

**The Western U.S. Mine Safety and Health  
Training and Translation Center's DPM  
Project — Projects Update**

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*Mining Diesel Emissions Conference*  
Toronto, Ontario  
October 4, 2007



## **An Excellent Field Trip**

## Couple of Thoughts/Observations

1. Good ideas take time
  - 1969 Coal Mine Health and Safety Act
  - 1977 Health and Safety Act
2. Encouraging things are happening
  - attitude/culture change evident
3. It is the right thing to do

## Western U.S. Mining Safety and Health Training and Translation Center



## Western U.S. Mining Safety and Health Training and Translation Center

- ★ **Consortium** of 4 universities (CSM, Montana Tech, Utah, and UMR) originally; Montana Tech later left the consortium;
- ★ 15 education projects; 1 translation project

Administrative and planning core

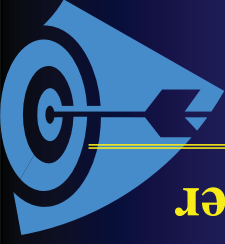
*"Evaluation and Control of Diesel Particulate Matter in Western Metal/Nonmetal Mines" – Tien, Grayson, UMR*



## Western U.S. Mining Safety and Health Training and Translation Center

### Aims and Objectives

The **primary** specific aim of this project is to **reduce** the number of **injuries** to miners through an **integrated program** of training intervention and translational research.

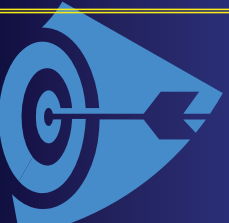


## Aims and Objectives

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Develop and implement a **broadly collaborative** western U.S. program that —


1. Identifies **training needs** of miners today and in the near future;
2. Addresses **prioritized** mine safety and health issues;



## Aims and Objectives

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3. Provide **qualified instructors/faculty** to train Western miners in thrust areas;
4. Evaluate **effectiveness** and **impact** of program on reducing injuries to miners;
5. **Translational** projects => convert essential mining health and safety research results into training with **wide dissemination**.



## DPM Workshop

1. There have been three conducted;
2. The fourth one scheduled to be in Denver in November, 2007
3. Two planned in 2008

## DPM Project Activities at UMR

- DPM workshops in western U.S.
- Have conducted *three* workshops and a *fourth* one is to be held next month in Denver
- Research activities — one Ph.D. student
- Tentative Title: Study of DPM dissipation and control measures in and around a working section using CFD*

# First DPM Emissions Workshop




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1. Conducted for Martin Marietta Aggregates, Des Moines, Iowa; August 16, 2005
2. Co-sponsored by MSHA Compliance Assistance Group
3. Total Attendees: 23
4. Content: *legislate update, control technologies, dpf, alternative fuel, ventilation, dpm estimator, and case studies*
5. Guest industry speakers
6. General discussions

# Controlling Diesel Particulate Exposures in UG Stone Mines

*First workshop*

Martin Marietta Aggregates, Inc.  
Des Moines, IA  
August 16, 2005

Western US Mining Safety & Health  
Training and Translation Center

Department of Mining Engineering  
University of Missouri-Rolla

Mine Safety and Health Administration



**2nd and 3rd Workshop**  
— with similar format and contents —

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**2nd Workshop — Doe Run Company:  
Viburnum, MO; Oct 19, 2005**

**3rd Workshop — Kansas City, MO —  
June 13, 2006**



**Workshop Presentation – Bob Haney**

## Q & A/Discussion Session

1. Many questions with regard to the January 19, 2006 deadline;
  2. MM&A reported on the use PuriNOx experience
  3. Mirencro experience
  4. DPF issues – costs and operational logistics
- Overall very positive feedback*







**Kansas City, MO**  
**June 13, 2006**



**Doe Run Company**  
**Viburnum, MO**  
**Oct 19, 2005**



UMR Experimental Mine

1. Using *Fluent* — a computational fluid dynamics software to study diesel exhaust dissipation once leaves the exhaust pipe
  - under different heading configurations
  - under different scenarios
2. To verify simulation results at UMR's Experimental Mine
3. Field testing — Doe Run Co.

## Research Activities at UMR

### Diesel Particulate Matter Emission Controls

A Workshop  
for  
Underground M/NM Mines



Western Mining Safety & Health Training & Translation Center \*  
Department of Mining & Nuclear Engineering  
University of Missouri-Rolla

And

U.S. Department of Labor  
Mine Safety and Health Administration

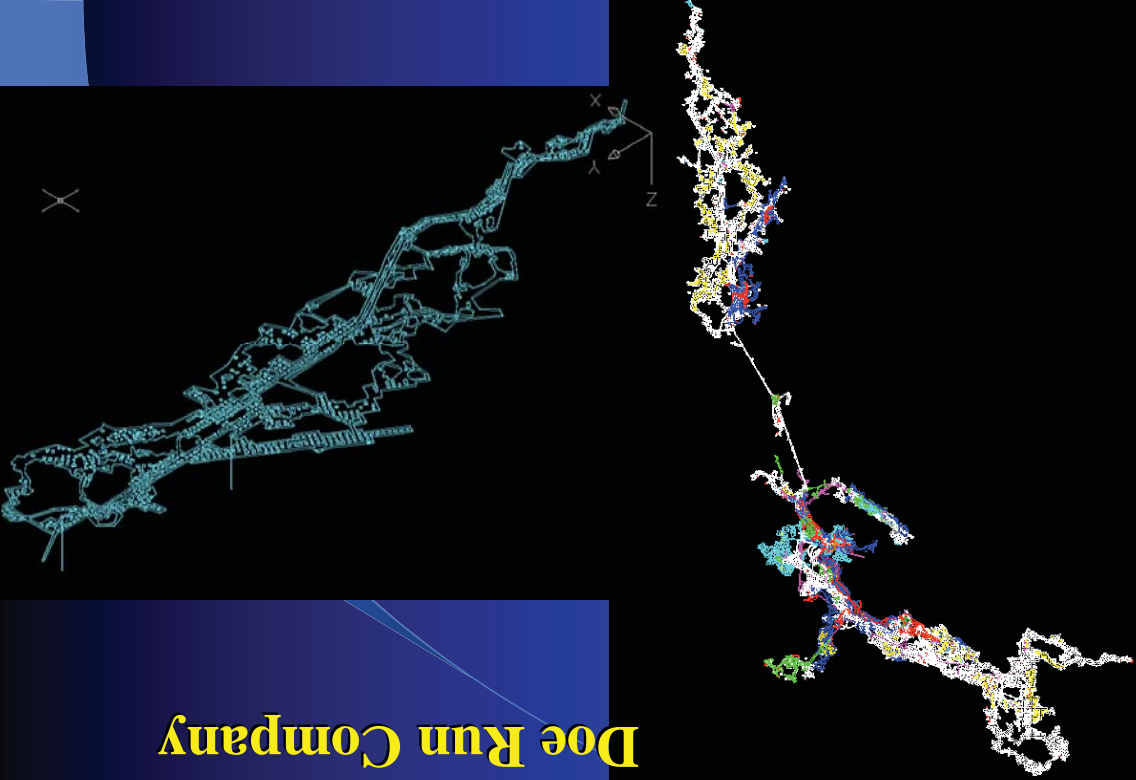
Workshop Date and Location:

November 6, 2007  
Courtard Denver — Airport  
6901 Tower Road  
Denver, CO 80249

## Research Activities at UMR



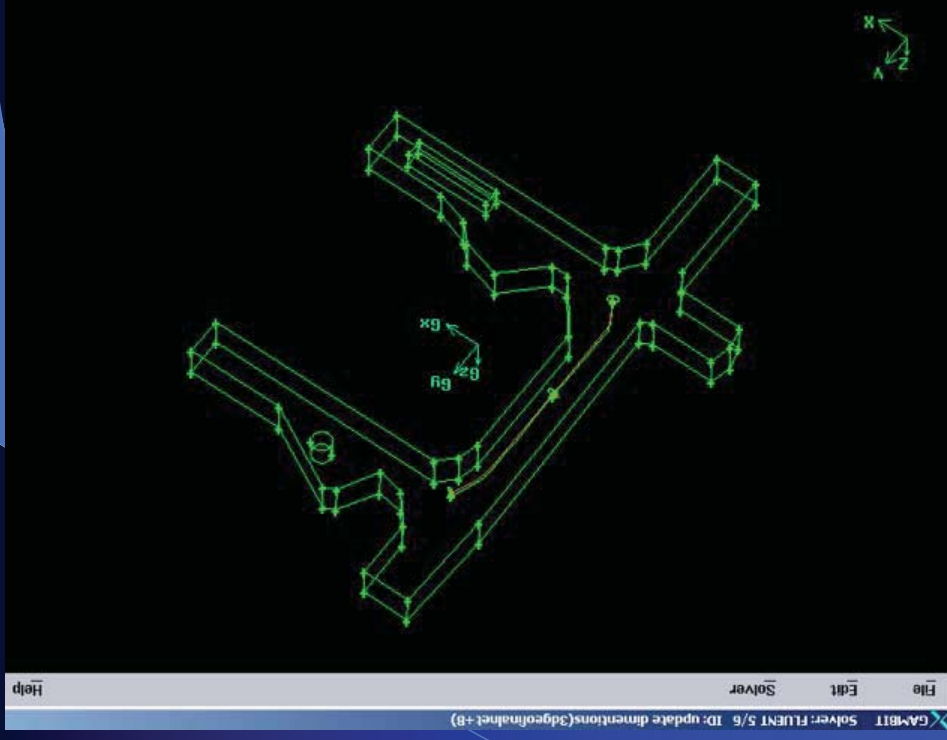
## Sweet Water Mine Doe Run Company



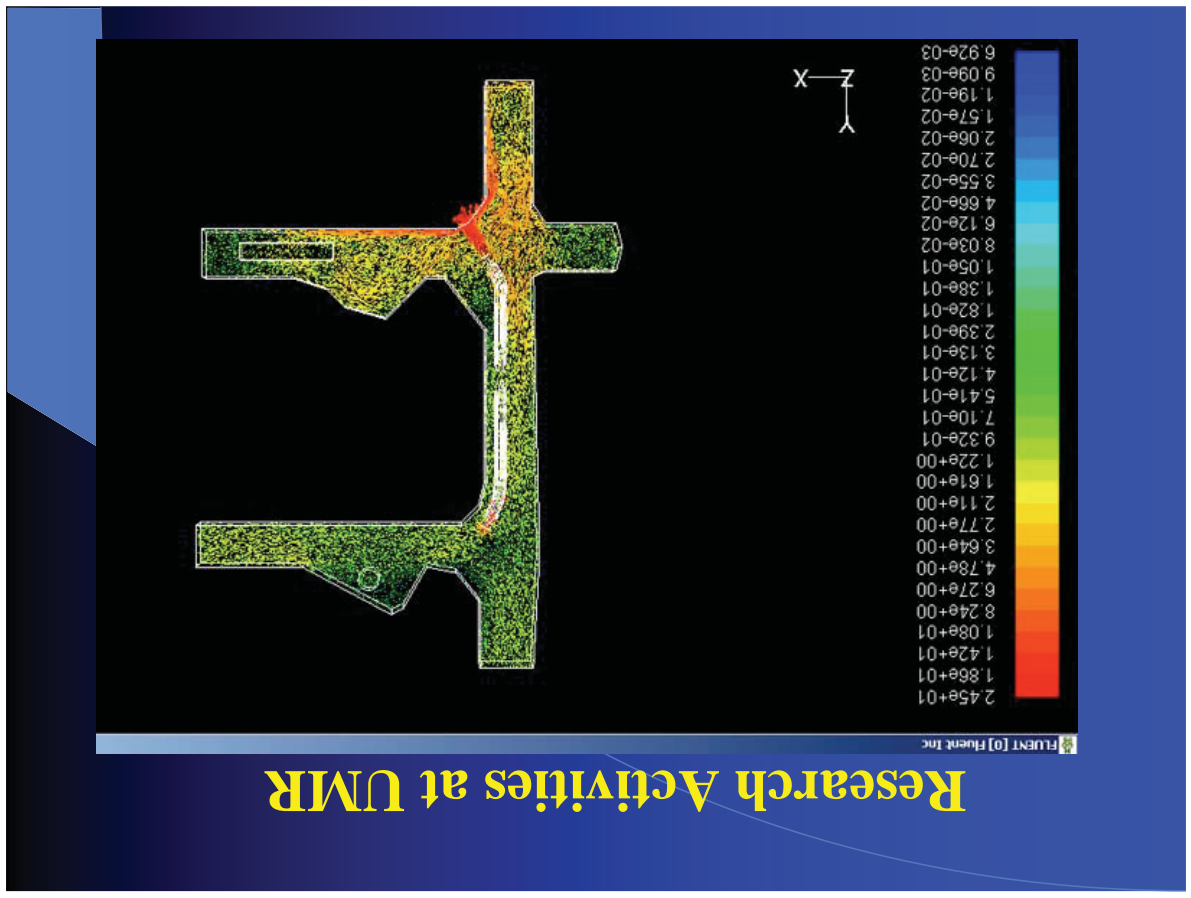
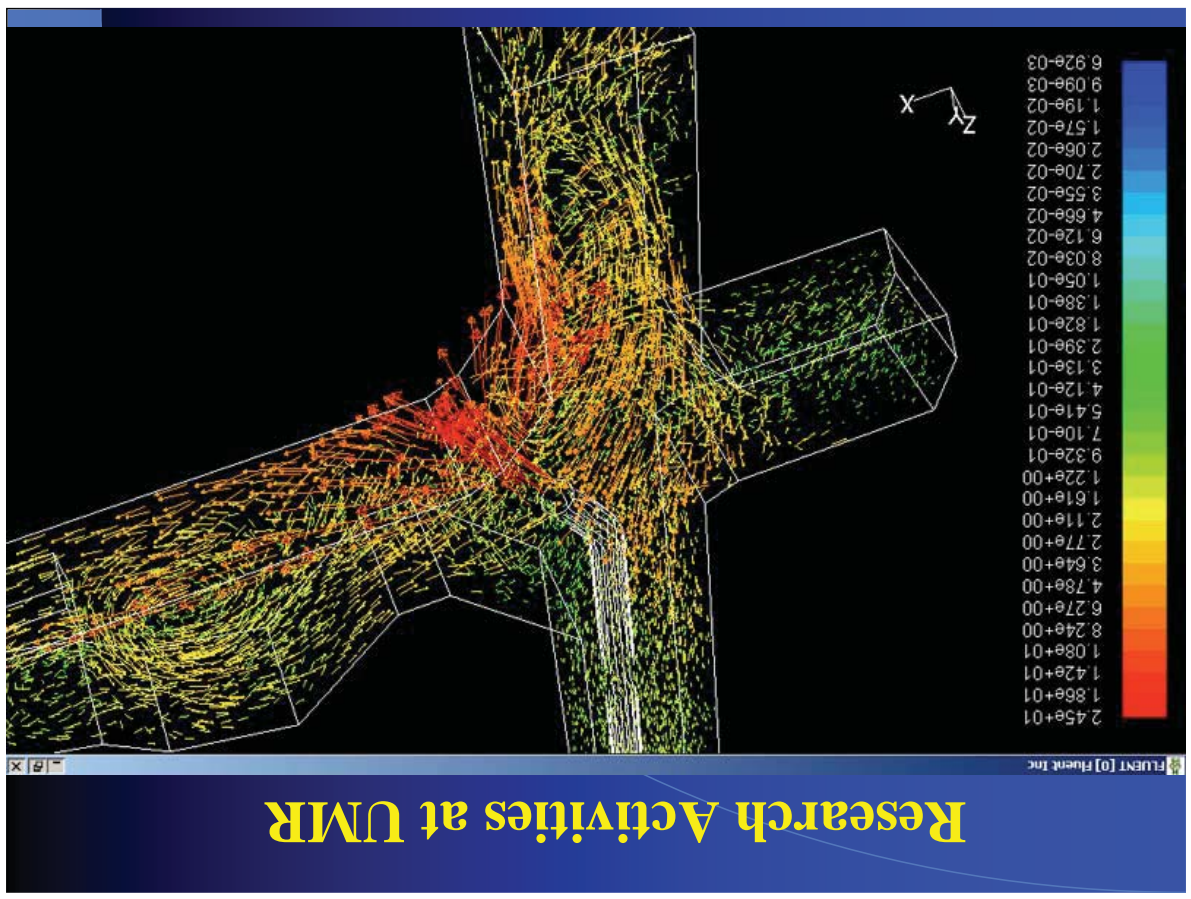
Simulate  
particulate matter  
dissipation patter  
using the *pathline*  
function in *Fluent*



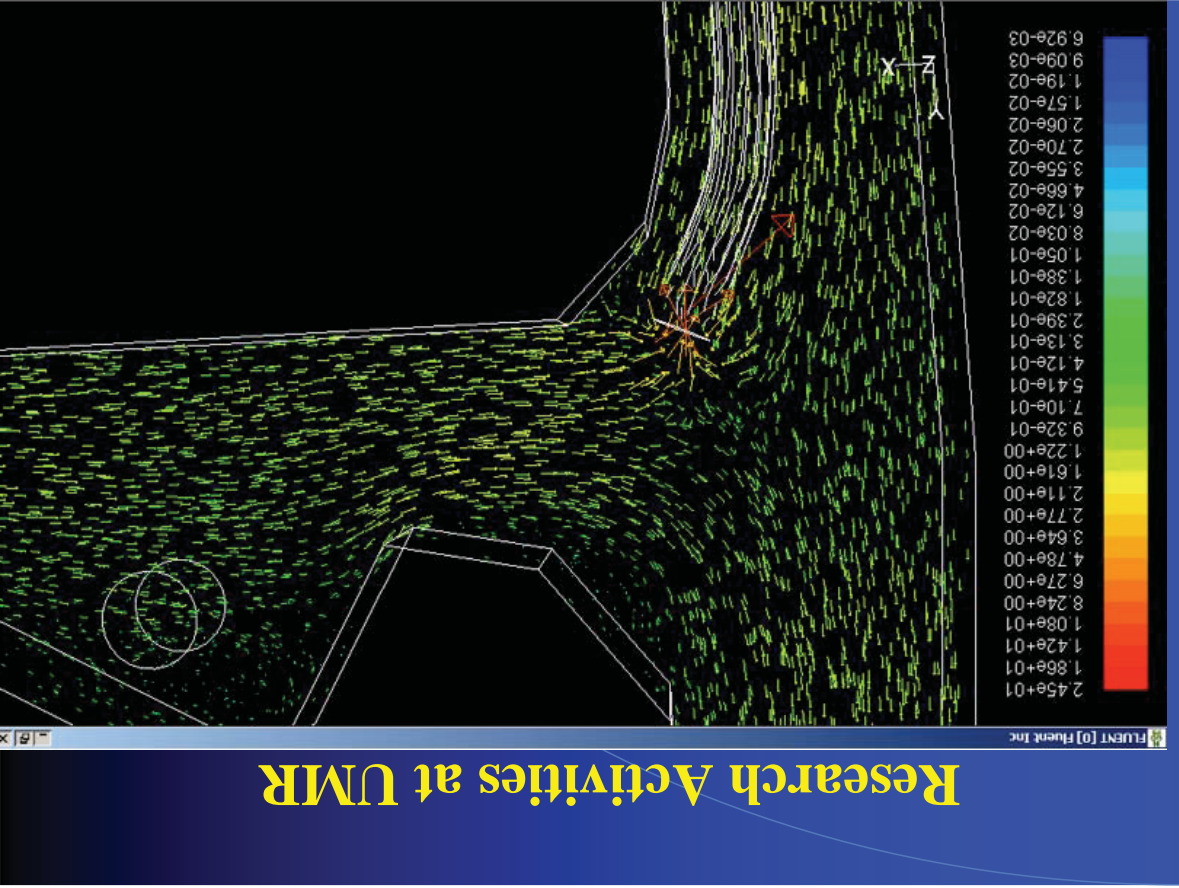
## Research Activities at UMR











**Thanks**

