Technical Memo
Enhanced Natural Attenuation for PFAS

This article by Charles J. Newell et al. published in *Wiley's Remediation Journal* discusses practical guidelines is based on a 'three-tiered lines of evidence' (LOE) approach for evaluating monitored natural attenuation (MNA) of PFAS. The approach outlined provides methods to assess PFAS retention in the subsurface. It also includes a list of methods to enhance MNA of PFAS plumes if MNA alone is not sufficient to manage the risk of the plume.

Key Takeaways:

Remediation of PFAS does not require destruction of the PFAS	With Natural Attenuation (NA), the PFAS is still in the subsurface, it is just not moving forward at a rate to impact a receptor. This is a key concept that is intrinsic to the concept of environmental risk where: ***Environmental Risk = Hazard X Exposure.*** By eliminating the potential for exposure, you eliminate the risk. That is how NA works. • This echoes what is being taught by the Interstate Technology Regulatory Council (ITRC) where their definition of remediation is: *"A process used to reduce or eliminate the risk for humans and the environment that may result from exposure to harmful chemicals"*
PFAS retention within the subsurface has a direct impact on attenuation of plume migration	• Compartment partitioning (e.g. sorbed mass, matrix diffusion) can offer significant contaminant mass retention and retards forward progress of migrating PFAS. • Chemical retention can result in retained mass (PFAS precursors bound in source area).
Three lines of evidence can be studied to support the process of Natural Attenuation as a remedy for PFAS	• Direct measurements (soil and groundwater samples) • Indirect measurements of retention (Foc of aquifer, heterogeneous zone offering matrix storativity) • Modeling of PFAS contaminant transport including matrix diffusion and competitive sorption (I believe our PlumeForce™ program developed by Dr. Birnstingl is the most advanced program available in this regard).
Natural attenuation can be enhanced	• Adding sorbents to the subsurface can increase retention (i.e. PlumeStop® Colloidal Carbon) thereby retarding the PAS to the extent that Natural Attention is achievable. • Reducing water intrusion reduces flux (e.g. caps, physical barriers, phytoremediation) • Sparing gases in some areas can increase partitioning at the air/water interface (e.g. foam fractionation)

Read the full article here: https://www2.regenesis.com/mna-pfas-potential-guidelines