priced at around \$88 – a 66% decline from five years ago. 3M later accepted a change in the 2023 settlement that removed an indemnity clause following pushback from attorneys general from 22 states, who urged the trial's judge to reject the deal for its perceived leniency.

Even with annual revenue surpassing \$30 billion and a market capitalization of \$57 billion in 2023, 3M is cutting costs, faced with multi-billion dollar settlements, against a background of macroeconomic headwinds stymying demand and a concurrent mass tort litigation over its manufacture of allegedly defective earplugs. Since January 2023, the firm has announced a 10% cut to its workforce and plans to spin off its healthcare business by 2024. Buyside analysts on Wall Street note that 3M's generous 6.1% dividend is also at risk.

In addition to financial losses, 3M incurred reputational damage. According to Minnesota's attorney general, despite possessing knowledge about the harmful impacts of PFAS, the company kept this information from regulators, local residents, and its client DuPont. The attorney general released a trove of documents online to back up the allegations, though a 3M spokesperson later called them misleading.

As local communities became aware of the environmental impacts, those surrounding the Minnesota facility switched to bottled water, while others threw away products containing PFAS, such as Scotchgard stain and water repellants, and Teflon pans.

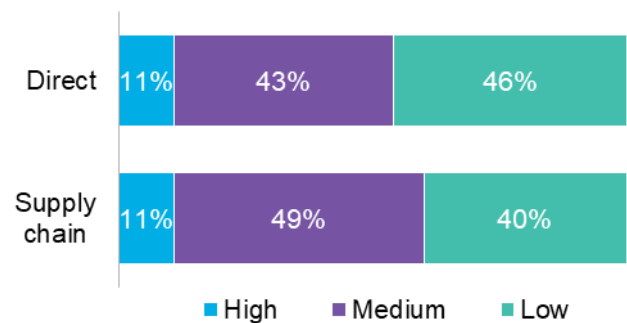
3M remains exposed to risks from ongoing environmental damage, as it continues to manufacture various types of PFAS until 2025. Even if it does halt

production, 3M will be hard pushed to escape further PFAS liabilities, as the chemical does not degrade and has complex interactions with the environment that are still being uncovered. In 2022, the EPA warned that forever chemicals could be dangerous even at undetectable levels. As a result, 3M will continue to face thousands of lawsuits over PFAS contamination, with over 4,000 lawsuits filed between January 2020 and October 2023 that mention 3M as a defendant.

### Nature risk across chemical industry

The chemical sector's production operations expose companies to significant natural risks. These range from physical (for example, loss of natural inputs as ingredients in the manufacturing process) to transition (such as the tightening of environmental protection laws) and systemic (macroeconomic changes shifting consumer demand).

### Nature dependency of gross value added across chemical companies' direct operations and supply chain



Source: World Economic Forum, BloombergNEF. Note: 3M is categorized as a chemical company in the report as it obtains over 40% of its revenue from the manufacture of specialty chemicals.

While all of the direct and supply chain value generation of chemical companies is to some extent dependent on nature, only 11% is classified as highly dependent, with over one-third being moderately reliant, according to the World Economic Forum. The ENCORE materiality matrix offers detail specific to specialty chemical companies such as 3M, identifying 10 ecosystem services that production processes

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depend on, though only two of these are given a high materiality rating.<sup>1</sup>

The nature *impacts* of the sector are much larger. For seven out of 11 impact drivers, which assess the impacts of production processes on ecosystem services and natural capital, chemical companies' operations are deemed highly material, covering water, greenhouse emissions, pollutants and waste.

The interactions that chemical companies have with nature mean that the case of 3M is not an exception. Even as awareness of the environmental effects of PFAS has increased, many companies continue to manufacture the harmful substances at scale.

In early June 2023, days before 3M's \$10.5 billion settlement, DuPont, Chemours Co. and Corteva Inc. together agreed to pay \$1.185 billion to resolve hundreds of municipal water pollution claims. Under a cost-sharing agreement, Chemours will cover approximately half of the settlement, DuPont one-third, and Corteva the remainder. Total costs for these PFAS-related liabilities are estimated at \$3 billion to \$5.5 billion.

Bayer, which acquired Monsanto in 2018, provides another example of legal risk manifesting through poor management of nature impacts. The company reached a \$650 million settlement with the state of Oregon to resolve claims over environmental damage resulting from its PCBs production.<sup>2</sup>

In May 2023, fire protection company Kidde-Fenwal filed for Chapter 11 bankruptcy protection in a New York court, unable to bear the weight of lawsuits alleging that its firefighting foam products contaminated water sources around US airports and military bases, claiming that its total liability was highly likely to "substantially exceed" its ability to pay.

## Similar risks and opportunities for chemical companies

Company	Risk type	Description
<b><u>Bayer AG</u></b>	Legal and reputational	Bayer finalized a \$698 million settlement with the US state of Oregon to resolve claims over PCBs' environmental pollution. The company did not admit liability.
<b><u>DuPont, Chemours, Corteva</u></b>	Legal and reputational	Total costs for PFAS-related liabilities for DuPont, Chemours and Corteva estimated at \$3.5 billion to \$5.5 billion. Currently \$110 million has been settled.
<b><u>Kidde-Fenwal Inc</u></b>	Legal	A subsidiary of Carrier Global Corp, it filed for bankruptcy after lawsuits alleged that forever chemicals in its firefighting foam products contaminated water sources around US airports and military bases.

Source: BloombergNEF

Pollution of watercourses and farmland will continue, and with it the associated legal and reputational risks for companies. As of August 2023, some 3,186 sites across locations in all 50 US states are known to be contaminated with PFAS, according to a [report](#) by the Environmental Working Group, a non-profit organization. Regulation is shifting rapidly – chemical companies that learn from the 70-year history of PFAS will be better placed to mitigate the risks resulting from their own impacts and dependencies on nature.

### More from BNEF:

[Corporate Net-Zero Assessment Tool \(web | terminal\)](#)

[Technology Radar: Advanced Conductors \(web | terminal\)](#)

[What Policy Levers Get the World to 1.5C and Net Zero? \(web | terminal\)](#)

<sup>1</sup> ENCORE is an ongoing collaboration between Global Canopy and UNEP to help companies understand potential nature-related risk exposure through sector-level generalizations. It collates information on the production processes of 177 sub-sectors, enabling sector- and industry-level comparison. More detail can be found on the tool's [methodology page](#).

<sup>2</sup> PCBs, or polychlorinated biphenyls, are classed as persistent organic pollutants. Their history – innovative chemicals with a myriad of applications across many sectors, followed by growing awareness of environmental harm and a subsequent production ban – appears to be a precursor to the story of PFAS.

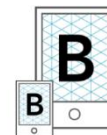
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