Real and Near-Real-Time Data

FASTER/CHEAPER/GOOD ENOUGH

John Fitzgerald
MassDEP

Top 3 complaints of (state your name) regulators

- Insufficient site characterization
- Insufficient site characterization
- Insufficient site characterization
Reality...

Finite $ for all expenses!
Work Smarter
Not Harder
Spend Wisely
Engage Brain
Tell a good story

good story

geophysical sensors analytical

“screening”
Get more data
Uncertainties in Site Characterization

Data Quantity

Total Uncertainty

Data Quality

mg/kg
µg/L
µg/m³

Really?

Really?
Don’t let the Perfect be the enemy of the Good
Voltaire

Analytical Screening
PID Meters

Chlorinated Hydrocarbons Headspace Partitioning

- MeCl
- TCE
- PCE

Estimated μg/L vs. ppmV Headspace
Dynamic Headspace Development is Critical!

Shake for 30 seconds

Static

Minutes

GC and GC/MS Headspace Data
GC or GC/MS Air Sample Analysis

Grab Indoor Air TCE Results vs 24-hr TO-15

R² = 0.915
## Bottom Line

<table>
<thead>
<tr>
<th></th>
<th>Groundwater Analysis by Headspace GC</th>
<th>Grab Air Sample Analysis by GC/MS</th>
<th>24-hour TWA Air Analysis by TO-15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn Around Time</td>
<td>24 hours</td>
<td>1 – 24 hours</td>
<td>7-10 days (24 hr RUSH)</td>
</tr>
<tr>
<td>Cost</td>
<td>$50/ea</td>
<td>$75/ea</td>
<td>$340/ea ($680 RUSH)</td>
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