



CARBON CHRONICLES



no.203.078

WHAT DOES THE INDUSTRY REALLY NEED?

- Since 2021

WHY ACTIVATED CARBON

Scott Noland

Although having been educated at Colorado School of Mines and earning a Chemical Engineering degree, there was still plenty to learn working in the field doing *in situ* remediation on contaminated sites. It was the dawn of this industry, and those were exciting times. Having worked with a couple of different companies, the focus was on passive technologies, testing available products, and developing injection techniques.

There is nothing like doing hard physical labor in the blazing heat and relentless sunshine of summer to foster innovation. On just such a day, I looked at my co-laborer and said, “There has got to be a better way”. Nothing seemed to work very well or was dangerous to handle and install. The good old days of playing with hydrogen peroxide.

Over beer later that afternoon, we started talking about the “ideal” product. What does the industry need?





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WHY ACTIVATED CARBON, CONT.

What does the industry need?

- It should not be life-threatening to handle, destroy the injection equipment or other sub-surface utilities/structures. It should be safe and non-toxic.
- It should be easy to install with readily available equipment.
- It should be applicable to a wide spectrum of common organic contaminants.
- You should not have to wait 6 months or more to figure out if it is going to have a beneficial impact.
- Lastly, it cannot bankrupt you to use it. It must be cost-effective!

When you start to think along these lines, it does not take long before the idea of sorbents comes to mind, and one of the best sorbents is activated carbon. It is a well-known material with decades of use across many applications from polishing our drinking water and cleaning pollutants from wastewater to scrubbing mercury from stack emissions at power generation plants.

The use of activated carbon for *in situ* remediation is a maturing technology, yet questions continue to be asked. So, to help the remediation community with both old questions and developing insights,

we plan to address a number of topics, which include the following:

- What is it and how does it work?
- “Rules of Thumb” and why these are not useful.
- Virgin carbon versus Reactivated carbon; what’s the difference?
- Is it just adsorption or is there treatment through degradation?
- The importance of a robust and viable degradation mechanism.
- How to increase NSZD by an “order of magnitude”.
- Can it achieve low concentration clean-up standards?

Engineering design: Are there ways to use it and significantly reduce cost?

RPI was the first company to use activated carbon for in situ remediation, and we have been using it for nearly twenty years. We believe that activated carbon has a significant and ever-expanding role to play in remediation of organic and inorganic contaminants, and we want to create a medium to share our excitement about this technology. So, we will address the above (and other) topics through short and informative notes. **This is the CARBON CHRONICLES.**