The Mining Legacy and EPA ORD: Past, Present and into the Future

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I am Required to Inform You
a.k.a, “The Disclaimer”

The following slides and words from this Gentleman’s mouth represent his thoughts and musings and surely do not represent U.S. EPA policy. Of course that has been true for the last 33 years, so why would today be different?
Who said there is light at the end of the tunnel?
The Planned Talk
Present An Overview of EPA ORD Mine Remediation Research through Technical Support
Through the Crystal Ball Glimpse at 21\textsuperscript{st} Century Mine Material and Water Remediation
AND NOW A WORD FROM OUR SPONSOR

EPA ORD Engineering Technical Support Center

ETSC is our Acronym
Established in 1987
Located in Cincinnati, Ohio
Center within ORD
 Legacy -- something from the past: something that is handed down or remains from a previous generation or time.
Legacy – You Got It Whether You Like it or Not.

The Modern Definition:

Deal With IT.
This is not Bruce Springsteen’s Tunnel of Love
This is Where I Digress

Outside the box
The Three Gentlemen Talk and Talk

After this Talk and the break, they will Talk …..

The First Part of their Talk was to Talk about the Early Days (You guess which one is older…)

The Second Part of their Talk was to Talk about their view of:

Where Do We Go From Here?
The Early Years of EPA HR Remediation

Big 5 and Burleigh Tunnels

Lime, Alkaline Channels, Lagoons
Burleigh Tunnel, CO
Would you allow these guys on your job site?
Developed Treatability Study Plan for Scientific Testing
Conducted Bench and Field-Scale Studies for BCRs
Tested Different Substrates for BCRs
Compared Solid Substrate vs. Liquid BCRs
Researched Lab / Field Measurements for Sulfates & Sulfides
Sampled, Analyzed and Identified Bacteria Inside BCR
Developed a Year ’round Sustainable Treatment System (with renewable energy and gravity-feed)
Developed High Altitude Field Pilots
Developed WASP Meta4 Model for Metals Loading
What Has ETSC Staff Done in the Mining Area in the Last 10+ Years?

Tested Remote Remedial Data Delivery (R2D2) Systems
Researched Changes in Stressed MIW Bacterial Communities
Created Problem-Solving Workshops on Mine Drainage Issues
Conferences For Technology Transfer and Development
Built Larger & Sustainable Gravity-Fed BCRs
Tested Low Power Mobile Treatment Systems
Re-use of Chat in Asphalt; Tailings in Cement
Establish Performance Guidance for BCRs (ITRC)
BCR Effluent Toxicity Studies and Treatment Methods
For Those of You Distracted

This is the second part of the talk:

Through the Crystal Ball Glimpse at 21st Century Mine Material and Water Remediation
Instrument of Truth
1

• The “Other Dave” Has a Top Ten List
• “This Dave” Has a “TOP 4 List”
• Kyra says “Listen to Papa!”
THINK “in situ” MIW Treatment

- Injection of Alkaline Material Means Higher pH Seeps
- Treatment Systems and Iron Pre-Treatment are out of sight, out of “mind”
- Immediate Surface Water Improvements
- Weather Issues May Be Averted
- Anaerobic Systems Can Thrive!
- Multiple Benefits; Less Risk; Reduce Exposure
He smiled until he opened the bag.....
Metals Recovery / Material Re-Use

• Recovery of Metals from MIW, Mine Materials
• Economics, Environment & Other Factors
• Closed Systems
• Mimic Natural Processes
• “Re-Use is Real Use!”
BCR Applied Research

• Build for Treatment; Publish Data for Knowledge
• Involve More Biologists & Chemists
• Understand the “Sulfide” Effect
• Alternative Substrates!!!!!!
• More Efficient; Higher Volumes, Loads
• Longevity is a Non-Issue….Ask Me!
Acknowledgements & Tributes

- ALL of YOU….for your work on this issue and for coming this week
- Co-Workers / Colleagues in & out of EPA
- EPA Contractors & Universities
- The Airlines for getting me there safely!

Most of All --- We’re in this Together; Let’s Set an Example!
Comments or Criticisms?
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