CANADIAN DAM ASSOCIATION
ASSOCIATION CANADIENNE DES BARRAGES
Canadian Dam Association

The CDA is a group of dam owners, operators, regulators, engineers and others who share the goal of advancing knowledge and practices related to dams. Our members are involved with all types of dams, including those used for irrigation, hydroelectric power, municipal water supply and mining operations.

CDA Vision
A future in which all dams are safe, well-managed and benefit society.

CDA Mission
To encourage co-operation, advance technical knowledge, and build competency related to dams in Canada.
Dams in Canada

- In general terms, a “dam” is a barrier constructed for retention of water, fluid waste or tailings
- Over 10,000 dams in Canada
- Almost 1,000 are categorised as “large” dams
- Ownership by
  - Federal and provincial governments
  - Electric utilities
  - Industrial and mining companies
  - Irrigation districts
  - Municipalities
  - Private individuals
Regulatory Framework in Canada

• Mainly a provincial/territorial responsibility
  • Regulations exist in British Columbia, Alberta, Ontario, Quebec
  • Other provinces/territories rely on legislation related to water resources

• No federal regulatory agency or overarching program
  • Canadian Nuclear Safety Commission regulates uranium tailings dams

• Federal interest
  • Navigable waters
  • Dams owned by Parks Canada and Public Works Canada
  • International Joint Commission (Boundary Waters Treaty) applies to some dams
  • Columbia River crosses international boundary
  • Infrastructure programs (e.g. CIP, emergency management)
Canadian Dam Association (CDA) - History

- 1928 - ICOLD (International Commission on Large Dams) was formed
- Since 1950s - CANCOLD represented Canada at ICOLD
- 1989 - Canadian Dam Safety Association (CDSA) was formed
- 1998 - CDA was formed through merger of CDSA and CANCOLD, thus taking on the role as Canadian member on ICOLD
CDA – Today

• Non-profit association relying on volunteer work by professionals in the dam community
• Not a regulatory agency, not an advocate for dams, but advocate for dam safety
• Board of Directors represents all provinces and territories
• Known across Canada and internationally as key resource for technical guidance and publications related to safety of dams
• Annual conference and workshops attract 350-500
CDA Membership

- ~ 50 Sustaining and Corporate members
- ~ 800 individual members

Members include
- Dam owners and operators
- Engineers working for owners and consultants
- Regulators
- Contractors
- Suppliers

Annual conference and workshops attract up to 500
CDA Dam Safety Guideline

Main Dam Safety Guidance Document – issued in 2007 and revised in 2013

Supporting Bulletins
- Inundation
- Surveillance
- Flow Control Equipment
- Dam Safety Analysis and Assessment
- Hydrotechnical Considerations
- Seismic Hazard Considerations
- Geotechnical Considerations for Dam Safety
- Structural Considerations for Dam Safety

Public Safety Guidelines
CDA Mining Dams Technical Bulletin

Issued in 2014

Definition of a mining dam

Addresses unique aspects of mining dams, examples:

- Environmental design flood
- Geotechnical items
- Closure
Sustaining Members of CDA

Provincial Agencies and Hydroelectric Companies

[Logos of various companies such as Hydro Québec, Energie NB Power, Ontario Power Generation, Manitoba Hydro, and others]

Engineering Consultants

[Logos of companies like BGC, Golder Associates, Gannett Fleming, HATCH, Kloh Crippen Berger, Knight Piésold, Meco, and others]

Equipment and Service Providers

[Logos of companies like Northern Strands, Emagineered Solutions, Hydro Component Systems, and Worthington Waterway Barriers]
Corporate Members of CDA

AAFC-Corporate Management Branch
Amec Foster Wheeler
Atlantic Power Corp.
BAUER Foundations Canada Inc.
Canary Systems
Columbia Power
FortisBC
MTM-2 Contracting Inc.
Nova Scotia Power Inc.
Ontario Ministry of Natural Resources & Forestry
Province of British Columbia
Shell Canada Energy
Algonquin Power Co.
Andritz Hydro AFI
Axter Coletanche Inc.
Brookfield Renewable Power
Chelan County PUD #1
ConCool LLC
Grand River Conservation Authority
Multiurethanes Ltd.
NWT Power Corporation
Parks Canada / Parcs Canada
SEG Precision
CDA Products and Services

• Annual conference and trade show
  • Presentations of technical papers, in English and French
  • Technical committee meetings

• Training and professional development programs
  • Workshops and seminars
  • On-line learning centre

• Publications
  • Application of Dam Safety Guidelines to Mining Dams (2014)
  • Dam Safety Guidelines (2013)
  • Guidelines for Public Safety Around Dams (2011)
  • Technical bulletins on dam safety topics (2007)

• In development...
Products in Development - Updates

• Guidance and training programs for
  • Dam Safety Reviews
  • Overview of dam owner responsibilities
  • Emergency management at dams
  • Tailings dam breach analysis
  • Tailings dam case studies and lessons learned
  • Public Safety
  • ....

• Strategies for emerging issues
  • Engineer of Record
  • Factor of Safety
  • De-licencing of Dams
Importance of CDA work

• Develop technical guidance used by regulators and dam owners across Canada and internationally

• Need for sustainable energy and security of water supply

• Increasing public interest in risks associated with dams, both water and tailings
  • Recent failures in Canada and other countries
  • Aging infrastructure

• Collaboration between private and public sectors
  • CDA facilitates communication and feedback

• Unique for Canadian national perspective on dams
  • Who represents Canada in international forums?
  • e.g. Invitation from Senate Committee in Brazil
ICOLD – International Commission on Large Dams

- Leading international dam engineering organization
- Almost 100 member countries
- Technical Committees produce bulletins that are recognized around the world
- Canada has representatives on 20 of the 24 Technical Committees
- Canada chairs 6 Committees
- Holds annual meeting, workshops and symposium; meetings of regional groups
Bringing Dams into the Future

Dams have become part of the critical infrastructure in North America and have provided many decades of reliable performance. Most are more than 50 years old. Dams deteriorate with age due to erosion, wind, waves, ice and other time-dependent natural processes, and monitoring and flow control equipment will eventually fail due to electrical and mechanical degradation, erosion, wear, corrosion and fatigue. Rehabilitation is required to extend or improve the service life of many dams and their ancillary equipment, or dams need to be upgraded due to evolving design criteria and changing regulatory and environmental requirements. Dam removal is an option to address dams at the end of their service life.

The Canadian Dam Association (CDA) Annual Conference is the national forum for engineers, geoscientists, dam owners and operators, regulators and other stakeholders. It is an opportunity to exchange ideas and information concerning the operations, maintenance and management of all types and ages of dams, and provides a networking opportunity for participants to remain current and benefit from advancements.

Technical Program

Technical papers are invited related to the conference theme “Bringing Dams into the Future,” which encompasses a wide range of topics including:

- Managing Aging Infrastructure
- Upgrading Dams to Meet Changing Design Criteria
- Emerging Technologies
- Environmental Consequences of Dam Operation and Failure
- Decommissioning and Closure – Challenges and Opportunities
- Implications of Climate Change for Dams – Review of Current State of Practice

In addition, papers are also invited for the following topics:

- Dam Safety Reviews – Case Studies
- Public Safety Around Dams
- Emergency Management
- Ice Management Strategies and Innovations
- Flow Control Equipment Access and Reliability
- Design and Construction Challenges

Potential authors who are interested in presenting papers are invited to submit a 300 word abstract in either English or French, by January 29, 2016. For detailed information on submitting an abstract, please see the CDA Conference 2016 link at www.cda.ca or email 2016technical@cda.ca.

Pre-Conference Workshops

Professional development workshops will be held in the two days prior to the conference. The topics under consideration include:

- Introduction to CDA Dam Safety Guidelines
- Dam Safety Reviews
- Operations, Maintenance and Surveillance using Emerging Technologies
- Design and Construction / Refurbishment of Dams
- Seepage Monitoring and Analysis of Embankment Dams
- Structural Condition Assessment of Dams using Non-destructive Evaluation Methods
- Emergency Management
- Potential Failure Modes Analysis
- Mining Dams / Design of Tailings Dams and Waste Dumps
- RETScreen for Small Hydro

Members are invited to contact the Conference Organizing Committee at 2016technical@cda.ca to suggest other potential workshop topics.

Technical Tours

Both a full-day and a concurrent half-day technical tour will be held following the conference. Both tours will showcase the use of newer technologies in the refurbishment of existing dams, and the design and construction of new dams.

Exhibit Hall

The latest in technology and services for dam safety and management will be available to delegates for learning and networking.

Conference Venue

The conference will be held at the Halifax Marriott Harbourfront Hotel in downtown Halifax, Nova Scotia, within walking distance of the city’s major cultural and social sites.

The CDA 2016 Conference organizing committee invites you to participate in the 2016 Conference.

Bringing Dams Into the Future

Leading Canadian and international experts will provide and lead technical papers and presentations on recent developments in dam technology and the changes needed to continue to deliver the value of dams in the future.