Content outline

Construction and the environment

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Overview

This course stresses the importance of being acutely aware of the environmental conditions, policies, and regulations that can affect the construction industry. It also provides information for creating and monitoring environmental management plans and on-site controls.

Prerequisite

Although there is no formal educational prerequisite for this course, the participants' chances of success will be enhanced if their reading and comprehension skills are at a high school or equivalent level. Participants must be familiar with basic computer operating and word processing programs.

However, a strong knowledge of materials, construction methods, systems and building science would be useful.

Learning objectives

Upon successful completion of this course, participants will be able to:

- identify environmental regulations, policies, procedures, and guidelines;
- define key roles, responsibilities, and practices;
- identify the environmental concerns related to the construction industry;
- identify impact of building science on environmental concerns related to the construction industry;
- participate in the development of an environmental management plan.

Content

1. **Identify environmental regulations, policies, procedures and guidelines.**
   - Canadian Environmental Assessment Act (CEAA)
   - Provincial Acts and Regulations
   - Municipal By-laws and Regulations
   - ISO 14000
   - due diligence
   - best practices
2. **Define key roles, responsibilities, and practices of stakeholders.**
   - regulators (federal, provincial, municipal)
   - policy writers
   - project proponents
   - contractors / sub-contractors
   - superintendents
   - inspection agencies
   - environmental coordinators

- health and safety coordinators

3. **Identify the environmental concerns related to the construction industry.**
   - building envelope
   - mould/fungi (health issue)
   - waste reduction
     - reduce, reuse, recycle, recover
     - benefits of CRD (construction, renovation, and demolition) waste diversion
     - toxic and hazardous waste management
     - collecting, storing, and removing non-hazardous CRD waste
   - deconstruction
   - fugitive emissions
     - asphalt
     - smoke
     - dust
     - vapours
     - off-gassing
   - sediment movement into waterways and sewer systems
   - erosion during construction
   - oil/chemical spills
   - noise
   - blasting
   - cleaning and restoration processes
   - insurance, liability, and contract exclusion
   - sustainability (green construction)
   - contaminated soil
   - contractor maintenance and storage sites
   - contractor equipment
   - migratory seasons
   - Navigable Waters Act restrictions
   - archaeological sites
   - wildlife protection

4. **Identify impact of building science on environmental concerns related to the construction industry.**
   - sustainability (green building)
   - condensation

- air quality
- thermal performance
- building envelope
- material characteristics
    - sealants
    - adhesives
    - epoxies
    - gypsum boards
    - coatings and coverings
    - treated lumber
    - PCBs
    - others
- methods
    - scheduling
    - planning and sequencing
    - installation
    - material handling
    - public and personal protection
    - transportation
    - disassembly
    - prevention
    - containment
    - mitigation
- energy efficiency (alternative power sources)
- meet contract certification requirements (green building)

5. Participate in the development of an environmental management plan.

- corporate policy
- environmental regulations
- site-specific considerations
- regulatory approval
- implementation and monitoring on-site environmental controls
- emergency response plan
- environmental protection plan
- public information and consultation

- compliance audit process
- project environmental risks
- environmental training
- periodic reporting
- environmental disaster recovery plan
- sustainability (green building)

Methodology

This course lends itself to short lectures, case studies, and research projects and assignments. Instructors may involve the participants in the following specific techniques and activities:

- icebreaker type activity to get students engaged as soon as possible;
- jobsite visit;
- guest speaker on environmental issues;
- analysis of a plan (environmental management plan, disaster recovery plan, emergency response plan);
- case study (environmental litigation, spills).

Assessment

In order to successfully complete this course, participants will be expected to demonstrate that they have achieved the learning objectives. They will be evaluated through various assignments, projects, and/or tests based on each of these objectives. Final assessment for the course will be determined by the following weighting:

Learning objective	Weight (%)
1. Identify environmental regulations, policies, procedures, and guidelines	20
2. Define key roles, responsibilities, and practices of stakeholders	20
3. Identify the environmental concerns related to the construction industry.	20
4. Identify the impact of building science on environmental concerns related to the construction industry.	20
5. Participate in the development of an environmental management plan	20
	100

Resources

Reports, manuals, textbooks and documents

A Best Practices Guide to Solid Waste Reduction, Canadian Construction Association cca-acc.com/en/industry-practices/cca-documents

A Guide on Construction Environmental Management Planning, Canadian Construction Association cca-acc.com/en/industry-practices/cca-documents

Environmental Code of Practice for Steam Electric Power Generation – Construction Phase, Environment Canada

Erosion and Sedimentation Control Handbook for Construction Sites, Nova Scotia Department of Environment (NSDOE)

Mould Guidelines for the Canadian Construction Industry, Canadian Construction Association cca-acc.com/documents/general-publications

Report on Energy Usage in the Construction Industry, Simon Fraser University

Government/association websites
Canadian Council of Ministers of the Environment ccme.ca

Environment Canada ec.gc.ca

Impact Assessment Agency of Canada canada.ca/en/impact-assessment-agency

International Standards Organization (ISO) iso.org

Other resources
Applicable acts, regulations, and by-laws

ISO 14000

Kyoto Accord unfccc.int

WHMIS training documents

Other resources available from the American General Contractors Association agc.org/bookstore
Construction Contractor's Environmental Risk Management Procedures Manual (AGC-1184)

Contractors Underground Storage (AGC-1181)

Exposing the Facts: Lead Exposure in the Construction Industry (AGC-145) Handle With Care: Job-Site Hazardous Waste Safety (AGC-144)

Make the Right Move: Materials Handling Safety (AGC-150) Storm Water Permit Requirements (AGC-1183)

The Hazardous Waste Cleanup Contractor's Handbook (AGC-1180)