

# Assessing PFAS Emissions in Ambient Air



PFAS in air emissions are receiving increasing regulatory attention. A range of industrial and commercial facilities are being asked to assess potential PFAS in air. Risk drivers have previously focused largely on impacts to soil, groundwater and drinking water, but increasingly ambient air quality, surface water and sediment impacts, and their potentially related fate and transport mechanisms are now being considered as well.



## Stack Testing of PFAS Emissions

Arcadis has completed PFAS emissions assessments on multiple projects and has implemented USEPA stack testing methodologies, including OTM-45, to quantify PFAS emissions from stacks. To successfully measure low-level PFAS emissions in the stack, field procedures are carefully performed to minimize background contamination and properly handle samples. In-stack reporting limits are in the nanogram per cubic meter (ng/m<sup>3</sup>) range or parts per trillion levels in gas. Mass emission rates (g/yr) are eight orders of magnitude lower than typically observed for other potential air contaminants such as pesticides and dioxins/furans.

Through our successful PFAS testing program, Arcadis has developed important lessons learned which include the need for:

- Comprehensive evaluation of test locations for safe access and movement of the large sample trains required for PFAS testing.
- Adequate time for sample media to be properly cleaned and prepared with QA/QC checks performed by the laboratory and testers before mobilization.
- Sample durations that allow for targeted emission rates.
- Extreme caution to prevent sample cross-contamination of samples when being collected, avoiding contact or use of PFAS-containing equipment or materials.

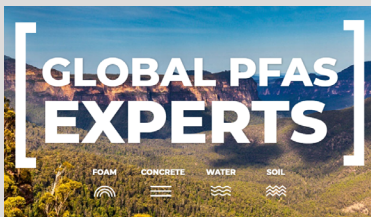
PFAS is a new challenge for many and our strategy will be unique to your organization's needs. Arcadis offers a full suite of PFAS services led by experts in their respective fields to address your specific issues or concerns with confidence.

## About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people, active in over 70 countries that generate €3.3 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

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PFAS Solutions Site

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## Air Dispersion Modeling

Arcadis has used air dispersion modeling, particularly through the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), to effectively assess hypotheses regarding the potential for transport and deposition from stacks, point sources with lower release heights or fugitive emission sources of PFAS.

The most accurate data available is needed to model possible or known PFAS emissions and properly represent the site and conditions of the release. Site data needs are complex and extensive, especially when the modeling effort is forensic (historical) rather than assessing current operations, or where measured emissions data is not available. Arcadis' technical experts have addressed these challenges with well-defined and defensible assumptions.

Our team applies a deep understanding of the AERMOD methodology to model possible or known PFAS releases to air. The results of air dispersion modeling are considered in combination with relevant data from soil and water media, along with the nature of those transport pathways. Our careful procedure provides an assessment of the transport distance, direction and aerial extent of deposition.

## Arcadis PFAS Emissions Services

In addition to stack testing and air dispersion modeling, Arcadis' global PFAS team includes air quality experts that offer:

- Compliance mitigation and risk assessment
- Site investigation support involving air pathway assessments
- Toxics Release Inventory (TRI) PFAS Reporting and listed PFAS use evaluations
- Destruction and removal efficiencies determinations for treatment and destruction technologies
- PFAS emission rate calculations
- Litigation and regulatory agency negotiation support
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