



ACAA

March 1996

Ash At Work

American Coal Ash Association

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ACAA SUBMITS RECOMMENDATIONS TO U. S. EPA ON FEDERAL PROCUREMENT

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On February 29, 1996, in response to the notice and request for information, Procedures for Submission of Recycled Content

Products Information to EPA [Federal Register, Vol. 60, No. 182, September 20, 1995, pp 48714-

48715], ACAA submitted a recommendation that EPA consider three uses of coal fly ash: structural fills; road base stabilization; and controlled low strength material (CLSM), also known as flowable fill; for designation in the update of the Comprehensive Guideline for

Procurement of Products Containing Recovered Materials (CPG).

ACAA provided information for EPA's use in developing recommendations for recovered materials content levels to be contained in the Recovered Materials Advisory Notices (RMANs) that accompany the CPG updates.

In addition to ACAA's annual report on CCB production and use and the ACAA membership directory, ACAA provided the following documents:

-Report to Congress, Barriers to the Increased Utilization of Coal Combustion/Desulfurization Byproducts by Governmental and Commercial Sectors, U.S. DOE, 1994

-Fly Ash Facts for Highway Engineers, FHWA-SA-94-081, August 1995

-Provisional Standard Guide for Use of Coal Combustion Fly Ash in Structural Fills, PS 23-95, ASTM, 1995

-Flexible Pavement Manual, ACAA, 1991

-Guidelines and Guide Specifications for Using Pozzolanic Stabilized Mixture (Base Course or Subbase) and Fly Ash for In-Place Subgrade Soil Modification, TF-28, AASHTO/AGC/ARTBA, 1990

-Fly Ash and Other Pozzolans for Use with Lime, C 593, ASTM, 1995

-Controlled Low Strength Materials (CLSM), ACI 229R-94, ACI, 1994

-Provisional Standard Test Method for Flow Consistency of Controlled Low Strength Material, PS 28, ASTM, 1995

-Provisional Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Controlled Low Strength Material, PS 29, ASTM, 1995

-Provisional Standard Practice for Sampling Freshly Mixed Controlled Low Strength Material, PS 30, ASTM, 1995

-Provisional Standard Test Method for Ball Drop on Controlled Low Strength Material to Determine Suitability for Load Application, PS 31, ASTM, 1995

-Coal Fly Ash-The Key to Quality Flowable Fill, Video Script (Videos were not permitted), ACAA, 1995

Corner

by: **Sam Tyson**
ACAA Executive Director

Potential Impact of NOx Regulations ACAA Provides Comments to EPA on Marketability of CCBs

A conservative estimate of the negative impact on fly ash markets in 1995 due to NOx reduction strategies shows a curtailment of what would have been real market growth in cement and concrete applications. This trend could result in even more substantial market losses for fly ash following EPA's Proposed Rule to implement the second phase of the NOx reduction provisions in Title IV of the Clean Air Act [Federal Register Vol. 61, No.13, Fri., January 19, 1996, pp. 1442-1480].

ACAA distributed a questionnaire on February 16, 1996 to coal-burning electric utilities throughout the USA concerning the impact of NOx reduction strategies on fly ash for use in cement and concrete. A total of 36 utilities responded to ACAA's questionnaire. About 58% indicated that 1-2 plants had been affected by NOx reduction strategies; 21% had experienced impacts in 2-4 plants; another 18% indicated that 5-7 plants were affected; and approximately 3% had 8 or more plants affected by NOx reduction strategies. With regard to loss of market share, 40% had experienced a decrease in marketable CCBs of more than 100,000 tons; 10% experienced losses ranging from 50,000 to 100,000 tons; 30% had losses of 10,000 to 50,000 tons; and 20% experienced losses of less than 10,000 tons. Among the electric utilities that experienced decreases in marketable CCBs, more than 80% were unable to find alternate markets for as much as 20% of that material, and fewer than 20% were able to find alternate markets for all or most of the CCBs that were no longer marketable for use in cement and concrete applications.

Half of the utility respondents indicated that, as a result of NOx reduction strategies, their companies had lost CCB marketing revenues. Further, as a result of NOx reduction strategies, about half indicated that they had experienced an increase in CCB management and disposal costs. The additional cost of CCB disposal, estimated for the next 10-year period, as a result of NOx reduction strategies, ranged from \$6 million to \$50 million for 40% of the utility respondents.

ACAA's annual survey of CCB production and use showed that in 1994 some 7.42 million tons of fly ash was marketed in cement and concrete applications—an increase of about 628,000 tons, or 9.2%, over 1993. In contrast with this growth scenario, the responses to ACAA's questionnaire revealed that even though alternate markets were found for significant amounts of CCBs impacted by NOx reduction strategies, a net amount of more than 700,000 tons of fly ash that could have been marketed for use in concrete was disposed by coal-burning electric utilities during 1995 (see Tyson's Corner, pg3).

Tyson's Corner

ACAA Provides Comments to EPA on NOx Regulations

(continued from page 2)

Because ACAA did not receive responses from all utilities, the net loss of marketable fly ash may have been far greater than 700,000 tons. Clearly, the immediate impact of current and proposed NOx reduction strategies on the marketability of CCBs is greatest for utilities, marketers and others now involved in the use of CCBs.

The longer-term impact will be experienced by all coal-burning electric utilities through reduced opportunities to enhance revenues, avoid disposal costs and reduce liability by maximizing the beneficial use of CCBs. The potential impact on marketers of CCBs could be devastating in some cases.

ACAA's comments were submitted to EPA on, March 18, 1996, one day prior to the close of the extended comment period [Federal Register, Vol. 61, No. 23, Friday, February 2, 1996, pp. 3893-3894]. ACAA's summary of responses to its NOx questionnaire as well as its proposed comments to EPA were made available to ACAA members and to others in the CCB industry at several stages during their preparation.

ACAA's April 1996 Meetings Set for Albuquerque, April 15 - 18

ACAA's Executive & Standing Committee meetings and CCB Management & Use Workshop will be held during April 15-18, 1996 at the Amberley Suites Hotel in Albuquerque, New Mexico. The several meetings taking place are as follows:

Monday, April 15

- 9:00 a.m. - 12:00 noon, Task Forces
- 1:00 p.m. - 3:00 p.m., Administrative Committee
- 3:00 p.m. - 4:00 p.m., Strategic Planning/Steering Committee
- 4:00 p.m. - 5:00 p.m., Educational Foundation

Tuesday, April 16

- 8:30 a.m. - 10:30 a.m., Government Relations Committee
- 10:30 a.m. - 12:30 p.m., Technical Committee
- 12:30 p.m. - 2:00 p.m., Lunch (provided by ACAA)
- 2:00 p.m. - 4:00 p.m., Communications & Marketing Committee
- 4:00 p.m. - 5:30 p.m., Executive Committee
- 5:30 p.m. - 7:00 p.m., Hospitality Reception

Wednesday, April 17

- 9:00 a.m. - 5:00 p.m., CCB Management & Use Workshop—
"Innovations in Transportation—Paving the Way with CCBs"

The registration fees for ACAA members is included in their membership dues. The fee for non-members is \$195.00. More information about meeting times, registration and agendas may be obtained from ACAA.

The Amberley Suites Hotel is located at 7620 Pan American, N.E., Albuquerque, New Mexico 87109. The hotel room rates for ACAA's meeting are \$79.00+tax/single or double. Call as soon as possible for hotel reservations—contact the Amberley suites at 800-333-9806. The hotel is located 15 minutes from Albuquerque International Airport with complimentary hotel shuttle. Weather at this time of year will be cool in the evenings and early mornings, with afternoon temperatures between 60 and 70 degrees F.

Western Ash Group Meeting to Follow ACAA

Thursday, April 18, following ACAA's committee meetings and workshop, the Western Region Coal Ash Group will hold a meeting for members from 8:00 a.m. - 2:00 p.m. The meeting location will be the Amberley Suites Hotel in Albuquerque, New Mexico.

ACAA Names Topics for Workshop

The topics for the next ACAA Workshop on Management and Use of Coal Combustion Byproducts (CCBs) to be held Wednesday, April 17, 1996 in Albuquerque, NM are listed below. The workshop title is **Innovations in Transportation: Paving the Way with CCBs.**

Specifying Fly Ash Concrete in Infrastructure Projects

Fly Ash Base Stabilization

Cold In-place Asphalt Recycling

Manufacture and Use of Fly Ash Aggregate

Use of Fly Ash in Whitetopping

Recycled Concrete in Controlled Low Strength Material

Controlling Alkali-Silica Reactivity with Pozzolans (presentation to be given at the Western Region Ash Group meeting on Thursday, April 18, 1996)

ACAA Officers and Committee Chairs Accept Responsibilities

Andy Stewart of Cooperative Power, Eden Prairie, MN, is ACAA's Chairman for the two-year period beginning January 1996. Andy continues in this position from the preceding term and will serve as chair of the Steering/Strategic Planning Committee. Ted Frady of South Carolina Electric & Gas, Columbia, SC, will serve a two-year term as elected Vice Chairman of ACAA and, by virtue of that elected position, as chair of the Administrative Committee. Joel Pattishall of Pennsylvania Power & Light, Allentown, PA, will serve as chair of the Membership Subcommittee of the Administrative Committee.

At ACAA's Annual Meeting, Educational Workshop and Committee Meetings during January 1996 in West Palm Beach, Florida, ACAA's Chairman Andy Stewart requested that standing committee positions be maintained as follows: James Lingle of Wisconsin Electric Power Company, Milwaukee, WI, Chair of ACAA's Government Relations Committee; Larry Harper of Duke Power Company, Charlotte, NC, Chair of ACAA's Communications & Marketing Committee; and Tex Leber of Nebraska Ash Company, Lincoln, NE, Chair of ACAA's Technical Committee. All three agreed to serve in these important positions for another year to provide continuity for the numerous activities that are currently under way.

Also at ACAA's January 1996 meetings, Don Callaway of Lower Colorado River Authority in Austin, TX, was elected Secretary of ACAA, filling in the position vacated by Chon Martinez of Houston Lighting and Power. Mike Schroeder of Cinergy, Cincinnati, OH, is ACAA's elected Treasurer for the two-year period, January 1996 - January 1998.

All registration fees for the April ACAA meeting in Albuquerque, New Mexico are included in membership dues. The fee for non-members is \$195.00.

The Amberley Suites Hotel has been chosen as the site for the meetings and workshop. For more information about the Amberley Suites, please contact the hotel directly.

ACAA Meeting Registration Information

Amberley Suites Hotel
7620 Pan American, N.E.,
Albuquerque, NM 87109
Phone: 505-823-1300

The hotel room rates are \$79.00 + tax/single or double and the hotel cutoff date is March 22, 1996. For hotel reservations, contact the Amberley suites at 800-333-9806. The hotel is located minutes from Albuquerque International Airport with complimentary hotel shuttle.

Weather at this time of year will be cool in the evenings and early mornings, with afternoon temperatures in the upper 60's. For more information about meeting registration, contact ACAA at 703-317-2400 and speak to Lisa Harrington, Manager of Finance & Administration. For more information on the meeting, see page 3.

American Coal Ash Association Calendar of Events; March - May 1996

March 1996

Mar 5-6 (S1)

Second Conference on Unburned Carbonaceous Material on Utility Fly Ash,
Pittsburgh Energy Technology Center/DOE
Holiday Inn South, Pittsburgh, PA

Mar 6-9 (S2)

Asphalt Recycling and Reclaiming Association, 20th Annual Meeting
Saddlebrook Resort, Tampa, FL

Mar 10-12 (M3)

NOx Control IX – Technical Conference,
Council of Industrial Boiler Owners (CIBO)
Sheraton Hartford Hotel, Hartford, CT

Mar 14-19 (S1)

ACI Convention, American Concrete Institute
Hyatt Regency and Denver Marriott, Denver, CO

Mar 14 (S2)

Denver Coal Club
Denver Athletic Club, Denver, CO

Mar 18 (M2, S1)

Council of Industrial Boiler Owners (CIBO)
Fossil Fuel Ash Reclassification Project
Washington, DC

Mar 18-20 (M3)

Sustainable Building Technology Workshop
U.S. EPA, EPRI, and U.S. Green Building Council
Public Technology, Inc.
George Washington University, Washington, DC

Mar 24-28 (M3,S2)

American Chemical Society Meeting
Division of Fuel Chemistry
Hilton and Convention Center, New Orleans, LA

Mar 28 (M1)

Seminar - ACAA as a Resource for CCB Management and Use Programs
GPU Genco, Johnstown, PA

April 1996

Apr 1-3 (M3)

15th Geotechnical Seminar
Geotechnology in Infrastructure Improvement
Hershey Lodge & Convention Center, Hershey, PA

Apr 2 (M2, S3)

TechExpo '96—Duke Power Company
Charlotte Convention Center, Charlotte, NC

Apr 4 (M1)

ACAA Task Force on Liability Issues
Alexandria, VA

Apr 9-11 (S2,S3)

58th Annual American Power Conference
Chicago Marriott Downtown, Chicago, IL

Apr 15-17 (M1)

ACAA Executive Committee Meeting, Standing Committee Meetings and Workshop
American Coal Ash Association
Amberley Suites Hotel, Albuquerque, NM

Apr 18 (M2, S1)

Western Region Coal Ash Group, Membership Meeting
Amberley Suites Hotel, Albuquerque, NM

Apr 23 (M1)

Seminar - ACAA as a Resource for CCB Management and Use Programs
Houston Lighting & Power, Houston, TX

Apr 24-26 (M2, S1)

American Society for Testing and Materials (ASTM)
E50 Committee Meeting
Omni Austin Hotel, Austin, TX

May 1996

May 1 (S1)

Environmental Council of Concrete Organizations (ECCO)
Board of Directors Meeting
PCA Headquarters, Skokie, IL

May 18 (M2, S3)

"Earth Day" Exhibits
Chinquapin Park, Alexandria, VA

May 29-31 (S1)

Chief Executive Officers of Concrete Related Assns., National Codes and Standards Council of the Concrete and Masonry Industries, General and Board Meetings
Airport Marriott Hotel, Detroit, MI

Footnotes

M1 -Meeting sponsored by ACAA

M2 -Meeting attended by ACAA members

M3 -General meeting information

S1 -Staff participation in committee/conference

S2 -Staff presentation/paper

S3 -Staff participation in exhibition

ACAA Adds New Members

In November 1995, ACAA initiated a new membership drive for the period November 1995 through March 1996. This activity has added eight (8) new members since January 1996. ACAA welcomes its newest members as follows:

Public Service Company of Colorado (Denver, CO)
Class U/Voting

Mineral Resource Technologies
(Atlanta, GA) - Class M/Voting

City Water, Light & Power
(Springfield, IL) - Class U/Voting

Virginia Power (Glen Allen, VA)
Class U/Voting

New Brunswick Power Corporation (Canada)
Class IN/Non-Voting

Babcock and Wilcox - R&D Division (Alliance, OH)
Class O/Non-Voting

ESSROC Corp. (Nazareth, PA)
Class O/Non-Voting

Foster Wheeler Power Systems, Inc. (Warrenton, VA)
Class N/Non-Voting

ACAA's total membership now stands at 98, and a new membership directory will be published in April 1996. New and current members will be contacted by ACAA to review and update information in the current directory by Ms. Earline Marshall, ACAA's Executive Assistant.

Regional Meetings of CCB Groups

Ohio Chapter of ACAA

Last Meeting: January, 26, in Columbus, OH

Next meeting: March 22 in Columbus, OH

For more information, contact:

Bob Gerbus, Trans-Ash 513-733-4770

Texas Coal Ash Utilization Group

Last Meeting: February 1, in Houston, TX

Next meeting: April 30th, in Austin, TX

For more information, contact:

James Merkel, Monex Resources 210-349-4069

Western Region Coal Ash Group

Last Meeting: January 20, Las Vegas, Nevada

Next Meeting: April 18, in Albuquerque, NM

For more information, contact:

Andy Stewart, Cooperative Power 612-949-1526

Educational Program at West Virginia University Set for June 10 - 13, 1996

ACAA and the National Research Center for Coal and Energy are sponsoring a Coal Combustion Byproduct (CCB) Managers Program during June 10-13, 1996 at West Virginia University in Morgantown.

This program is designed to broaden the technical knowledge of CCB managers and others; give descriptions of CCB properties, applications and markets; address various aspects of CCB management; and identify opportunities for the use of CCBs. The program will feature more than twenty speakers who will present information on a wide range of topics.

Registration is \$895 for ACAA members; \$1,195 for non-members. Register today! Twenty-six (26) of the 40 available spaces have been filled. For more information about the program, hotel, location or registration contact Lisa Harrington, Manager of Finance and Administration.

All Registrants will be entitled to a \$100 discount on their registrations for ACAA's Twelfth International Symposium on Management & Use of CCBs, which will be held during January 25-30, 1997 in Orlando Florida.

**CANMET/ACI
THREE-DAY INTENSIVE
COURSE ON
FLY ASH, SLAG, SILICA FUME,
OTHER POZZOLANIC
MATERIALS AND
SUPERPLASTICIZERS
IN CONCRETE**

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Natural Resources Canada
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IN CONSTRUCTION
Natural Research Council
Ottawa, Ontario, Canada

Course Director
Dr. P.K. Mehta
Professor Emeritus
University of California
at Berkeley
Berkeley, CA

April 24-26, 1996
CHATEAU LAURIER HOTEL
Ottawa, Ontario, Canada

For further information contact:
H.S. Wilson
Fax: 613-992-9389

Fly Ash in Concrete-Revised Edition Published by CANMET

Since the publication of the first edition of Fly Ash in Concrete by the Canada Centre for Mineral and Energy Technology (CANMET) in 1986, there have been many new developments in the understanding and use of fly ash in concrete. The second

edition of the book, Fly Ash in Concrete-Revised Edition, is now available from CANMET.

The second edition contains updated information and discusses in depth the development of concretes incorporating high volumes of fly ash. It includes chapters on properties and hydration reactions, effects of fly ash on concrete quality, specialized applications for fly ash concrete, standards and specifications for use of fly ash in concrete and recommendations for further research. The second edition also includes a list of 364 references for more information. The cost for this valuable technical resource is \$25.00 CAN. It is now available from:

**CANMET/NRCan
555 Booth Street
Ottawa, Ontario, K1A 0G1
Canada**

For telephone orders, call 613-992-6793 or fax 613-952-2587.

Asphalt Recycling and Reclaiming - Opportunity for Use of CCBs

ACAA's Executive Director, Sam Tyson, addressed members of the Asphalt Recycling and Reclaiming Association (ARRA) recently in the Tampa area at ARRA's 20th annual meeting. ACAA's presentation provided an overview of current uses of CCBs, some 250,000 tons of which is in asphalt filler applications with another 1.7 million tons being used in base stabilization that can be related to flexible pavement construction. Tyson challenged ARRA members to identify additional opportunities to use CCBs in their industry, and he

invited them to contact ACAA with suggested activities that would advance such opportunities. Most ARRA members are contractors, and several have contacted ACAA for more information including ACAA's annual report on CCB production and use as well as ACAA's flexible pavement manual. Also, an ARRA member from Kansas has agreed to speak at ACAA's April 1996 workshop in Albuquerque.

Showcase Home Features Fly Ash

The February 1996 issue of Design/Build Business magazine has an article about an Environmental Showcase Home in Arizona that features concrete utilizing coal fly ash. The project, sponsored by the Arizona Public Service Company was designed to be environmentally efficient, in part by utilizing recycled materials that have minimal impact on the environment.

Project manager J. Brent Gifford said "We're replacing up to 25 percent of the cement in the concrete with this byproduct. By using fly ash, we've reduced the energy requirements of our home up front and reduced pollution, saved landfill space and reduced disposal costs". The purpose of the model home was to increase public awareness of the wide range of recycled products available to the construction industry. Each of the materials used was tested for any toxic components, the ability to be recycled, and the amount of waste produced during installation.

Executive Committee Votes on Culm/Gob Fuels and International Affiliate Membership

During February 1996 ACAA's Executive Committee voted to include an additional type of coal-based fuel, culm and gob, for the purpose of computing membership dues. The committee also voted to create a new membership class, International Affiliate.

The word "culm" comes from the Pennsylvania region and is used to describe coal mining and processing wastes. Recently, through the development of circulating fluidized bed boilers in electric generation, culm has become a viable fuel source. In bituminous regions the processing wastes are referred to as "gob". Like culm, gob is waste material that is non-uniform in size, heating value and ash content. Both culm and gob are burned in fluidized bed combustion (FBC) boilers.

Currently, ACAA's dues structure for producers of CCBs is based on rates for tonnages of anthracite, bituminous, sub-bituminous, and lignite coal types. A similar dues structure has been developed for the new culm/gob type of fuel.

The International Affiliate membership, Class IA, would have a flat rate of \$5,000.00 per year for dues for producers of CCBs located outside North America. Current and potential members from both Canada and Mexico already are covered under ACAA's International

membership, Class IN, if they are CCB producers. They would not be affected by the new membership class.

Workshop on CCBs in Concrete Held at the University of Wisconsin

The University of Wisconsin, Milwaukee, Center for By-Products Utilization conducted a workshop on the Use of Fly Ash and Other CCBs in Concrete and Concrete Products in Green Bay, WI on February 22, 1996. The more than 70 attendees included many ACAA members as well as contractors, engineers and regulators.

ACAA's Director of Technical Services, Tom Blackstock, presented information on the production and use of CCBs in the USA. The luncheon speaker was Terrence Mulcahy, Deputy Secretary of the Wisconsin Department of Transportation (DOT), who spoke on the use of recycled materials by Wisconsin DOT. Other topics included lightweight aggregate production, controlled low strength material (CLSM) and properties of fly ash concrete. The presentations were followed by a panel discussion.

For more information on the workshop, contact Dr. Tarun Naik at 414-229-4105.

ACAA Exhibits at Annual Meeting of County Engineers

ACAA's Communications Coordinator Gregg Deinhart and Director of Technical Services Tom Blackstock represented ACAA at the 1996 National Association of County Engineers (NACE) Annual Meeting and Management & Technical Conference held at the Westin Hotel in Seattle, WA, February 4-5, 1996. The show, attended by some 350 engineers and administrators representing county governments throughout the USA, provided a great opportunity to bring technical and environmental information about CCB applications to the specifiers and users. Many of the attendees were interested in CCB applications and expressed appreciation for ACAA's continuing support of NACE. The next NACE annual meeting and exhibit will be held during March 23-27, 1997 at the Sheraton Civic Center in Birmingham, AL.

If you have news or information you want printed in Ash At Work contact Communications Coordinator, Gregg Deinhart at:

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Conference Proceedings on Unburned Carbonaceous Material Available from DOE

Two recent technical conferences help to demonstrate that while some measures can help to mitigate the adverse impacts on marketability of CCBs following compliance with NOx regulations, unburned carbon has become an impediment both to the efficient and environmentally sound operation of coal combustion processes that reduce NOx emissions by combustion modification, and to the use of CCBs resulting from such combustion. The proceedings from the most recent of these two conferences, **Second Conference on Unburned Carbonaceous Material on Utility Fly Ash** [DOE, Pittsburgh Energy Technology Center, March 1996] contains material presented by eighteen speakers as well as a summary of the seventeen presentations from the first conference held in 1995. ACAA's Executive Director, Sam Tyson, attended the 1996 conference and made a presentation at the 1995 conference.

One of the few factors that has acted to slow positive marketing trends has been the increasing pressures for utilities to reduce nitrogen oxides (NOx) emissions and the subsequent selection of NOx reduction strategies. EPA's current and proposed NOx regulations pose at least two concerns regarding the marketability of CCBs. Higher and more variable levels of unburned carbon could limit fly ash use in displacing portland cement in concrete applications.

Also, because ammonia frequently is injected to enhance electrostatic precipitator performance, especially in conjunction with low-NOx burner installations, residual ammonia concentrations in fly ash could affect sales. The quantity of fly ash that could be affected would be substantial. (see DOE Proceedings on pg. 10)

Report on DOE Electric Utility Climate Challenge Program

In the past couple of years, the benefit of fly ash use with respect to the global climate has become more broadly recognized, giving added importance to the beneficial use of CCBs. Fly ash used to displace portland cement in concrete applications results in a substantial reduction in CO2 emissions. This and further opportunities for the use of CCBs to benefit the environment by reducing greenhouse gas (GHG) emissions are described in papers prepared by ACAA and others and presented at educational meetings organized by ACAA during 1995. These papers are as follows:

Climate Change and New Opportunities for Coal Combustion Byproducts [11th International Symposium on Management and Use of CCBs, ACAA, Orlando, January 1995]; and

Further Opportunities for Coal Combustion Byproducts to Reduce Greenhouse Gas Emissions [CCB Management and Use Workshop, Memphis, April 1995].

This Administration's efforts under the Climate Change Action Plan, and the electric utility's proactive efforts in this regard, have

encouraged the use of fly ash as a means to reduce CO2 emissions. Under the Climate Change Action Plan, the Climate Challenge Program is a joint, voluntary effort of the DOE and the electric utility industry to reduce, avoid, or sequester GHG emissions.

Electric utilities participating in the Climate Challenge Program have signed "Participation Accords" with DOE, describing the specific commitments that the utility has undertaken or will undertake to reduce GHG emissions. To date, over 110 of these Participation Accords have been negotiated and signed, pledging nearly 200 million tons of CO2 reductions from a wide range of nuclear, fossil, renewable, demand-side, and off-system activities.

One of the most frequently pledged activities is the increased use of CCBs, particularly fly ash, to displace portland cement in cement and concrete applications. Nearly 40 of the Participation Accords so far signed have described the utility's commitment to further efforts in this area. These commitments, if successfully implemented, would increase the use of fly ash by roughly two to three million tons by the year 2000, a substantial increase from current levels. The corresponding incremental reduction in carbon dioxide emissions is nearly two million tons CO2 in the year 2000.

The potential increase in fly ash use associated with the Participation Accords was summarized for ACAA in a report, **Increased Fly Ash Use Under the Climate Challenge Program: A Summary of Participation Accords Between the Electric Utilities and the U.S. Department of Energy** [Twenty-First Strategies, March 1996]. The report also contains, in its appendices, a copy of each of the two papers cited above. A copy of the full report has been sent to each ACAA member and to the U.S. EPA (see Tyson's Corner on page 2-3).

DOE Proceedings

(continued from pg. 9)

The market that has been and will be most significantly impacted by lower NO_x limits is the pozzolan market for the concrete industry. Fly ash has been used to displace cement in concrete both for technical and economic reasons. The installation of low-NO_x burners to meet established NO_x emission limits has caused an increase in the loss-on-ignition (LOI) value, a measure of the carbon in the fly ash.

The most frequently cited specification for use of fly ash in concrete, ASTM C-618, states that fly ash must have a LOI of six percent or less to be useable as a mineral admixture for concrete. The reason for this specification is that carbon adsorbs chemical additives used to entrain air into concrete for freeze-thaw durability. This situation is further complicated because actual market conditions regionally may require fly ash with a LOI of three percent or less as indicated by specifications of several state departments of transportation.

In addition to the increase in LOI, the variability in the LOI caused by the low NO_x burners has also become erratic with "swings" of one percent or greater. Maintaining fly ash with a constant LOI of four percent is better than daily swings in LOI from two to three percent. This variability also impedes efforts to properly entrain air in concrete. Since the majority of concrete producers have only one silo designated for fly ash, they cannot segregate fly ash based on its LOI. If a concrete producer has a silo containing two fly ashes with erratic LOI values, quality control becomes an issue. This erratic behavior and doubling of LOI has forced many customers to abandon their use of fly ash. The return of these customers to using fly ash is questionable.

Electric utilities and marketers have also reported concerns about fly ash marketability due to residual ammonia concentrations. Should the concentrations of ammonia in fly ash rise too high, some fly ash sales could be lost. The two major reasons for injecting ammonia into the flue gas downstream of the boiler are: (1) to condition flue gas for improved operation of electrostatic precipitators (ESPs); and (2) to reduce NO_x. The great majority of fly ash treated with ammonia in North America is generated because of flue gas conditioning for improved ESP operation. The use of ammonia injection for NO_x reduction is a fairly recent development.

One of the most frequently pledged activities is the increased use of CCBs, particularly fly ash, to displace portland cement in cement and concrete applications. Nearly 40 of the Participation Accords so far signed have described the utility's commitment to further efforts in this area. These commitments, if successfully implemented, would increase the use of fly ash by roughly two to three million tons by the year 2000, a substantial increase from current levels. The corresponding incremental reduction in carbon dioxide emissions is nearly two million tons CO₂ in the year 2000.

ACAA Workshop Proceedings and Committee Meetings

ACAA hosted its Workshop and Committee Meetings January 15-18, 1996 at the Sheraton West Palm Beach, FL. The workshop was held on January 18, 1996, and featured twelve speakers addressing topics including:

CCB marketing and management strategies due to clean air act compliance;

Options available to avoid/minimize effects on fly ash quality;

The role of alternative fuel sources;

The status of DOE's voluntary accords under the climate challenge program;

A twenty-five year perspective on CCB utilization;

Guidance for compliance with antitrust laws in association activities;

Setting goals for CCB management and use programs;

R&D opportunities and challenges for CCB uses;

Opportunities and challenges in other associations in a changing electric utility environment;

Added value for CCB management and use programs derived from ACAA membership;

Using ACAA's strategic plan to gain recognition and achieve a sustainable CCB management and use program; and

ACAA's role in the development of full-consensus standards for the use of CCBs.

A proceedings volume of the material presented at the workshop is now available from ACAA. The publication bears the title of the ACAA workshop, Management and Use of Coal Combustion Byproducts (CCBs) – Marketing Coal Combustion Byproducts (CCBs) in an Increasingly Competitive Environment.

Meetings of the various standing committees including Communications & Marketing, Technical and Government Relations, were attended by ACAA members as well as guests. The attendance at the January 1996 meetings included some 85 individuals registered throughout the week.

Participation in ACAA's standing committee meetings is always rewarding both to ACAA and the participants as these committees provide a central focus for the basic programs and activities within ACAA's annual business plan. Meetings of various task forces also were held to address specific topics.