

Course Instructors

(Three present at each course.)

Dr. Steven A. Benson Dr. Benson's areas of expertise include the fate and behavior of major, minor, and trace inorganic components in combustion and gasification fuel systems. Specific emphasis has been on fireside ash behavior and control of emissions, specifically mercury.

Mr. Michael J. Holmes Mr. Holmes's principal areas of interest and expertise include emission control and process development and economics for advanced energy systems. He is currently the project manager on two large consortium projects to perform long-term field testing of mercury control technologies at lignite-fired utilities.

Dr. Michael L. Jones Dr. Jones's principal areas of interest and expertise include multidisciplinary science and engineering research focused on a wide range of integrated energy and environmental technologies, including clean and efficient combustion of low-grade fuels, matching of fuel characteristics to system design and operating parameters, development of advanced power systems based on low-grade fuels, fundamentals of low-grade fuel combustion, ash deposition in low-grade fuel combustion systems, and analysis of inorganic materials in low-grade fuels.

Dr. Donald P. McCollor Dr. McCollor's principal areas of interest and expertise include coal combustion kinetics and inorganic transformations, ash deposition processes, and mercury control testing. He has over 20 years of experience in the collection, analysis, and interpretation of data from combustion systems as well as in the development of predictive models to assess combustion and ash deposition behavior.

Mr. John H. Pavlish Mr. Pavlish's areas of interest and expertise include research and consultation on air toxic issues; hazardous air pollutants (HAPs) with emphasis on mercury; the effects of fuel quality and ash on combustion, gasification, and power plant system performance; emission reduction control technologies; and flue gas-processing equipment.

Mr. Jason D. Laumb Mr. Laumb's principal areas of interest and expertise include biomass and fossil fuel conversion for energy production, with an emphasis on ash effects on system performance. He has experience with trace element emissions and control for fossil fuel combustion systems, with a particular emphasis on air pollution issues related to mercury and fine particulate.

Mr. Kevin C. Galbreath Mr. Galbreath's principal areas of interest and expertise include trace element transformations and speciation in fossil fuel conversion flue gases and the thermal metamorphism of coal mineral matter. Specific emphasis has been on trace metal emissions, characterization, and transformations; airborne trace metal transport and fate; ambient air quality; and inhalation health effects.

The Energy & Environmental Research Center (EERC) is a research, development, demonstration, and commercialization facility at the University of North Dakota (UND) recognized internationally for its expertise in cleaner, more efficient energy technologies. The EERC is dedicated to moving promising technologies out of the laboratory and into the marketplace to produce energy cleanly and efficiently, minimizing environmental impacts and conserving precious natural resources. The EERC has over a 50-year history of developing viable, efficient, and clean technologies for energy production and environmental control.

Education, Training, and Outreach

The EERC has sponsored, organized, and collaborated on more than 50 world-class energy and environmental conferences.

The EERC also specializes in designing tailor-made outreach programs, including the following:

- Short courses
- Workshops
- Field experiences

For further information regarding outreach opportunities contact:

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For technical information on the Mercury Control Short Course contact:

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MERCURY CONTROL SHORT COURSE

This short course provides an overview of recent advancements in mercury transformations, speciation, measurement, and control strategies where participants will gain up-to-date knowledge of developments related to measurement and control of mercury emissions from coal-fired boilers based on results obtained in laboratory-, pilot-, and full-scale testing.

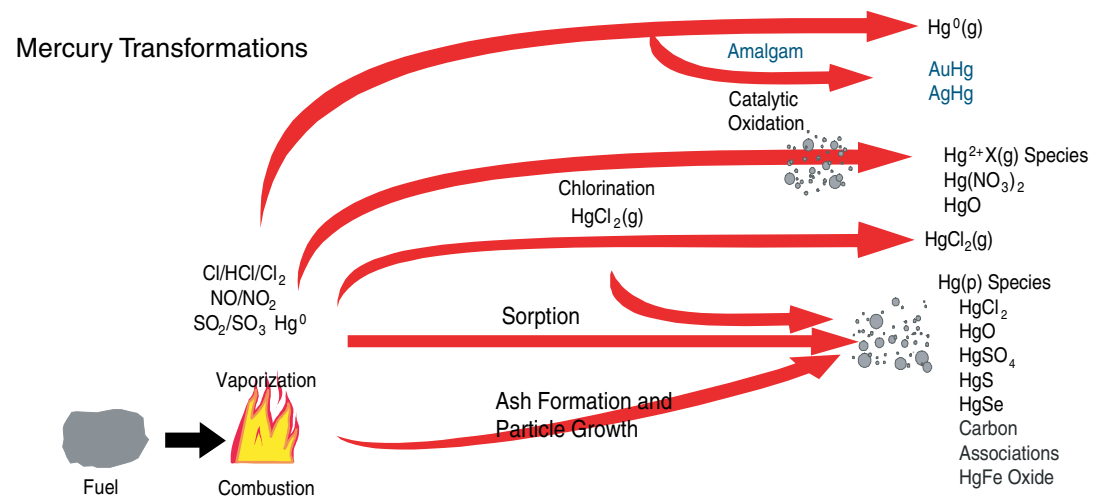


Course Description

The objective of this course is to provide the participant with an appreciation of mercury transformations, measurement, speciation, and mercury control options. The selection of mercury control options is dependent upon the speciation and transformation of mercury in combustion flame and postcombustion flue gas. Coal composition, boiler operating conditions, and postcombustion conditions influence the distribution of mercury in the elemental, oxidized, and particulate forms. Mercury speciation along with the configuration of air pollution control devices dictates mercury control options. Emphasis will be given to providing examples of current experience with mercury emission control and measurement. Examples will be presented on sorbent options, oxidation additives, and sorbent enhancement based on bench-, pilot-, and full-scale testing of mercury control options. In addition, the challenges of mercury measurement will be discussed. The short course will conclude with examples of the use of computer models for predicting mercury speciation and control.

Who Should Attend?

This course is designed to provide utility, equipment vendors, and coal company personnel with an understanding of the options and challenges related to mercury measurement and control.



Course Outline

Mercury Emission Control

1. Introduction

The introduction overviews the course content and introduces the EERC and course presenters to the participants.

2. Mercury Transformations and Speciation

This session will address mercury transformations and speciation in the combustion and environmental control system and its dependence upon coal composition and system conditions.

3. Status of Mercury Measurement Techniques

This session of the course will present a description of the various mercury measurement techniques, their level of precision and accuracy, and costs.

4. Options for Mercury Control – Plants Equipped with Particulate Control Only

The status of current sorbent injection technology will be covered in this portion of the course, including the chemistry of activated carbon and mercury.

5. Options for Mercury Control – Plants Equipped with Scrubbers

Oxidation catalysts and chemical additive testing results will be presented including their potential to increase mercury capture.

6. Modeling of Mercury Transformations and Control

This session will address models that are currently being developed to predict mercury speciation and control and to assist in identifying options for mercury control.

7. Overview of Technologies/Projects under Development for Mercury Control

This session will give an overview of the current technologies in the development stages for mercury emission control.