

2025 PFAS Testing Results in NorCal High School Sports Fields

Summary of the Whitepaper: There is concern about potential exposures to per- and poly-fluorinated alkyl substances (PFAS) in the environment. Gradient was tasked to determine whether there might be safety concerns from exposure to PFAS in Northern California athletic fields.

Key Findings (See “Figure 1” and “Table 1”)

Former Fields:

- Both former fields exhibited low-level PFAS concentrations, with School A (natural grass field) detecting seven compounds and School B (synthetic turf field) detecting five.
- Soil samples from the former field at School A (natural grass field) contained PFOA and PFOS levels exceeding U.S. EPA and certain state soil screening limits (SSLs). At School B (synthetic turf field), the same soil types showed PFOA levels above its SSL, though still within typical ranges.
- Former synthetic turf at School B contained low-level PFAS compounds.

Replacement Fields:

- Testing new synthetic turf field materials revealed significantly lower PFAS concentrations compared to the former fields.
- At School A, minimal traces of PEPeA and PFOS were detected, but these concentrations fell below all SSL thresholds. At School B, no PFAS compounds were detected in replacement materials.
- Replacement materials are expected to pose lower potential health risks compared to the former fields.

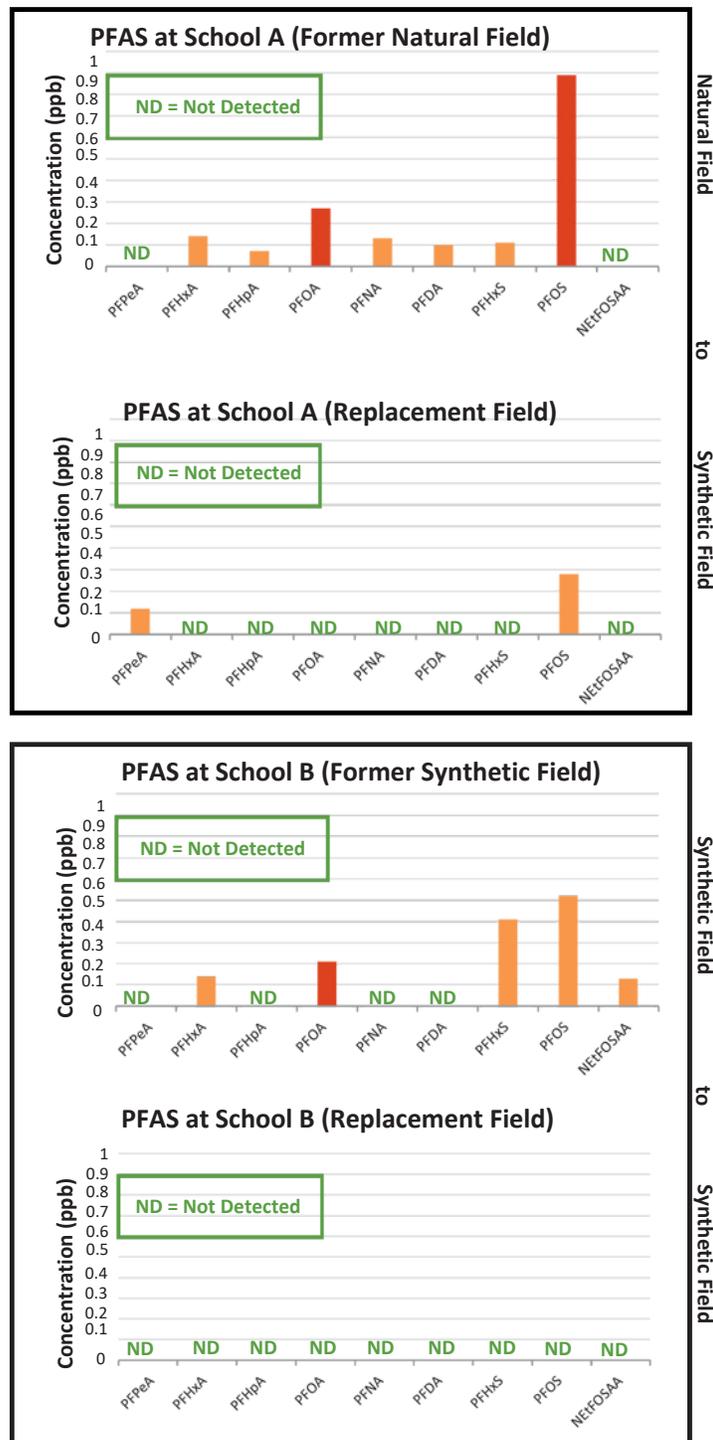
Health Impact Assessment:

- PFAS concentrations measured across all sample types were extremely low, unlikely to cause harm to human health, and aligned with similar studies of synthetic turf and natural soils.
- The study reassured stakeholders that the replacement fields significantly mitigate PFAS-related risks for users.

Limitations:

- The study focuses on only two fields, so results may not be universally applicable across other locations or materials manufactured by different companies.

Figure 1. Sampling Results Bar Charts



Notes: ND = not detected. Orange = detections below screening values. Red = Detections above US EPA residential long-term exposure criteria.

Ref: EPA Method 1633 is the only US EPA method that has been validated for PFAS analysis in solid samples and has been recommended by US EPA for soil analysis. It was finalized in January of 2024 and the final draft was very similar the 4th draft of the method. Many commercial laboratories – including Pace, MN – are currently working to update their protocols to the finalized method.

Table 1. Comparison of Sampling Results to Screening Levels

Screening Level (ppb)	Screening Level (ppb) ^a	School A Formerb (Natural Field to Synthetic Field)	School A Replacementc	School B Formerb (Synthetic Field to Synthetic Field)	School B Replacementc
PFPeA	250	ND	0.12 J	ND	ND
PFHxA	250	0.14 J	ND	0.14 J	ND
PFHpA	250	0.071 J	ND	ND	ND
PFOA	0.0185	0.27	ND	0.21 J	ND
PFNA	19	0.13 J	ND	ND	ND
PFDA	250	0.1 J	ND	ND	ND
PFHxS	25	0.11 J	ND	0.41 J	ND
PFOS	0.63	0.89	0.28 J	0.52	ND
NEtFOSAA	0.63	ND	ND	0.13 J	ND

Notes: ND = non-detect, detection limits vary for analyte and matrix; J = estimated concentration between the method detection and reporting limit. Red = Above screening limit. (a) Screening Level Source: (b) Results are the maximum reported values for any infield or outfield composite samples. (c) Results are the maximum reported in any carpet or infill samples.

Context and Analytical Process (See “Figure 2”)

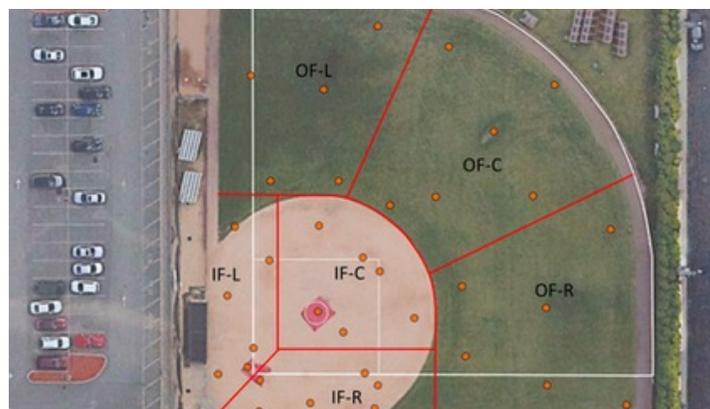
- Sampling and testing followed stringent industry best practices and utilized the U.S. EPA Draft Method 1633, finalized in early 2024, for PFAS analysis.
- Former fields' samples included infield clay, subsurface soil, and synthetic infill (at School B), while replacement material samples included synthetic turf carpet and infill. A robust data validation process ensured analytical quality and reproducibility.

Conclusions

The report concludes that the installation of the new synthetic turf fields has successfully reduced PFAS concentrations at both sites, aligning with best environmental and public health practices. While PFAS compounds are prevalent in the environment, results indicate that both the former and replacement fields pose minimal potential risks.

The study emphasizes the importance of adopting safer field materials in athletic facilities and provides key data for future decision-making on sports field installations.

Figure 2 School A Former (Natural) Field Sampling Locations



Notes: To preserve School A's anonymity, an image of a different softball field was used to create this figure. All Locations are approximate. Biased sampling focused on areas where players and coaches may spend a lot of time or slide in the dirt (batter's box, bases, baselines; coaches boxes, on deck circles, pitcher's mound). White lines indicate base lines and pitcher's mounds and red lines give borders of six composite areas. Orange dots indicate sample aliquot locations.



Gradient is an environmental and risk sciences consulting firm renowned for scientific excellence. We utilize scientific principles and a systematic study of the data, along with an independent perspective, to help our clients understand their issues. Since 1985, we have delivered work products that are responsive and protective, with the highest professional standards.



FULL VERSION of Gradient's Scientific Study available upon request on Field Turf's website.