



PNOD - Frequently Asked Questions What is PNOD and why is it important when using permanganate for in situ chemical oxidation?

1. What is PNOD?

PNOD stands for permanganate natural oxidant demand. It is a lab generated value that estimates the amount of permanganate that will react with naturally occurring compounds (organic and inorganic) in the subsurface, also known as the background demand or soil oxidant demand.

2. Why is PNOD important at a remediation site?

When considering in situ chemical oxidation for soil and groundwater treatment, the background demand needs to be taken into consideration during the site design phase. The background demand may interfere with the oxidants ability to react with the contaminants of concern (COC). Based on the soil type and the contaminant of concern concentrations, the natural oxidant demand can be a significant economic factor for a remediation project. The background demand (versus the COC) is often the driving factor for the total amount of oxidant needed to treat a site.

3. How do I test my soil for PNOD?

Prior to field implantation with permanganate, it is recommended that site specific soil be tested for the permanganate natural oxidant demand. Soil samples can be sent to Carus for PNOD testing. Carus performs permanganate natural oxidant demand analysis following a method developed by the American Society of Testing and Materials (ASTM) Method D7262-10 (2016), Test Method A. There are other laboratories globally that follow the same ASTM method.