Sub-Bituminous Coal Handling Safety Specialist

Mr. Randy Rahm  Mr. Bob Taylor

Sub-Bituminous Coal Handling Safety and Fire Protection

CoalTech Consultants, Inc.

www.prbcoaltech.com

Sub-Bituminous Coal Handling Safety and Fire Protection
Training & Assessments
COURSE OVERVIEW AND OBJECTIVES

The Coal Handling Safety and Fire Protection course is designed for those individuals that handle or may otherwise be exposed to Sub-Bituminous Coals. Those who work in coal handling operations and maintenance will benefit from this course to be able to recognize hazards related to this unique coal. Once the hazards are understood, the attendees can take appropriate actions to protect themselves and others from harm while protecting the plant assets. In addition, for those involved in designing a new coal handling system, this course will provide direction to address these hazards correctly the first time and avoid rebuilding the system shortly after operation starts.

Weaved throughout the course are industry best practices and lessons learned from industry events and experiences.

Attendees will be able to:

- Describe characteristics of sub-bituminous coal including its impact on people, equipment, process, and system
- Define elements necessary for a combustible dust explosion or flash fire
- Demonstrate measures to prevent a coal related fire or injury to workers
- Describe measures to effectively control dust
- Recognize and identify hazards from a given situation and select actions
- Understand lessons learned from other’s experiences and relate them to their given operation
- Describe safe handling practices so the plant operates efficiently and business is sustained
- Design a new coal handling system with the best available technologies
- Learn and apply industry best practices
- Develop a plan for continual improvement

...from receiving, conveying, transferring, sizing, storing, reclaiming...to the pulverizers.
TOPICS TO BE COVERED (2 DAYS)

Characteristics of coals
- Where does it come from
- Differences and behavior
- Fuel procurement
- Interaction between coal specifications and purchasing

Emergency Preparedness and Response
- Fire and explosion
- Fire detection and suppression
- Hazards to humans and environment

Dust
- Sources
- Equipment reliability impacts
- Equipment/area hazards and risks
- Controls
- Containment
- Dust Suppression
- Dust Collection
- Explosion characteristics
- Housekeeping

Combustible Dust Management
- Identifying the problem
- Identification and hazard recognition
- Operational controls
- Evaluation and improvements

Equipment and Process Specifics
- Receiving
- Conveying
- Belt Cleaners/V-Plows
- Chutes
- Load zones
- Dust collection wet vs dry
- Transfer points
- Short term storage
- Long term storage
- Coal pile management
- Reclaiming
- Crushing and sizing
- Bunkers/Silos
- Fire detection and suppression
- Pulverizer/Mills
- Burner pipes
- Operation management
- Maintenance practices
Sub-Bituminous Coal Handling Assessments

WHERE EXPERIENCE DRIVES RESULTS

The demands on coal-fired power plants continue to grow. Sub-bituminous coal handling experts can help you improve performance while positively affecting overall plant economics by shedding new light on areas of your operations that demand smart, creative solutions.

SAFE

SURVEY
Comprehensive site coal handling assessment focus on lowering risk and improving efficiency.

APPLY SOLUTIONS
We partner with the site to identify and implement improvements and solutions.

FORMAT
Effective dust, fire and safety management systems, safe work practices, and continual improvements. Assist in evaluation and hazard mitigation.

EMPOWER PLANT PERSONNEL
Increase awareness of plant personnel to recognize and control dust, fires, and safety hazards.

Reducing operational costs
Are your assets performing to their full potential?

Maximizing capital investments
What are your current fuel economies?

Controlling financial risk
Can you risk staying status quo?

Worker Safety

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### SYSTEM AND OPERATIONS EXPERIENCE

An assessment of the coal handling system for combustible dust mitigation works to integrate the current system design into an approach of options that offer choices for balancing risk, reliability and cost, while effectively reducing combustible dust and spillage throughout the coal handling system.

The assessment will include all areas from the receipt of the coal at the plant through storage and reclaim to the silos/bunkers in the generating units. CoalTech will make recommendations on how to implement the best-proven technologies in the industry today. The risks will not be reduced by installing new equipment. Results occur when a combination of the new equipment and management practices are put in place. CoalTech will bring the latest management practices and examples of successes at other utilities. Priorities will be established based on the impact to personnel safety, potential impact to operations, along with required maintenance and housekeeping based on the current condition of the system. The assessment will document hazard identification, causes, and recommendations for mitigation.

### Asset Optimization
- Enhanced operations, maintenance, safety, fire protection, and training
- Identify improvement opportunities
- Plant efficiency improvement audits and plans
- Capital project planning studies and implementation
-Operational effectiveness
- Procedural reviews
- Knowledge and experience transfers

### ASSESSMENT FOCUS AREAS

#### Dust Collection
- Review current technologies and its effectiveness
- Design per NFPA Standards

#### Dust Suppression Review
- Proper location for effective application
- Review of system for effective dust control

#### Chutes
- Overall condition
- Center loading of material
- Proper skirts, seals, and liner clearance
- Proper scrapers and location
- Effectiveness of maintaining material on the belt
- Material build-up in the chute

#### Containment
- Condition of skirts, seals, liners
- Condition of belt cleaners
- Belt walking (misalignment and belt training idlers)
- Belt condition

#### Limited Ignition Source Review
- Magnetic separators or detectors
- Belt misalignment switches
- Visual and audible review of mechanical components (idlers, rollers, bearings, motors, crushers)

#### Housekeeping
- Methods (wash down, vacuum)
- Frequency, schedule
- Effectiveness
- Wash down (effectiveness, manual or automatic with manual clean-up, drainage, sumps)
- Vacuuming (grounding/bonding truck, hose, and manpower)
- Electrical Area Classification
- Overall effectiveness

#### Fire Protection and Safety
- Manual fire fighting
- Fire detection and suppression systems
- Passive fire protection
- Safety systems and practices
Mr. Randy Rahm

Over 40 years in the coal industry and 30 years specifically associated with sub-bituminous coals.

Mr. Rahm founded CoalTech Consultants, Inc. in March of 2008, following nearly two years in the ethanol industry as the COO of Ethanex Energy, Inc. a startup ethanol company.

Formerly Director – Fuel Services, for Westar Energy, Inc., Mr. Rahm was responsible for the coal procurement of over 13 million tons of PRB coals annually and a transportation fleet of over 1,800 coal railcars.

Prior to joining Westar Energy in 1999, Mr. Rahm was the Special Projects Manager for Amax Coal West, Inc. in Gillette, WY. From 1991-1993, he managed the world’s largest commercial sub-bituminous coal dryer located at the Amax Belle Ayr Mine. The Coal Dryer Project conducted extensive research in the areas of reducing the dried PRB coal’s reactive characteristics, dust suppression chemicals for the treatment of the enormous amount of super fine coal dust generated during the drying process, explosion characteristics, spontaneous combustion and coal dust firefighting procedures.

Following the closure of the Coal Drying Project, Mr. Rahm worked with the company’s coal sales group, providing their electric power company customers with comprehensive coal handling risk assessments. This was the beginning of what is now an industry service provided by numerous vendors including CoalTech Consulting, Inc.

Mr. Rahm was employed with McNally Pittsburg, Inc. for 14 years as Senior Project Manager, engineering and constructing coal dryers, coal preparation plants and handling systems throughout the United States and Canada.

Mr. Rahm is currently a contributing editor and has authored many articles for Power and Coal Power magazines. He has given presentations at conferences including Edison Electric Institute, National Coal Transportation Association, American Coal Council, ASME, Electric Power, POWER-GEN, AEGIS Seminar, PRB Coal Users’ Group, PRB Coal Symposium and at numerous electric utilities.

Mr. Rahm is an inventor on U.S. Patent 6,086,647 for a coal dust suppressant.

Mr. Rahm is a past chair of the ASME’s Fuels and Combustion Technology (FACT) Division, and is the founder, a former Chairman, and presently Executive Director of the PRB Coal Users’ Group. The PRB Coal Users’ Group has over 1500 members, of which 823 are from 82 operating companies. On behalf of the PRBCUG, Mr. Rahm is leading the growth and development of the Asian Sub-Bituminous Coal Users’ Group. The fourth annual meeting will be held at the Amari Watergate Hotel in Bangkok, Thailand October 13 - 16, 2014. www.asiansbcusers.com

In 2006, Mr. Rahm was appointed to the National Coal Council by the Secretary of Energy.

In 2008, Mr. Rahm was a party appointed arbitrator in a AAA arbitration in a coal industry related dispute. A decision was rendered by the panel of three arbitrators following the arbitration hearing.

Mr. Rahm has been retained by utilities as an expert witness in several coal related lawsuits and has provided expert reports and

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<td>TNB JANAMANJUNG SDN. BHD., Malaysia</td>
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<td>BNSF Railway</td>
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<td>Hazard Control Technologies</td>
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<td>Fuel Tech</td>
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<td>Roberts &amp; Schaeffer Co.</td>
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<td>SynCoal Solutions</td>
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<td>Patrick Engineering</td>
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<td>GTL Energy</td>
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<td>Various legal firms</td>
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rrahm1@cox.net
Areas of Expertise

- Dust Hazards Analysis (per NFPA 652 Standard)
- Safety & Health Management Systems
- Fire Protection (Manual, Fixed and Passive)
- Emergency Preparedness & Response – evaluate, design, develop and conduct education/training
- Design and deliver training

Publications

- Articles published in POWER and Coal Power on combustible dust and fire protection
- Co-author – EEI’s “Utility Emergency Response Liaisons – A Special Report”
- International Fire Service Training Association (IFSTA) – review committee/author of industrial fire programs incipient fire manual
- Presented at Electric Power/PRB Coal Users’ Group; Asian Sub-bituminous Coal Users’ Group; Philippines Coal Plant User’s Group; International Fire, Safety & Security; EEI Conferences, Indiana Safety Congress, Generation Summit, Plant Management Summit
- Principal member of the NFPA Technical Committees:
  - NFPA 652 Fundaments of Combustible Dust (New), NFPA 654, NFPA 655 and other Combustible Dust
  - NFPA 1081, Professional Qualifications for Industrial Fire Brigade Members
  - NFPA 10, Portable Fire Extinguishers
  - NFPA 850, Electrical Generating Stations
  - National Fire Academy – Public Fire Safety Education curriculum
  - PRB Coal Users’ Group/PowerSafe – e-Learning Combustible Coal Dust Awareness Training

Accomplishments & Awards

- Fuel (coal) assessment and improvement projects
- Corporate fire protection program improvements
- Developed and implemented Environmental, Safety & Health Management Systems (ISO 14001 & OHSAS 18001) within the electric utility industry
- Improved a facility’s safety & health processes to become a leader in the industry
- Developed and implemented facility fire brigade, safety & health, power plant and other education/training programs

Associations

- Past Chairman and Secretary, Board of Directors, PRB Coal Users’ Group
- Executive Committee, Asian SB Coal Users’ Group
- Edison Electric Institute (EEI) – Fire Protection/Loss Control and Safety & Health Committees
- EUCG – Safety & Health Committee
- National Fire Protection Association (NFPA)
- National Safety Council (NSC)

Interactions

- U.S. Chemical Safety Board – Input to dust materials
- OSHA – participant in combustible dust activities

With over 30 years of experience in the electric power industry, Bob has extensive background in coal, combustible dust, fire protection, occupational safety & health, management systems, designing and delivering training, and physical security.

Bob retired from American Electric Power, the largest user of coal for power generation in the United States. He continues to be active world-wide in the safe handling coal.

He serves as Past Chairman and Secretary - Board of Directors of the PRB Coal Users’ Group. He also is a principal member of National Fire Protection Association’s Technical Committees focused on combustible dust, electric generating plants, and industrial fire brigades.

Coal Handling Safety and Fire Protection

dtaylor8880@att.net
Sub-Bituminous Coal Handling Safety and Fire Protection Training Course and/or Assessments

CoalTech Consultants will provide a site-specific coal handling safety training and/or conduct an assessment. Your operators and management will be able to relate to the CoalTech Consultants Sub-Bituminous Coal Handling Safety and Fire Protection Training Course and/or assessment. The assessment and course is about your plant and what needs to be done to fine-tune the management and personnel philosophies to safely and efficiently manage the coal handling and storage processes. CoalTech Consultants is comprised of individuals that are recognized as leading experts in material handling technologies, combustible dust mitigation, coal handling system emergency preparedness and fire prevention. Together we will improve the health and safety of coal handling personnel while protecting your share-holders assets.

Contact:
Randy Rahm
+1-785-249-3981
rrahm1@cox.net

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