



**ASSOCIATION OF CANADIAN INDUSTRIES RECYCLING COAL ASH  
ASSOCIATION CANADIENNE DU RECYCLAGE DES CENDRES DU CHARBON**

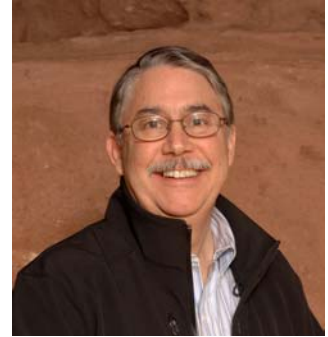
## **2010 ANNUAL REPORT**

**DEDICATED TO INCREASING SUSTAINABLE USE  
OF COAL ASH IN CANADA**

## MESSAGE FROM THE PRESIDENT

2010 was a year of high demands on CIRCA and the Fly Ash industry as a whole. Considering CIRCA is a volunteer based organization with limited resources, 2010 was another successful year for this hard working Association. While it seemed the majority of time was spent addressing the US EPA's proposals for new regulations for disposal of CCPs, there were a number of other issues developing in the background.

Accomplishments for this year have to start out by recognizing the progress made through responding to US EPA's proposals for new CCPs' disposal regulations. EPA's politically driven attempt to reclassify Fly Ash as a hazardous material has the potential to jeopardize the CCP industry. Through the efforts of CIRCA, ACAA and hundreds of other interested parties, EPA activities have been moderated to address issues in a more technically, environmentally and economically responsible manner.



*CIRCA President  
T. Brad Pope, P.Eng.  
Lehigh Cement*

On a more positive note, CIRCA has released four new publications this year; two promotional articles on the role that Fly Ash has taken in the construction of Vancouver Olympic structures and two technical data sheets. Details of the aforementioned include:

- ACI Concrete International monthly journal entitled "Green concrete goes for the Gold at the 2010 Winter Olympics"
- ACAA's bi-annual "Ash at Work" publication to their members "Vancouver Olympics go for Green"
- Data sheet on "Bottom Ash"
- Data sheet on the "Potential impact of PAC (Powdered Activated Carbon) Fly Ash in concrete"

Publications such as these demonstrate the professional stature of CIRCA and illustrate the important role the organization plays in the industry. The data sheet on PAC addresses issues a new era the CCP industry is entering, as tighter emission controls are imposed on the power industry.

The membership drive continues to be successful as CIRCA welcomed SaskPower and ADI Ltd. to the Association. I know that both these organizations will find great value in their membership as they become more involved in the organization. CIRCA has a good representation of producers and marketers across the country, giving it a balanced approach to promoting CCP's in a technically sound manner.

Looking forward to 2011, CIRCA has a challenging year ahead. Increased revenue is required to ensure the Association has sufficient funding to continue its promotion of this important product.

I would like to thank all the Members for giving me the opportunity to lead this organization. In conclusion, I would be remiss were I not to recognize Anne Weir's continuous commitment to the organization. Her dedication and professional conduct has helped allowed CIRCA to become a prominent organization in the international arena of CCPs.

T. Brad Pope, P.Eng.  
CIRCA President

**TABLE OF CONTENTS**

**MESSAGE FROM THE PRESIDENT..... ii**

**INTRODUCTION..... 1**

MISSION ..... 1

OBJECTIVES..... 2

STRATEGIC PRIORITIES ..... 2

AFFILIATIONS..... 3

**MEMBERSHIP..... 4**

MEMBERS..... 4

STRUCTURE..... 4

**2010 PROGRAMME..... 5**

REGULATION..... 5

GOVERNMENT RELATIONS..... 5

EDUCATION & COMMUNICATION ..... 6

CIRCA MEETINGS ..... 7

INTERNATIONAL COLLABORATION..... 7

CURRENT ISSUES..... 7

PRODUCTION AND USE OF CCPS ..... 9

**2010 FINANCIAL REVIEW..... 10**

BALANCE SHEET AS AT DECEMBER 31, 2010 ..... 10

STATEMENT OF SURPLUS AS AT DECEMBER 31, 2010 ..... 10

CASH FLOW STATEMENT, YEAR ENDED DECEMBER 31, 2010 ..... 11

**2011 PROGRAMME..... 12**

EDUCATION & COMMUNICATION ..... 12

VALUE TO MEMBERS ..... 12

REGULATION..... 12

INDUSTRY PARTICIPATION..... 13

SUSTAINABILITY ..... 13

2011 BUDGET ..... 14

**APPENDICES..... 14**

CORPORATE STRUCTURE ..... A-1

CIRCA RESOURCES ..... B-1

## INTRODUCTION

A cornerstone of Canada's increasingly diversified power base, coal-fired power generation remains an integral part of Canada's electricity supply <sup>[1]</sup>. Coal Combustion Products (CCPs) are mineral by-products of electricity production. CCPs are confirmed a significant contributor to the sustainability of Canadians' quality of life by improving the durability of our infrastructure and reducing the environmental footprint of our built environment.

Our society's concern with energy and resource conservation has inspired a review of industry practices in which CCPs are considered a valued mineral resource and a "critical tool" <sup>[2]</sup> to improve the technical performance and extend the life of our built environment, all within the context of more sustainable practice. <sup>[3]</sup>

A primary motivator across intersecting spheres of influence, "Sustainability" can shape economic and social development, with far-ranging benefits. In partnership with industry, producers and marketers of Coal Ash support environmental sustainability by recycling CCPs to beneficial use. As coal-fuelled power generation and the manufacture of cement and concrete each contribute significantly to Canada's economy, CCP recycling contributes to these industries' responsible management of Canadian resources, by:

- ◆ Reducing consumption of natural resources and energy;
- ◆ Reducing landfill for stockpiling or disposal of ash from power utility generating stations;
- ◆ Reducing GHG emissions associated with the production of concrete, wallboard and an expanding range of manufactured goods.

In addition to the social benefits these savings realize over the long term, CCP use promises immediate economic benefits as well, in terms of:

- ◆ Technical superiority (reduced permeability and higher strengths mean longer life)
- ◆ Longer service life of concrete structures through better performance and durability
- ◆ Reduced downtime for maintenance of infrastructure means lower life cycle costs
- ◆ Reduced maintenance costs for owners (public and private) and taxpayers
- ◆ Reduced operating costs for CCP producers

Recognition of this potential is reflected in government and industry standards, specifications and practices that encourage judicious use of CCPs. The past decade's wider acceptance of CCP use, in a growing variety of applications indicates growing demand for CCPs.

CIRCA promotes Canadians' use of CCPs for production of technically superior concrete and improved environmental performance. Our focus on education and collaboration is essential to CIRCA programming. Working relationships with CCP-related organizations and government agencies enables vigilance on national and international scenes to keep Members on top of trends in legislation, regulation and specification that may affect the use of CCPs.

CIRCA cultivates a broad perspective on the Coal Ash industry, with representation from Ash producers, marketers and other industry stakeholders. Staying current with evolving issues regionally, nationally and globally positions CIRCA to present a united voice on issues that affect the use and marketing of CCPs.

## MISSION

CIRCA's mission is to increase the technically sound, environmentally responsible and commercially competitive use of Coal Combustion Products as mineral resources in Canada.

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- 1] Electricity Generation in Canada by Province and Fuel Type, 2009: [http://www.electricity.ca/media/Industry%20Data%20July%202010/Electricity%20Generation%20in%20Canada%20by%20Province%20and%20Fuel%20Type%20\(Chart\)%202009.pdf](http://www.electricity.ca/media/Industry%20Data%20July%202010/Electricity%20Generation%20in%20Canada%20by%20Province%20and%20Fuel%20Type%20(Chart)%202009.pdf)
  - 2] "fly ash is a critical tool... there are other tools, but few as plentiful, effective, and economical." Portland Cement Association, November 2009
  - 3] "Analysis of Resource Recovery Opportunities in Canada and the Projection of Greenhouse Gas Emission Implications", pg. 266. Natural Resources Canada, 2006: <http://www.rcbc.bc.ca/files/u3/RR-opport-data-report.pdf>

## OBJECTIVES

CIRCA works to increase awareness of the performance and sustainability benefits of CCP use, through collaboration with industry affiliates and government agencies, and development of educational products.

CIRCA participates in national and international collaborative programs to address legislative or regulatory barriers to greater CCP use.

Collaboration with industry and government colleagues is central to CIRCA's mission, cultivating opportunities that further increase the responsible use of Coal Ash. Productive working relationships underpin development and distribution of communications and educational materials to promote CIRCA's identified priorities:

- i. Education & Communication
- ii. Value to Members
- iii. Regulations
- iv. Sustainability
- v. Research & Development

## STRATEGIC PRIORITIES

### EDUCATION & COMMUNICATION

Providing tools needed to ensure greater understanding of the beneficial uses of Coal Ash remains a central priority. CIRCA is devoted to the delivery of products that present a balanced, technically and environmentally sound perspective on the use of Coal Ash to Canadian industry and academic organizations. Promoting the effective use of CCPs in industry publications redresses information deficits and misinformation in the public domain that discourage growth of CCP utilization. Educational programs are directed to industry professionals, practitioners, academia and the general public. Resources are made available at no cost at <http://www.circainfo.ca/resources.htm> (Appendix B).

CIRCA's website and those of affiliated organizations are prime outlets for free access to CIRCA products and other resources.

### VALUE TO MEMBERS

CIRCA returns value to Members through timely delivery of information, materials and products to assist them in achieving their organizational goals. Input to government programs has increased the visibility of Coal Ash on the national scene, with recognition of its value as a supplementary cementing material reflected in national specifications <sup>[4]</sup>, guidelines <sup>[5]</sup> and policies <sup>[6]</sup>.

The growth of CCP use is central to CIRCA Members' appreciation of value in the Association. While use has increased significantly since CIRCA's 2002 incorporation, it is anticipated that technical performance and the sustainability of CCP use will reinforce this growth trend. Back in 2001, CIRCA set its sights on a 35% national use rate by 2010; latest available Production and Use statistics (2005-07, page 8) indicate we are well on our way to achieving that goal, having recycled 31% in 2007.

### REGULATORY ACTIVITIES

Reduction of barriers to CCP use has long been recognized as crucial to increasing their responsible use. At the same time, government programs to reduce industrial emissions are

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4] "National Master Specification", Public Works & Government Services Canada: <http://www.tpsgc-pwgsc.gc.ca/biens-property/ddn-nms/index-eng.html>

5] "Use of Fly Ash and Slag in Concrete, A Best Practices Guide", Public Works & Government Services Canada, Jan. 2005: <http://www.circainfo.ca/documents/UseofFAandSlaginConcrete-ICONPWGSCJan2005.pdf>

6] Leadership in Energy Efficient Design (LEED) Canada, attributes points to Coal Ash in terms of Recyclable Materials Canada Green Building Council: <http://www.cagbc.org/AM/Template.cfm?Section=LEED>

putting pressure on CCP Producers to minimize CO<sub>2</sub> and Mercury emissions, which may affect Fly Ash characteristics. CIRCA engages regulators & stakeholders in their development of programs and policies that safeguard sustainable CCP applications. The Association monitors changes in regulation and legislation to ensure there are no inappropriate barriers to Coal Ash use.

#### **SUSTAINABILITY**

Sustainable Practice has become a primary motivator for CCP use, shifting the focus from a purely bottom line analysis to the more sustainable combination of social, economic and environmental factors. Communications on the role Coal Ash plays in sustainable development is central to CIRCA activities: <http://www.circainfo.ca/pdf/CIRCA%20FactSheet%208%20Sustainability.pdf>

#### **RESEARCH & DEVELOPMENT**

With a view to staying current with evolving expertise, CIRCA identifies and documents research projects underway at industry associations, universities, colleges and Centres of Excellence which assist in encouraging CCP use. In addition, CIRCA identifies gaps in the Canadian context and develops opportunities to address them.

#### **AFFILIATIONS**

Collaboration with industry and government is strategically important to cultivate opportunities that increase the responsible use of Coal Ash:

##### **National**

Canadian Ready Mixed Concrete Association  
Canadian Electricity Association  
CanMet  
Cement Association of Canada  
Coal Association of Canada  
Environment Canada  
Natural Resources Canada  
National Research Council Canada  
Public Works & Government Services Canada

##### **International**

American Coal Ash Association  
Coal Combustion Products Partnership (C<sup>2</sup>P<sup>2</sup>)  
European Coal Combustion Products Association  
Midwest Coal Ash Association  
World Wide Coal Combustion Products Network

## MEMBERSHIP

Membership is open to Utilities with coal-fired generation, Marketers & Users of coal combustion products, Government & other agencies, Universities and other stakeholders. A non-voting *Associate Member* category offers industry suppliers and consultants the opportunity to participate in CIRCA activities.

CIRCA Members meet twice annually and engage in conference calls throughout the year. *Members' Only* web pages, quarterly *Updates* and regular correspondence keep Members informed of activities and progress between meetings. More information on Membership, its benefits, fees and Application are posted on CIRCA's website: <http://www.circainfo.ca/benefits.htm>

## MEMBERS

A Canadian, non-profit association of ash producers and marketers, CIRCA sustained a majority participation of the Canadian Coal Ash industry in 2010, represented by:

- ADI Ltd. – Fredericton, NB
- ASHCOR Technologies Ltd. – Calgary, AB
- Headwaters Resources Inc. – Salt Lake City, Utah
- Lafarge Canada Inc. – Calgary, AB
- Lehigh Cement – Delta, BC; Edmonton & Calgary, AB
- NB Power Holding Corporation – Fredericton, NB
- Ontario Power Generation Inc. – Toronto, ON
- SaskPower – Regina, SK
- St. Marys Cement Company – Toronto, ON
- TransAlta Corporation – Calgary, AB

As a volunteer organization, Members' commitment to and support of CIRCA initiatives are essential to the Association's success. Member contributions provide valued industry expertise and scope to determine program development and execution.

## STRUCTURE

CIRCA's five member Board of Directors, contribute a national perspective on CCP issues and inter-disciplinary expertise to complement Association Programming.

At the **Executive Committee** level, CIRCA's nation-wide representation is secured by Members' service in Executive Offices.

CIRCA Board of Directors and Executive Committee Structures are provided in Appendix A.

CIRCA's Bylaw, governing its organization and operation, is provided at:  
[http://www.circainfo.ca/pdf/CIRCA\\_Bylaw.pdf](http://www.circainfo.ca/pdf/CIRCA_Bylaw.pdf)

## 2010 PROGRAMME

### REGULATION

CIRCA works with international colleagues and fellow Members of the World Wide Coal Combustion Products Network (WWCCPN). The US EPA's 2009 Co-Proposal to re-classify Coal Ash as "hazardous" or "special" waste - responding to a 2008 Ash spill - alarmed the international community and spurred international Ash Associations to action. As the US EPA's July 2009 suspension of its very successful Coal Combustion Products Partnership (C<sup>2</sup>P<sup>2</sup>) Program signalled its preparedness to abandon decades of research, CIRCA followed up its June 2009 correspondence to US EPA with testimony at its Sept. 21<sup>st</sup> Public Hearing in Baltimore, MD, and another, written response November 18<sup>th</sup>.

Ongoing interaction with Canadian government agencies proves to be informative and reassuring with respect to CCP use: Environment Canada's 2009 confirmation it had "no plans to make changes to classification of Fly Ash from coal powered generating stations under EIHWHRM" was restated by guest speakers from Environment Canada at CIRCA's Fall meeting, in September 2010.

### GOVERNMENT RELATIONS

CIRCA stays current with Canada's evolving regulatory landscape thanks to active communication with government representatives (at Environment Canada, Health Canada, Natural Resources Canada, and Canada Border Services Agency) and industry colleagues. In 2010, CIRCA consulted with government agencies to provide input on CCPs to Environment Canada on its:

- input to negotiations on an international, legally binding Treaty on Mercury;
- development of proposed regulation for Reduced Emissions to Coal Fired Power Generation;
- proposed changes to the Import/Export of Hazardous Waste and Hazardous Recyclable Materials (EIHWHRM) Regulations.

CIRCA also provided information to the Canadian Electricity Association for its response to Environment Canada's inquiries into Vanadium Pentoxide for Environment Canada EIHWHRM consultation (Nov. 16).

Health Canada's public consultations on the Chemical Management Plan (CMP) also secured CIRCA's attention and participation in a November Workshop. Under Canadian Environmental Protection Act (1999), CMP assessments are underway on substances of "greatest potential exposure (GPE)" to Canadians to determine whether they meet the definition of "toxic" set out under CEPA's section 64. Vanadium oxide, quartz and silicones are included in Domestic Substances List (DSL) inquires; findings will indicate whether research or control measures are required, or alternatively, that there is no risk to human health and the environment.

CIRCA maintained Industry-Government Working Group activities on "Beneficial Use of Coal Ash & Applications", with representatives from NRCan, National Research Council Canada, CanMET, Public Works & Government Services Canada, Environment Canada and Canadian Ready Mix Concrete Association.

Continued federal government fiscal restraint has unfortunately prompted Natural Resources Canada to suspend national CCP Production & Use Surveys since 2008, pending further review. While CIRCA's government colleagues acknowledge our appeals to continue collecting this data, it remains to be seen if this annual survey will survive under government purview. In the meantime, 2007 statistics are the most current on offer:

<http://www.circainfo.ca/documents/CCPStats2005-07NRCan.pdf>

CIRCA has maintained a collaborative relationship with Canada Border Services Agency (CBSA) since its successful 2004 efforts expanded the definition of Coal Ash in the World Customs Organization's "Harmonized System" (HS). The potential to revise Coal Ash's HS classification to a status commensurate with its value in international trade will renew correspondence with CBSA in coming months.

## EDUCATION & COMMUNICATION

CIRCA's efforts to promote the sustainability of Fly Ash Concrete extended to industry as well, with contributions to *Concrete International*:

<http://www.circainfo.ca/pdf/Concrete%20International%20Feb%202010%20-%20Green%20Concrete%20goes%20for%20Gold.pdf>

and the American Coal Ash Association's *Ash at Work* (pg. 28):

[http://www.acaa-usa.org/associations/8003/files/ASH\\_at\\_Work\\_1-2010\\_final\\_LR.pdf](http://www.acaa-usa.org/associations/8003/files/ASH_at_Work_1-2010_final_LR.pdf)

with a combined international readership of 22,000. CIRCA Members and industry representatives contributed to CIRCA articles, with insider details of recent Canadian projects executed for the Vancouver 2010 Winter Olympics. Such outputs broaden the scope and appeal of CIRCA communications and reinforce CIRCA's reputation for constructive collaboration with industry stakeholders:

<http://www.circainfo.ca/pdf/Whistler%20Sliding%20Centre.pdf>

Two new Fact Sheets were produced in 2010, addressing Bottom Ash ([http://www.circainfo.ca/documents/BottomAshFactSheet\\_Oct2010.pdf](http://www.circainfo.ca/documents/BottomAshFactSheet_Oct2010.pdf)) and changes foreseen to Alberta's Coal Ash production processes, with Alberta Mercury Emission Reduction limits, coming into effect January 1, 2011 (<http://www.circainfo.ca/pdf/Fly%20Ash%20Update%201%20-%20Nov%202010.pdf>)

CIRCA's 9<sup>th</sup> annual return to Canada's Great Northern Concrete Toboggan Race (GNCTR) was hosted by McMaster University in Hamilton, Ontario, where head to head races (*right*) heightened Race Day excitement at Milton, Ontario's Glen Eden Ski Resort.



CIRCA's "Award for the Most Effective Use of Fly Ash in Concrete" met with nearly 70% of the competitors vying for the Award, which, encourages engineering students' interest in Fly Ash concrete, providing an opportunity for first hand experience of its performance benefits.



CIRCA Members Alison Knight (Ontario Power Generation Inc.) and Wafiq Thaha (St Marys Cement Co., Ltd.) fielded inquiries (*left*) at CIRCA's Technical Exhibition booth.

University of Calgary bested nine other Canadian university and college teams to win CIRCA's \$2,000 Award prize. CIRCA Director Doug Hooton (University of Toronto) and Executive Director Anne Weir presented the Award to jubilant University of Calgary victors (*below*).



CIRCA followed up GNCTR Participants' enthusiasm for information offered at the Tech. Ex. with presentations to students and faculty at the University of Western Ontario and Queen's University. CIRCA Executive Director, Anne Weir, delivered presentations on "Sustainable Coal Ash: Improving the Technical & Environmental Performance of our Built Environment".

## CIRCA MEETINGS

CIRCA held its Annual General Meeting in Edmonton, AB, May 11-12. Participants included prospective Members and local academic and industry experts with presentations on current research (V. Bingdinavile, University of Alberta), successful application of high-volume Fly Ash (HVFA) to sustainable housing construction (R. Sipka, Kanas Corporation) and developing CSA activities (R. Day, University of Calgary). Meeting host, Lehigh Cement, escorted participants on a tour of its Edmonton Plant.

CIRCA's Fall Meeting & Strategic Planning Session was held September 28-29 in Montréal, Québec. Members and prospective Members interfaced with:

- Environment Canada representatives (H. Paradis and K. Abraham) on the subject of Government of Canada's new national Utility Emission Reduction Plan,
- Concordia University's Undergraduate Program Director and Associate Professor in Civil Engineering (M. Nokken) on research undertaken at Concordia University,
- Experts on the federal "Scientific Research & Experimental Development (SRED) Tax Credit Program" (A. Faccioloa, PFMQ and T. Hill, Applied Research & Development).

Members were also welcomed to a tour of Lafarge's Corporate Technical Services Lab.

## INTERNATIONAL COLLABORATION

CIRCA participated in American Coal Ash Association's annual meeting (June 22, Baltimore, MD), supporting ACAA efforts to formulate its response to US EPA's "Co-Proposal".

CIRCA joined European Coal Combustion Products Association's Fall meeting (November 4-5, Brindisi, IT) to update European colleagues on the status of Coal Ash in Canada and support ACCA's Spring 2010 appeal for their input to US EPA. International responses to US EPA's Co-proposal are available on the US Utility Solid Waste Activities Group website:

<http://www.uswag.org/ccbletters.htm>

## CURRENT ISSUES

Participation in selected industry and federal government activities has kept CIRCA updated on current issues:

### ◆ **Classification of Coal Ash as "product"**

The traditional description of Coal Ash as a "waste" by-product is as out-dated as it is prevalent. The legacy of such a derogatory estimation overlooks a well-established body of evidence that confirms the intrinsic value of Coal Ash as a recyclable mineral resource, beneficial in terms of technical and environmental effects. Appreciation of Coal Ash has grown significantly over the last decade, evidenced by the inclusion of Coal Ash in government and industry standards, specifications, protocols and certification programs since 2004.

It is clear Coal Ash warrants a more considered estimation. In direct opposition to US EPA's recent stance on CCPs, new legislation and regulation in Europe and Australia legitimizes reclassification of CCPs where "quality criteria, standards, regulations or user-imposed technical requirements" clearly acknowledge their value. These accomplishments model significant opportunity for Canada's Ash industry.

The outdated perception of Coal Ash as a waste material has forged a systemic predisposition to limit or exclude the use of Coal Ash.

### ◆ **Regulatory barriers to CCP use**

Decades of research demonstrating CCPs' beneficial use in construction, agricultural and mining applications might be trumped by the US EPA's pending determination on the non-hazardous or hazardous labelling of Coal Ash. While a measured response to the December 2008 failure of a US Coal Ash lagoon might reasonably describe enhancements to Ash storage regulations, US EPA's pending decision has the potential to reshape the North American Ash industry.

◆ **Mercury emission monitoring, reduction & regulation**

North American air and water quality regulations are focussing efforts to reduce mercury emissions that require power utilities and cement manufacturers to retool operations. Various mercury reduction technologies under consideration remove mercury at different stages in the combustion process. Some of these technologies or processes may impact Fly Ash with deposits of mercury and carbon into the ash stream. Similar to the impact of unburned carbon, higher dosages of air entraining admixture will be needed to entrain air in concrete, affecting manufacturers' quality assurance efforts:

<http://www.circainfo.ca/pdf/Fly%20Ash%20Update%201%20-%20Nov%202010.pdf>

In addition, new international collaboration to create a legally binding Treaty on Mercury may require new emissions compliance measures in coming years.

◆ **Closure of Coal-fired power plants**

Canada's wealth of natural resources has permitted its utility industry an enviable range of generation options. While renewable energy has expanded in recent years, coal-fired generation has been on the decline, with plant closures in Alberta, Manitoba, New Brunswick and Ontario. Corresponding decreases in availability of Coal Ash are shifting the Canadian market.

◆ **GHG Emission savings and CO<sub>2</sub> offsets from CCP utilization**

It is well known and long proven that coal Fly Ash improves the quality of concrete, its highest volume application. Used as a "supplementary cementing material" in concrete manufacture, Fly Ash reduces the demand for cement in concrete, presenting considerable opportunity for GHG emission reductions and an improved end product. Experts have quantified significant emission reductions and resource savings attributable to Fly Ash in concrete or road bed construction and FGD gypsum in wallboard. While these benefits are embraced in some sectors, they have yet to penetrate the awareness of the general public.

It is anticipated quantifying CO<sub>2</sub> offsets attributable to Ash use can establish its important contribution to environmental stewardship <sup>[7]</sup>.

◆ **Non-traditional applications**

Canada lags behind other nations in terms of non-traditional CCP use. The success of geotechnical and agricultural applications in the US, Europe, Australia and India have encouraged the acceptance of Coal Ash.

In geotechnical applications, Coal Ash provides an environmentally responsible alternative to diminishing natural resources and the carbon footprints their processing involves. Used as an engineered fill material (right) or to stabilize soils on site, Coal Ash offers technical properties that support durable construction.

In agriculture, CCPs used to improve soil conditions, reduce water consumption and increase crop yields also reduce demand for chemical fertilizers and limited, naturally-sourced soil amendments in agriculture.

CIRCA Members are pursuing reclamation of Ash from landfill: the Association will promote reclamation from landfill for use in traditional and non-traditional applications.



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7 ] The (US-based) Recycled Materials Resource Center established "that recycling ash saves enough energy every year to power 1.7 million households and reduces greenhouse gases equivalent to taking 2 million cars off the road for a year." "Wisconsin could become coal ash model", Milwaukeenewsbuzz.com, Nov. 22, 2010 Aggregate Research <http://www.aggregateresearch.com/article.aspx?ID=20845>

## PRODUCTION AND USE OF CCPs

Natural Resources Canada last produced summary statistics of Canadian CCP Production and Use in 2008, for the years 2005-2007. Canadians recycled an average of 36%, 6% and 94% respectively of the total Fly Ash, Bottom Ash and FGD Gypsum generated (averaged over 3 years). In total, 31% of CCPs produced were used in a variety of valued applications.

This 31% utilization rate represents significant improvement in Canadian recycling rates over the previous 8 years; in 1999, only 21.4% of CCPs produced were recycled.

Canada's 31% use rate still compares modestly to counterparts in the US and internationally, where their much higher use rates (43% in the US and 47% in Europe) reflect a commitment to the beneficial application of these materials.

<b>CANADA, PRODUCTION (1) AND USE (2) OF COAL COMBUSTION PRODUCTS (CCPs), 2005-2007 AVERAGE</b>					
	<b>Fly Ash</b>	<b>Bottom Ash</b>	<b>FGD Gypsum</b>	<b>Other (3)</b>	<b>Total CCPs</b>
<b>PRODUCTION</b>	<b>(000 tonnes)</b>				
Produced	3876	1624	393	195	6087
Disposed / Stored	2984	1421	1	194	4600
Removed from Disposal	0	5	1	0	6
<b>USE (DOMESTIC)</b>					
Cement	805	52	6	0	864
Concrete / Grout	409	0	0	0	409
Mining Applications	85	–	0	0	85
Roadbase / Subbase	5	48	0	0	53
Wallboard	0	0	364	0	364
Other (4)	92	2	0	1	95
<b>TOTAL USE</b>	1396	102	370	13	1881
<b>Individual Use Percentage</b>	<b>36</b>	<b>6</b>	<b>94</b>	<b>6</b>	<b>31</b>
– Nil.					
(1) Reported production of coal combustion products (CCPs) may include both dry & ponded Categories.					
(2) Use (domestic), as reported, includes amounts imported (assumed World Customs Organization's Harmonized Standard codes 2621.00 relating to fly ash and HS 2520.10 relating to gypsum).					
(3) Cfb (circulating fluidized bed) fly ash and bottom ash.					
(4) Includes waste stabilization and specialty uses such as mineral filler and flowable fill.					
Note: Numbers may not add to totals due to rounding.					

From 1999 through 2007, annual CCP Production and Use statistics were collected. Findings, traditionally published in the "Cement" chapter of the "**Canadian Minerals Yearbook**" <sup>[1]</sup>, reflected the majority of CCP usage as a supplementary cementing material. In 2005 & 2006, Natural Resources Canada also addressed CCPs in its "Recycled Metals" <sup>[2]</sup> chapter as "non-ferrous ash", capturing CCPs' value in the context of recycled minerals and metals in Canada.

[1] Natural Resources Canada, Minerals and Metals Sector <http://www.nrcan-rncan.gc.ca/mms-smm/busi-indu/cmy-amc/com-eng.htm>

[2] Natural Resources Canada, Minerals and Metals Sector <http://www.nrcan-rncan.gc.ca/mms-smm/busi-indu/cmy-amc/content/2005/72.pdf>.

**2010 FINANCIAL REVIEW**

Financial Statements presented are the product of an Engagement Review, undertaken by Chartered Accountant firm Ponzo, Faccioloa, Manganiello, Quagliari, in accordance with CIRCA Board of Directors Resolution (October 1, 2008).

**BALANCE SHEET AS AT DECEMBER 31, 2010**

(Unaudited)

<b>ASSETS</b>	<b>2010</b>	<b>2009</b>
<b>CURRENT ASSETS</b>		
Cash and term deposits	\$ 64,019	\$ 75,606
Sales taxes receivable	\$ 4,684	\$ 4,234
Prepaid expenses	<u>\$ 1,771</u>	<u>0</u>
Total Assets	\$ 70,474 =====	\$ 79,840 =====
<b>LIABILITIES</b>		
<b>CURRENT LIABILITIES</b>		
Accounts payable & accrued liabilities	<u>\$ 11,912</u>	<u>\$ 15,080</u>
Total Liabilities	<u>\$ 11,912</u>	<u>\$ 15,080</u>
<b>NET ASSETS</b>	<u>\$ 58,562</u>	<u>\$ 64,760</u>
	\$ 70,474 =====	\$ 79,840 =====

**STATEMENT OF SURPLUS AS AT DECEMBER 31, 2010**

(Unaudited)

	<b>2010</b>	<b>2009</b>
<b>BALANCE – BEGINNING OF YEAR</b>	<u>\$ 64,760</u>	<u>\$ 69,878</u>
EXCESS OF EXPENSES OVER REVENUE	<u>\$ (6,198)</u>	<u>\$ (5,118)</u>
<b>BALANCE – END OF YEAR</b>	<u>\$ 58,562</u> =====	<u>\$ 64,760</u> =====

In 2010, CIRCA further secured its growth as a non-profit industry association through certified short-term investments, now totalling \$35,383, that will facilitate its continued development and delivery of future programming.

**CIRCA ANNUAL REPORT 2010**

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**STATEMENT OF INCOME, YEAR ENDED DECEMBER 31, 2010**

(Unaudited)

<b>REVENUE</b>	<b>2010</b>	<b>2009</b>
Member Dues	\$ 58,352	\$ 62,705
Interest	<u>\$ 368</u>	<u>\$ 344</u>
<b>TOTAL REVENUE</b>	<b><u>\$ 58,720</u></b>	<b><u>\$ 63,049</u></b>
 <b>EXPENSES</b>		
Projects - Education and Communication	\$ 4,146	\$ 4,855
Advertising and Promotion	\$ 1,345	\$ 410
Management costs	\$ 35,500	\$ 40,000
Executive Director Travel	7,869	\$ 6,680
Member Meetings	\$ 4,372	\$ 4,940
Professional fees	\$ 3,250	\$ 2,425
Operating Expenses	\$ 8,436	\$ 8,857
<b>TOTAL EXPENSES</b>	<b><u>\$ 64,918</u></b>	<b><u>\$ 68,167</u></b>
 <b>EXCESS INCOME OVER EXPENSES</b>	 <b><u>\$ (6,198)</u></b>	 <b><u>\$ (5,118)</u></b>
	=====	=====

**CASH FLOW STATEMENT, YEAR ENDED DECEMBER 31, 2010**

(Unaudited)

<b>OPERATING ACTIVITIES</b>	<b>2010</b>	<b>2009</b>
Excess of expenses over revenue	(\$ 6,198)	(\$ 5,118)
Adjustments for:		
Increase (decrease) in accounts payable & accrued liabilities	(\$ 3,168)	\$ 8,209
Decrease (increase) in sales taxes receivable	(\$ 450)	\$ 1,903
Increase in prepaid expenses	(\$ 1,771)	\$ 2,194
	-----	-----
CASH INCREASE (DECREASE)	(\$ 11,587)	\$ 7,188
CASH, BEGINNING OF YEAR	<u>\$ 75,606</u>	<u>\$ 68,418</u>
<b>CASH, END OF YEAR</b>	<b><u>\$ 64,019</u></b>	<b><u>\$ 75,606</u></b>
	=====	=====

## 2011 PROGRAMME

### EDUCATION & COMMUNICATION

CIRCA will return to the academic engineering community at the 37<sup>th</sup> annual running of the **Great Northern Concrete Toboggan Race**, to be hosted by the University of Alberta in Edmonton, AB. Industry representatives will comprise the team of Judges interacting with student competitors for CIRCA's "Award for the Most Effective Use of Fly Ash in Concrete". In so doing, Members will present the vital mix of industry, association and future contributors to promote the value of Fly Ash concrete and present its sustainability benefits to students from across Canada.

Communication of the sustainability benefits of CCP use will underpin communications and educational deliverables under development:

- ◆ CIRCA **Website** updates will refresh and expand the site (<http://www.circainfo.ca>) to better report accomplishments and increase links to the larger community. Reorganized menus will facilitate users' access and enhance users' experience. Incorporation of recent technical advances will improve interactivity and facilitate updating. Continued improvements will increase the site's interactivity and facilitate access to Resources. These upgrades will also improve presentation of the CIRCA brand, in keeping with Member expectations.



[www.circainfo.ca](http://www.circainfo.ca)

2010 website improvements:

- ✓ facilitate regular updates,
- ✓ improve ease of use,
- ✓ facilitate access to information;
- ✓ improve interactivity,
- ✓ enhance users' experience,
- ✓ enhance CIRCA brand with current design.

- ◆ Updates to the **CCP Web Course** on "Traditional and Non-traditional Uses of CCPs" will include recent developments in applications and research.

### VALUE TO MEMBERS

CIRCA will hold its 2011 Annual General Meeting in Denver, CO on May 12. The Fall Meeting & Strategic Planning Session is to be held in Toronto, September 21-22. Both will provide important opportunities for CIRCA Members to confer with industry, government and academic experts, to focus on current issues and technologies that align strategic planning with an evolving marketplace. In 2011, CIRCA will expand Membership categories to grow participation by industry representatives (subject to Board & Member approval).

### REGULATION

Exchanges with industry and government colleagues on issues of common interest will continue to inform CIRCA initiatives. While air quality and emission regulations demand vigilance, new legislation, markets and emerging technologies will define opportunities and shape industry response.

Ongoing discussion of evolving legislation, regulatory and technological developments will define programming priorities to deliver value to CIRCA Members and advance industry relationships. CIRCA will pursue correspondence with Environment Canada, Health Canada, Natural Resources Canada and Public Works & Government Services Canada. CIRCA's administrative role in coordinating Industry-Government Working Group activities will maintain a constructive focus on Coal Ash.

## INDUSTRY PARTICIPATION

CIRCA Representatives will participate in a number of industry events in 2011, to stay current with new technologies, regulations, issues and complement development of future activities and programs.

CIRCA's support of industry activities will include sponsorship of the *2011 World of Coal Ash Conference (WOCA)*, a bi-annual symposium presented jointly by the American Coal Ash Association and University of Kentucky Center for Applied Energy Research. CIRCA will sponsor and participate in the WOCA Conference, to be held May 9-12.

WOCA also provides international Members of the World Wide Coal Combustion Products Network (WWCCPN) an opportunity to discuss the status of CCPs, and issues or initiatives of shared interest. CIRCA will join international colleagues May 11<sup>th</sup> at the WWCCPN Meeting, hosted by WOCA, and present a paper on reclassification of Coal Ash in the World Customs Organization's Harmonized System.

## SUSTAINABILITY

The sustainability benefits of Coal Ash use underpins industry and government efforts to increase its use. CIRCA will contribute to Canadians' appreciation of Coal Ash use with development of two Fact Sheets, planned for release in 2011.

**2011 BUDGET**

(Unaudited)

<b>2010 RETAINED EARNINGS</b>	<b>\$ 23,179</b>
<b>INVESTMENTS</b>	<b>\$ 35,383</b>
<b>REVENUE</b>	
2010 Member Dues	\$ 62,102
Interest	\$ 400
<b>TOTAL REVENUE</b>	<b>\$ 62,502</b>
<b>Total funds available to activities</b>	<b>\$ 121,064</b>
<b>EXPENSES</b>	
General Administration	
Management Costs	\$ 47,000
Executive Director Travel	\$ 5,000
Operating Expenses	\$ 13,000
<b>TOTAL OPERATING EXPENSES</b>	<b>\$ 65,000</b>
Special / Project Expenses	
Education	\$ 2,599
Promotions & sponsorship	\$ 1,500
Development Projects	\$ 5,000
Contingency	\$ 2,000
<b>TOTAL SPECIAL / PROJECT EXPENSES</b>	<b>\$ 11,099</b>
<b>TOTAL EXPENSES</b>	<b>\$ 76,099</b>
2011 OPERATING SURPLUS	\$ 43,863
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**APPENDICES**

Appendix A - Corporate Structure

Appendix B - CIRCA Resources

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**CORPORATE STRUCTURE****BOARD OF DIRECTORS**

James MacLean, Dominion Ash CCP Ltd.  
Joe Schnitzer, ASHCOR Technologies Ltd.  
T. Brad Pope, Lehigh Cement  
Doug Hooton, University of Toronto (Dept. of Civil Engineering)  
Keith Bargaheiser, Headwaters Resources Inc.

**CIRCA MEMBERSHIP****EXECUTIVE COMMITTEE**

President: T. Brad Pope, Lehigh Cement  
Vice-President: K. Bargaheiser, Headwaters Resources Inc.  
Treasurer: T. Sherman, Lafarge Canada Inc.  
Past-President: Alison M. Knight, Ontario Power Generation Inc.  
Executive Director: Anne Weir

**ISSUE COORDINATORS**

Communications:  
Alison M. Knight,  
Ontario Power Generation, Inc.

Environmental Issues: (currently vacant)

Technical Issues:  
T. Brad Pope, Lehigh Cement

## CIRCA RESOURCES

CIRCA Resources are free to the public via the CIRCA website: [www.circainfo.ca](http://www.circainfo.ca)

[About](#) [Resources](#) [News](#) [Successes](#) [Contact](#) [Members Only](#)



The Olympic Oval in Richmond, BC, Canada, built for the Vancouver 2010 Olympic Games.

### News

#### Spring Annual General Meeting:

**May, 2011 in Denver, CO (USA)** to coincide with the World of Coal Ash Conference (May 9-12).

Specific dates & Venue: To be Announced  
For more information, contact [awelr@circainfo.ca](mailto:awelr@circainfo.ca)

### CIRCA Mission

CIRCA represents Canadian producers and marketers of coal combustion products (CCPs) to increase the technically sound, environmentally responsible and commercially competitive use of CCPs as mineral resources.

CIRCA promotes the recycling of CCPs for technically superior concrete products and supports efforts to develop non-traditional applications that will expand CCP utilisation.

### Benefits

Recycling CCPs has a substantial and positive impact on the environment through the reduction of GHG emissions. The electric utility and ash industries can in this way make significant contributions to the sustainability of Canadian power, construction and manufacturing industries.

### Quick Links

[Fly Ash Update](#)

[Green Concrete goes for Gold](#)

[Whistler Sliding Centre Project Profile](#)

[Sustainable Fly Ash](#)

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