



TECHNOLOGY COMMERCIALIZATION, EDUCATION, AND PUBLICATION

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Project Description

This ongoing project continues to provide technical information on trace metals produced through the CATM Program to interested parties in research organizations, federal and state agencies, and the energy and environmental industry as well as to encourage and support activities that provide training and educational opportunities for both students and professionals.

Since its inception in 1993, the CATM Program has strived to improve on and provide educational courses and materials that make students and the public more aware of environmental issues and serve as reference documents to the scientific community [1–9]. With respect to education, the goals of the CATM Program are consistent with the U.S. Environmental Protection Agency’s (EPA) goals, which state that “Increased information exchange between scientists, public health officials, businesses, citizens, and all levels of government will foster greater knowledge about the environment and what can be done to protect it” [10]. Additionally, CATM strives to develop and demonstrate products and technologies that aid in pollution prevention and/or control and works with partners to commercialize these technologies in the marketplace.

Goal

Specific goals are as follows:

- Prepare, publish, and present CATM results at conferences and workshops and in peer-reviewed journals and conference proceedings
- Provide educational opportunities for students through CATM research
- Promote technology development and commercialization

Rationale

Because of increasing environmental concerns, training, education, and dissemination of up-to-date information to industry and government agencies (e.g., EPA and the U.S. Department of Energy [DOE]) in a timely manner are critical. Sharing with and transferring the latest research findings to industry, environmental groups, state agencies, and EPA will greatly assist in establishing scientifically based regulatory standards.

Approach

To facilitate the transfer of information to government, research organizations, academia, industry, and the general public, several vehicles of communication are necessary. During the past year, activities included 1) coordination of the CATM annual meeting in conjunction with EPA, program affiliates, and the Research Advisory Council (RAC); 2) coordination and sponsorship of the Air Quality III: Mercury, Trace Elements, and Particulate Matter (AQIII) Conference; 3) distribution of the *CATM Newsletter*; 4) updating and maintaining the CATM Web page; 5) serving on environmental advisory committees; 6) continuing efforts of the Environmental Education Committee (EEC); 7) education through publications; and 8) overall administration of the CATM Program.

Progress

Meetings

The ninth annual CATM RAC meeting was held at the Marriott Crystal Gateway Hotel in Arlington, Virginia, September 10, 2002. The meeting was held in conjunction with the AQIII Conference. The purpose of the meeting was to provide a forum by which industry, government, and the research community could exchange information on CATM results and provide direction for future CATM research, development, and commercialization programs. Approximately 20 people participated, representing government (including EPA and DOE), industry, and other research organizations.

AQIII Conference

Air Quality III, held September 10–12, 2002, was specifically aimed at addressing key issues facing many industrial sources, in particular the utility power sector. In December 2000, EPA determined that it was necessary and appropriate to control mercury emissions from coal- and oil-fired power plants and that regulations would be proposed by December 2003. Within this boundary, many research and development organizations, including the EERC, are striving to develop effective and economical mercury control technologies and predictive mercury speciation models for coal-fired utility boilers.

The intent of AQIII was to once again bring together individuals from government, industry, environmental groups, and the research community to further discuss and resolve critical questions concerning health risks, policy and regulatory actions, transformations and pathways, sampling and measurement of emissions, predictive modeling, and related control technologies, both in advanced research and development as well as field applications, critical at this time in view of the upcoming EPA proposed regulations.

In addition to covering advancements made in the topics addressed at the first two Air Quality Conferences, AQIII also added sessions addressing multipollutant control, mercury management from by-products, and advanced power systems.

Attendance at AQIII numbered 401 from 36 states and 15 countries, with 49% of the attendees representing industry, 23% representing government, 23% from research and academic organizations, and the remaining 5% from media and consulting groups. EPA had 34 participants at the conference, demonstrating the conference's importance in providing timely and cutting-edge information for future regulations. Below are examples of the responses received from the evaluation distributed at the conference:

- “This conference is by far the best I have attended as a professional. It provided important information to be used in performing my job duties. I look forward to attending this conference in the future. Keep up the good work!” (We Energies)
- “Clearly the best conference I attend that balances policy and technical discussions.” (EPA)
- “This conference is really great, an eye-opener to everybody, especially on issues concerning policy, regulation, and health.” (Philippines)

CATM Newsletter

The *CATM Newsletter* was published and distributed to industry and other interested parties. The newsletter is circulated in all 50 U.S. states and to 36 countries internationally. The newsletter is designed to inform interested parties on air toxic issues and CATM activities and to encourage further participation and collaboration among industry and government. Upcoming issues of the newsletter will feature articles on AQIII. The newsletter is also available on the EERC's home page at www.undeerc.org.

CATM Web Page

The CATM Web page continues to serve as a vehicle for easy access to recent developments and results from the CATM Program. General information about CATM is also maintained and includes background, role and activities, accomplishments, and key education and training activities: conferences, short courses, workshops, and academic programs; a calendar of events; and CATM personnel.

Committees

Advisory Committees. CATM researchers and managers continue to serve on several advisory committees to provide expert advice and technical guidance on a number of issues related to air toxics. Below are a few of the committees that CATM researchers serve on:

- Minnesota Pollution Control Agency Mercury Research Advisory Committee
- Binational Strategy Utility Mercury Reduction Committee

Environmental Education Committee. EERC/CATM personnel are encouraged to volunteer their time and talents to promote scientifically sound and relevant environmental education through their participation in EEC activities and other outreach programs. CATM assists in coordinating research efforts with the EEC and provides direction and focus on increasing environmental awareness at the University of North Dakota and in the Grand Forks community.

Education Through Publications

CATM strives to disseminate information in several ways. In the current year, eighteen refereed journal articles have been published or are in preparation. Included is a comprehensive review paper on mercury emission and control for coal-fired power plants from all leading sources. This paper, "Status Review of Mercury Control Options for Coal-Fired Power Plants," has been accepted for publication in a special issue of *Fuel Processing Technology*. CATM has also been involved in the writing of several related project reports. CATM staff members also give presentations at and participate in several conferences and workshops throughout the year. In the past year, CATM has presented eighteen papers at conferences and workshops around the world. In addition to attending workshops and conferences, CATM is also organizing and coordinating the AQIV Conference for September 2003.

Status

Educational and information-sharing activities will continue throughout the year. Involvement in community environmental activities will continue, as well as the programs in place to reach out to and help area schools in their efforts to educate students and teachers.

The newsletters and the CATM Web site have also become a valuable outlet for disseminating information, and both will continue to provide valuable, up-to-date information.

Air Quality IV

Continuing discussion on technology advancement and whether appropriate cost-effective technologies are available to meet suggested emission reductions is necessary at this time, leading to the need for a fourth conference on Air Quality. The EERC, along with EPA through CATM, DOE's National Energy Technology Laboratory, and EPRI, are collaboratively organizing and sponsoring Air Quality IV (AQIV). This conference

will be a follow-up to the first three Air Quality Conferences held in December 1998, September 2000, and September 2002. AQIV will take place September 22–24, 2003, at the Marriott Crystal Gateway, Arlington, Virginia.

AQIV will provide two streams of oral presentations: one focusing on mercury issues and one focusing on trace elements and particulate matter. A poster session will include topics from both streams. The conference will focus on air quality impacts on health and ecosystems, emission prevention and control, measurement methods, and atmospheric reactions and modeling.

The intent of this conference is to provide the opportunity for representatives from industry, environmental groups, the research community, and state and federal government to present and discuss critical issues facing our nation and the world. Conference participants will gain up-to-date information and benefit from discussions on potential health risks, available and developing control technologies, control strategies and research needs, and current and pending regulatory policies.

Potential Users/Technology Transfer

Industry and government agencies (specifically EPA and DOE) will benefit from the results of the project, with information and data that will provide a much better understanding of air toxic issues and the control of air toxic emissions. The general public will benefit through the publication of refereed papers and documents, college courses, workshops, and numerous outreach programs initiated and supported by CATM.

References

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