

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**

S

**Through the Crystal Ball Glimpse
at 21st 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

How Did We Get Here? The Mining Legacy

Legacy -- something from the past: something that is handed down or remains from a previous generation or time.

The Modern Legacy

*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?



EPA ORD ETSC



*What Has ETSC Staff Done in the Mining Area in the Last
10+ Years?*

- 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

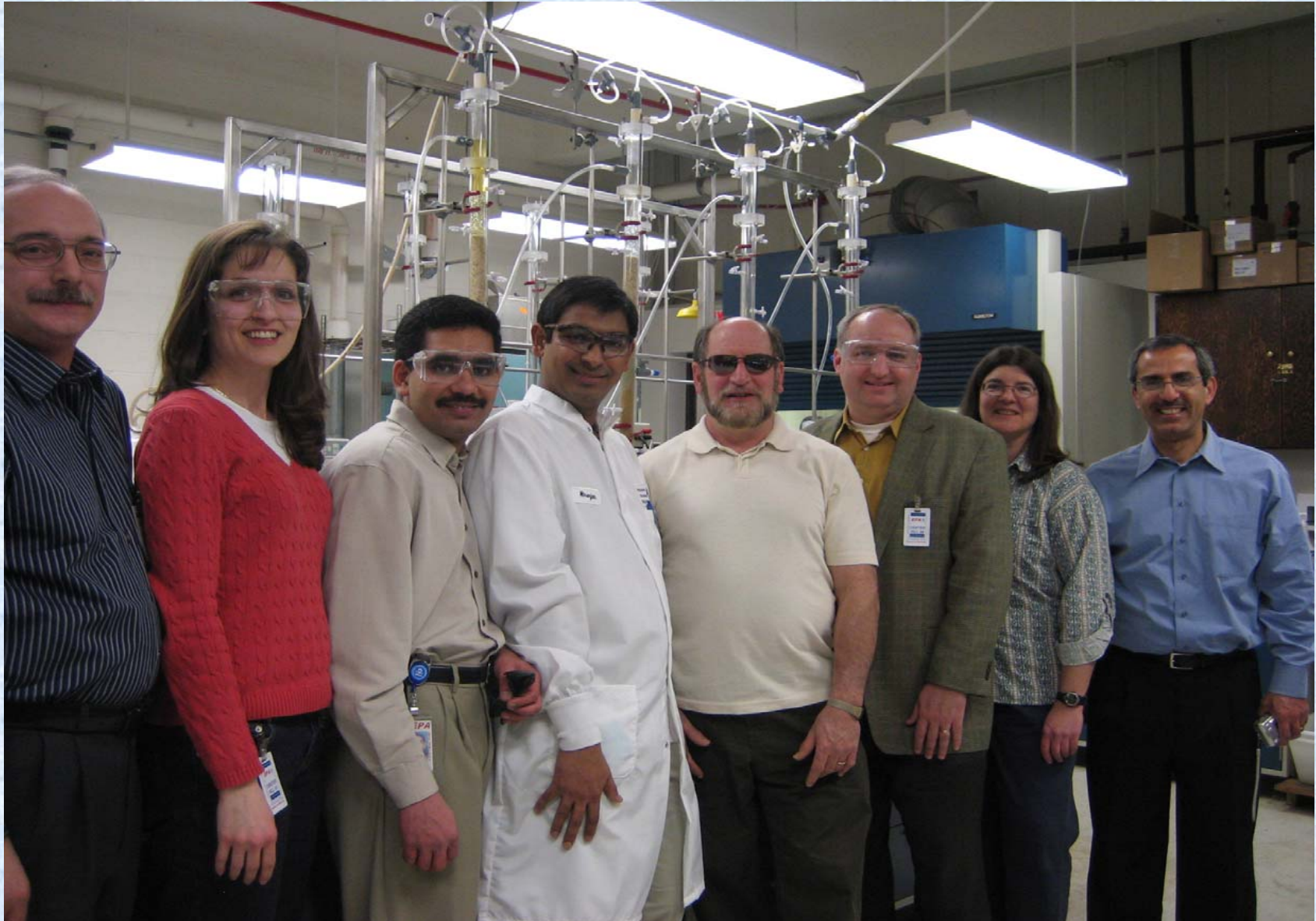


“Listen to Papa!”

THINK “in situ” MIW Treatment

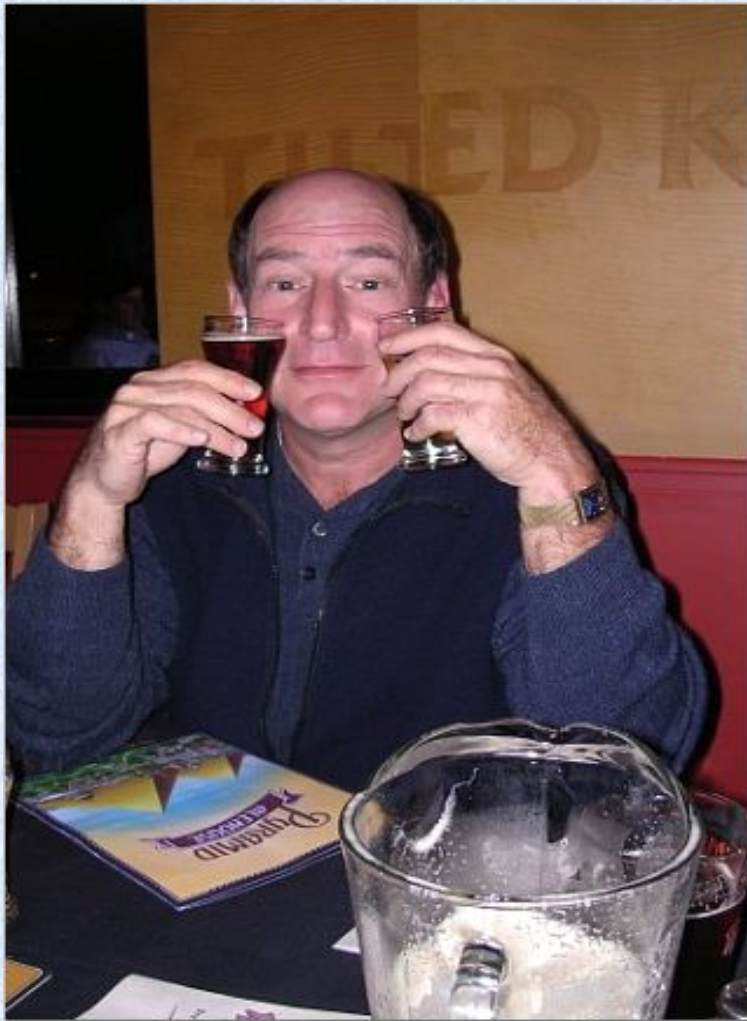
- Injection of Alkaline Material Means Higher pH Seeps
- Treatment Systems and Iron Pre-Treatment are out of sight, out of “mind”
- Immediate Surface Water Improvements
- Weather Issues May Be Averted
- Anaerobic Systems Can Thrive!
- Multiple Benefits; Less Risk; Reduce Exposure

2



BEER

Bio-Engineered Environmental Repository



3 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!”

4



BCR Applied Research

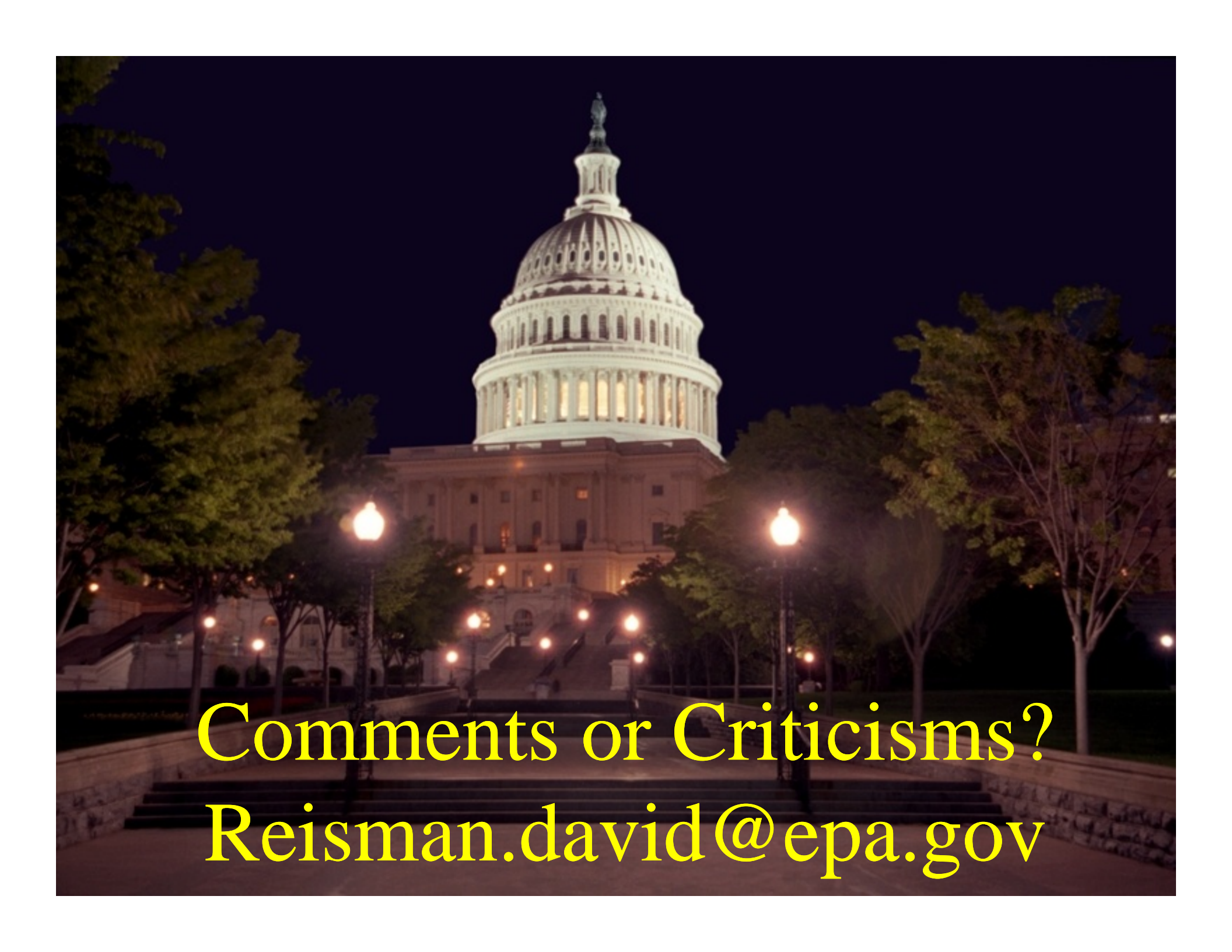
- Build for Treatment; Publish Data for Knowledge
- Involve More Biologists & Chemists
- Understand the “Sulfide” Effect
- Alternative Substrates!!!!!!
- More Efficient; Higher Volumes, Loads
- Longevity is a Non-Issue....Ask Me!



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!**

A nighttime photograph of the United States Capitol building in Washington, D.C. The building is illuminated, with its iconic dome and the Statue of Freedom on top clearly visible against a dark sky. The foreground shows a paved walkway with several lit street lamps and trees. The text is overlaid in a bright yellow, serif font.

Comments or Criticisms?
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