



ACID DRAINAGE TECHNOLOGY INITIATIVE

COAL MINING SECTOR

Stephen Parsons*, Fred Block*, Roger Hornberger, and John Craynon***

*** Office of Surface Mining, Washington, DC**

**** Department of Environmental Protection - Mineral
Resources Management, Pottsville, PA**

ACID DRAINAGE TECHNOLOGY INITIATIVE COAL MINING SECTOR

OVERVIEW

- **ADTI and the Coal Mining Sector**
- **Accomplishments and Activities**
- **Looking Ahead**

ACID DRAINAGE TECHNOLOGY INITIATIVE

- **ADTI was created in 1995 as a technology development program**
- **Partnership-based applied research including:**
 - **Academia**
 - **Federal agencies**
 - **Industry**
 - **National Mined Land Reclamation Center**
 - **State Agencies**
- **Recognizes issues related to coal mining and to metal mining**

ADTI ORGANIZATION



ADTI Objectives

- **Identify, evaluate and develop cost-effective and practical acid drainage control technologies**
- **Develop best science available to understand and resolve acid drainage issues**
- **Reduce the extent and severity of acid drainage problems**
- **Develop improved mine drainage quality prediction methods**
- **Use a consensus building processes to facilitate on-the-ground solution of mine drainage problems**
- **“Cooperate as a clearinghouse of information on mine drainage prediction, monitoring, monitoring, avoidance and remeditation”**

STATEMENT OF MUTUAL INTENT

IDENTIFICATION, EVALUATION, AND DEVELOPMENT
OF
COST-EFFECTIVE AND PRACTICABLE TECHNOLOGIES
FOR
IMPROVEMENT AND PROTECTION
TO
ADDRESS ACID DRAINAGE
FROM
METAL AND COAL MINES

Sponsored and Agreed to by:

Interstate Mining Compact Commission
Western Governors Association
Mining Life Cycle Center, Mackay School of Mines, University of Nevada - Reno
National Mine Land Reclamation Center, West Virginia University
National Mining Association
US Army Corps of Engineers
US Environmental Protection Agency
US Department of Agriculture, Forest Service
US Department of the Interior

April 2002
Washington, D.C.

The Statement of Mutual Intent describes a framework for cooperative development of controls of acid drainage and “to protect and restore streams and watersheds”

ACID DRAINAGE TECHNOLOGY INITIATIVE

Coal Mining Sector

- **Within ADTI, the Coal Mining Sector focuses on (not surprisingly) technologies appropriate to coal mining-related drainage issues**
- **ADTI originally identified two major technical development areas:**
 - **Prediction of acid drainage**
 - **Avoidance and remediation of acid drainage**

Coal Mining Sector Organization

The importance of major technical areas is reflected in the two Working Groups of the Coal Mining Sector

Working Group 1 Prediction:

- Overburden Test Methods
- Sampling and Alternate Sources of Information
- Field Validation

Working Group 2

Avoidance & Remediation:

- Passive Treatment
- Alkaline Treatment & Overburden & Refuse Reclamation
- Active Treatment Technologies
- Engineered Structural Techniques



COAL MINING SECTOR ACCOMPLISHMENTS & ACTIVITIES

Abandoned Mine Land Remediation Workshop

July 29, 2003

A Handbook of Technologies for Avoidance and Remediation of Acid Mine Drainage



Prepared by


J. Skousen, A. Rose, G. Geidel, J. Foreman, R. Evans, W. Hellier,
and Members of the
Avoidance and Remediation Working Group
of the
ACID DRAINAGE TECHNOLOGY INITIATIVE (ADTI)

June 1998

PREDICTION OF WATER QUALITY AT SURFACE COAL MINES



**Prepared by Members of the Prediction Workgroup
of the
Acid Drainage Technology Initiative (ADTI)**

 Published by the National Mine Land Reclamation Center
at West Virginia University

ADTI COAL MINING SECTOR PUBLICATIONS

“A Handbook of Technologies for Avoidance and Remediation of Acid Mine Drainage”

“Prediction of Water Quality at Surface Coal Mines”

<http://wwri.nrcce.wvu.edu/publications.php> - ADTI

For Printed Copies, Contact:

West Virginia Water Resources Institute

West Virginia University

202 NRCCE Building

PO Box 6064 Morgantown, WV 26506-6064

Attn: D. Burnside

drburnside@mail.wvu.edu

(304) 293-2867 x 5450

COAL MINING SECTOR PROJECTS

- **Monitoring and Evaluation of acid mine drainage remediation site**
- **Selenium in Coal Mine Overburden and Surface and Ground Water**
- **Field verification of Acid-Base Accounting method to predict AMD**
- **Development of a Standardized Kinetic Test Procedure**

COAL MINING SECTOR PROJECT ACTIVITY

Evaluation/Monitoring of Acid Mine Drainage Remediation Sites

**Evaluation/Monitoring of Passive Treatment Technologies
Learning what works/what doesn't and why**

Monitoring of In-Situ Treatment Sites

General Technical Assistance



COAL MINING SECTOR PROJECT ACTIVITY

Selenium in Coal Mine Overburden and Surface and Ground Water

COAL MINING SECTOR PROJECT ACTIVITY

Field Verification of Acid-Base Accounting Method to Predict AMD

AMD PREDICTION

Static Tests

Acid Base Accounting:

Neutralization Potential (NP)

Maximum Potential Acidity (MPA)

Net Neutralization Potential (NNP)

Kinetic Tests

**Development of a standardized method using
Leaching columns and humidity cells**

Potential Future Areas

- ✦ Prediction of acid load prior to mining
- ✦ Long-term AMD generation from:
 - ◆ Flooded underground mines
 - ◆ Above-drainage underground mines
 - ◆ Surface mines
- ✦ Passive treatment
 - ◆ Long-term performance
 - ◆ Identify reasons for success or failure
- ✦ Coal Combustion By-products mine fills
 - ◆ Risk assessment methods
 - ◆ Documentation of benefits/impacts and field verification
- ✦ In-situ underground mine treatment
- ✦ Refuse capping/barriers
- ✦ Treatment for Cl, Se, SO₄
- ✦ Technology transfer
 - ◆ Update AMD workbooks

Looking Ahead

✦ **The Coal Mining Sector will hold an inhouse workshop October 7 – 8, 2003, at the NMLRC at WVU in Morgantown, WV**

✦ **The Workshop will include:**

- **Review progress so far**
- **Identify areas that have been adequately addressed**
- **Identify areas needing additional work and “tools missing from the toolbox”**
- **Prioritize future efforts**

ADTI WEBSITES

COAL MINING SECTOR WEBSITE--

<http://wwwri.nrcce.wvu.edu/ADTI>

METAL MINING SECTOR WEBSITE--

<http://www.unr.edu/mines/adti/>

The Acid Drainage Technology Initiative - Coal Mining Sector

Abandoned Mine Land Remediation Workshop

July 29, 2003