



Mike is a hydrogeologist with a passion for getting things right the first time. He also isn't afraid to buck conventional thought, when necessary. Mike brings these two characteristics to every environmental project he touches. Mike has a deep and broad background in hydrogeology, formed from a demanding geological engineering undergraduate degree, followed by a Ph.D. from the world-class hydrogeology program at the University of Waterloo. Mike's 15-year academic career prior to consulting served to further broaden his knowledge and hone his communication skills.

How to Achieve Successful Environmental Remediation (Part 1 of 8)

The Heart of the Soil and Groundwater Remediation Problem

Have you ever seen “Ground Hog Day” with Bill Murray? In the movie, he relives the same day over and over and over. At one point in the movie, he realizes that it does not have to be déjà vu all over again. He can change the outcome of the day.

If you have an environmental remediation project that goes on and on and on ... and seems like déjà vu all over again ... you should be thinking like Bill Murray. It may be possible to change that never-ending story. We have seen this scenario many times. Often it is not that the remediation method is wrong; it is that the site characterization is flawed. If the problem is not fully understood, it is difficult (if not impossible) to design a remedy that has a high potential for success at a reasonable cost and in a reasonable timeframe.

In this first of eight Environmental Minutes, we breakdown what we feel are the critically-important steps in setting your remediation up for success. These Environmental Minutes are not intended to be a treatise on site characterization. The intent is to provide non-practitioners an overview of many

of the important aspects of site characterization and why it is critical to cost-effective remediation. Each successive Environmental Minute will be a step in the right direction.

Endless Environmental Remediation Projects

It doesn't make sense. “We” know more about contamination now, and remediation technology keeps getting better and better. So why do “endless remediation projects” continue to frustrate so many?

Site remediation never seems to end; instead, it just morphs into the *next greatest* remedial technology and more expense. However, what if finishing a remediation isn't due to problems with the remediation technology, but is something more fundamental ... like understanding the site?

This is exactly what we have found, frequently, at sites across North America and beyond. Very basic components of “*Site Characterization*” are missed or misinterpreted ... leading to “forever remediations” or over-engineering. The end result: **wasted dollars and wasted time.**

Successful remediation requires the proper diagnosis. Think of it as if you were going to the doctor when you are sick. The doctor usually cannot see what made you sick just by looking at you, but some tests are done to better understand your condition. Only after getting test results can the doctor select the right prescription or treatment. If the doctor misinterpreted the symptoms and prescribed the wrong medicine for your illness ... you will not get better, no matter how much of the medicine you take. If an environmental consultant misinterprets the "site's symptoms," your site's conditions will not improve, no matter how much you remediate.

The Heart of the Environmental Remediation Problem: It's a Contact Sport

Remediation of impacted soil and groundwater, regardless of the contaminant (TCE, BTEX, PCBs, metals, dioxin, etc...), is about one very important factor: **contact**.

- *If you chose to dig contaminated soil, the shovel must remove the contaminated soil.*
- *If you chose to pump impacted groundwater, the well must pump that groundwater.*
- *If you decided to inject, the chemical must reach the contaminated zone.*

Remediation technologies assume good contact with the target contaminant. When good contact happens,

the technology usually works. Too often, good contact doesn't happen and remediation fails.

The rush to a solution (remediation) without proper site characterization often dooms even the most proven remediation technology. And what happens when the remediation doesn't work? Frustration! And more soil borings, more monitoring wells, more expensive site investigations, and then the next greatest remediation technology. More Frustration!

So, how do you increase the odds of getting better contact between the chemical in the contaminated media (soil and/or groundwater) and the remediation technology? Better yet, how do you avoid further remediation altogether? The answer is "Site Characterization." Once you have mastered this, you are on your way! If you get the site characterization right, you can get the remediation right ... the first time.

In this series of Environmental Minutes, we'll share with you some of the "secrets" to site characterization that have led to [successful remediation](#) (and sometimes that means [no remediation](#)), closing sites, and saving a lot of money!



Our next Environmental Minute in this eight-part series will focus on the Conceptual Site Model.

If you have any questions about this series of Environmental Minutes, or if you have an immediate question or concern, please contact Dr. Michael Sklash (mkslash@dragun.com) at 248-932-0228, ext 120.

United States

30445 Northwestern Hwy, Suite 260
Farmington Hills, Michigan 48334
Tel: (248) 932-0228

Windsor

436 Elmstead Road, RR1
Windsor, Ontario N8N 2L9
Tel: (519) 979-7300

Toronto

112 George Street
Toronto, Ontario M5A 2M5
Tel: (416) 800-2140