Geosyntec consultants

PFAS IN THE MINING INDUSTRY

What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of thousands of compounds used widely for their oil- and water-repellent and heat-resistant properties. PFAS are highly persist and soluble and can bioaccumulate. The behaviour of PFAS in the environment can vary widely depending on the composition of the PFAS mixture, the presence of co-contaminants, and the introduction of oxidants or reductants to the environment. It is essential that practitioners who fundamentally understand the limitations and challenges associated with PFAS direct investigation and remediation efforts to achieve successful risk mitigation at PFAS sites.

Geosyntec can help navigate regulations across the globe.

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PFAS Challenges in Mining

POTENTIAL PFAS USES AT MINE SITES

PFAS are present in fluorinated foams for heat suppressants, surfactants, dust suppression, hydraulic fluids, fuel additives, drilling fluids, and nonstick coatings.

ENVIRONMENTAL CONCERNS

PFAS have been detected in air, groundwater, soil, and surface water at mining sites globally, leading to regulatory scrutiny and remediation requirements.

REGULATORY LANDSCAPE

Mining operations face complex federal, state/provincial, and international regulations, with sampling and compliance challenges.

Geosyntec's PFAS Services for Mining Clients

SITE AUDITS, REGULATORY, AND LEGAL SUPPORT

- Understanding the full scope of operations and conducting comprehensive audits to identify PFAS-containing products, assess their usage, and evaluate potential exposure pathways
- Permitting support, compliance monitoring, and negotiation with regulators
- Due diligence and expert testimony for legal matters

SITE INVESTIGATION AND ASSESSMENT

- Strategic site characterization and phased investigations to identify PFAS sources, transport pathways, and exposure risks
- Development of robust conceptual site models based on defensible data
- Defensible data collection, laboratory testing, and third-party data validation

RISK ASSESSMENT

- Human health and ecological risk assessments, including modeling of PFAS fate and transport
- Setting appropriate screening levels and supporting regulatory acceptance

TREATMENT SOLUTIONS

- Evaluation and design of PFAS treatment systems for surface water, groundwater, drinking water, leachate, and stormwater
- In situ and ex situ remediation approaches tailored to mining environments

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Overview of Our Experience

Geosyntec has extensive experience supporting manufacturing and mining clients with a wide range of PFAS assessment, remediation, and regulatory services. We recognize the sensitive nature of PFAS-related projects and respect our clients confidentiality requirements. The summaries below provide an overview of our experience.

MINING

Geosyntec provides PFAS evaluations, characterization, and treatment design for our mining clients. This work includes assessing PFAS-containing material as part of existing equipment and fixtures and identifying potential source items to complete federally-mandated drinking water protocols. In addition, In addition, Geosyntec conducts PFAS characterization to support treatment design and implementation (e.g., firefighting foam with significant PFAS in tailings impoundments). Geosyntec supports mine sites with identifying PFAS sources, reporting, and design and performance treatment systems.

MANUFACTURING

Geosyntec conducted extensive environmental investigations at a complex site with PFAS in air, soil, groundwater, and surface water over an 8-year timeframe. During this time, we collected thousands of samples, actively progressing on-site and off-site delineation activities, and identified two clearly distinguishable PFAS source types and signatures using PFAS forensic techniques. We developed comprehensivie conceptual site models, applied toxicological assessments to evaluate the potential hazards to human and ecological receptors, and conducted regulatory negotiations. Additionally, Geosyntec designed and implemented multiple PFAS remedies at the site, including seep flow-through cells that won the National Groundwater Association's 2023 outstanding groundwater remediation project award.

PHASE II AND III ENVIRONMENTAL SITE ASSESSMENT PROGRAM, MANUFACTURING CLIENT, ONTARIO AND QUEBEC SITES

Geosyntec conducted Phase II and III environmental site assessments for a manufacturing client at multiple Canadian sites. By developing tailored investigation and remediation strategies—including advanced sampling protocols and conceptual site models—we helped the client efficiently delineate and mitigate contaminants, including PFAS, reducing cleanup costs and accelerating project timelines. We secured site closure or implemented cost-effective long-term remedies across the various sites, providing compliance and strengthening the client's reputation within the community.

Leading the Way:
PFAS NEWSLETTER

Do you have questions about PFAS and your site? Call us!

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About Geosyntec

Geosyntec is a consulting and engineering firm that works with private and public sector clients to address new ventures and complex problems involving our environment, natural resources, and civil infrastructure.

With a combined staff exceeding 2,800 engineers, scientists, and related technical and project support personnel, we serve our clients from more than 130 offices in the United States, Canada, the United Kingdom, Ireland, Sweden, Finland, Spain, Saudi Arabia, the United Arab Emirates, and Australia.

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