ECOSMART™ CONCRETE Project

a concrete contribution to the environment

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Concrete Technologies for Sustainable Buildings
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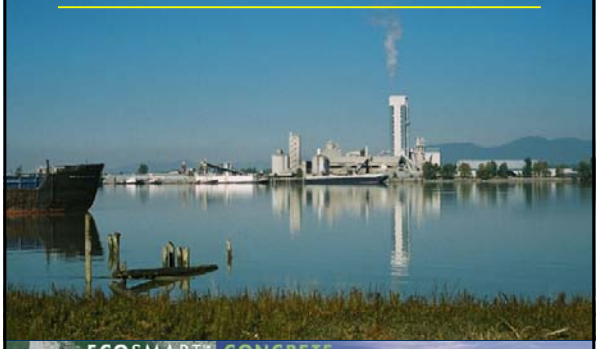
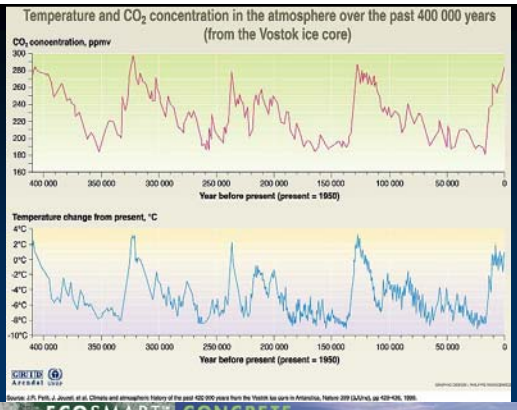
Concrete & Cement

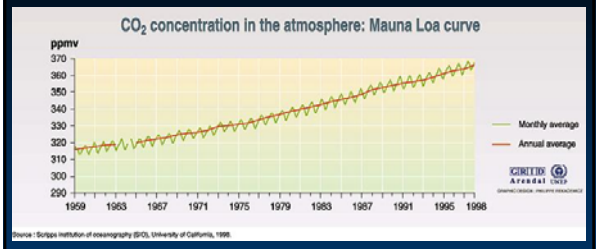
Cement production accounts for more than 90% of the energy used to make concrete

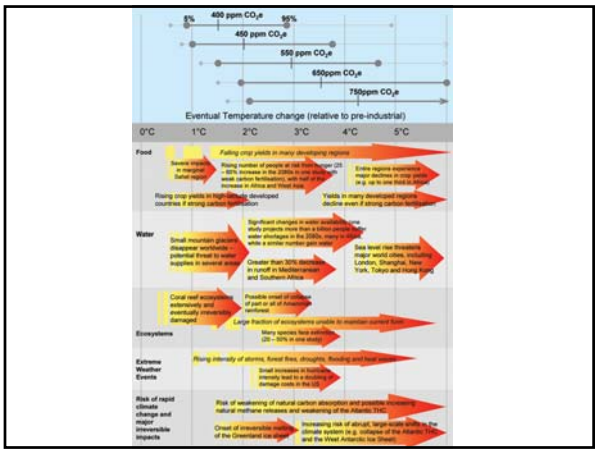
Producing 1 tonne of cement emits about 1 tonne of CO2 and other CAC in smaller quantities.

One Tonne CO_2









Stern Review

- Current level is 430 ppm from 280 ppm (pre-industrial)
- If GHG emission did not increase, it will reach 550ppm by 2050
- 550 ppm → 77% of 2º C increase
- If GHG emissions continue to raise, this level will be achieved by 2035

- Costs to stabilize CO2 to 550 ppm by 2050 will be about 1% of world GDP
- Weak response in the next 10-20 years will make it impossible economically to reach this level

Stern review on climate change: http://www.hm-treasury.gov.uk

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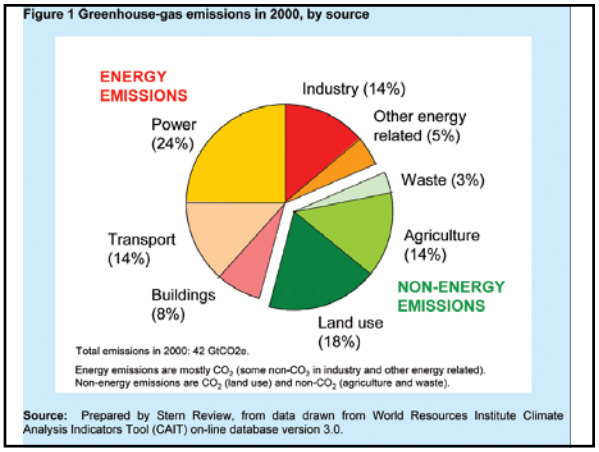

EcoSmart Concrete Objectives

To minimize GHG "signature" of concrete

by optimizing replacement of Portland cement with Supplementary Cementing Material such as fly ash while improving or maintaining

- Cost
- Performance
- Constructability

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SCM: Zero (or low) GHG

Benefits of SCM Concrete

1. Stronger and more durable concrete
2. Easier to place and to finish.
3. SCM costs less to produce than cement
4. GHG reduction and credits: 1T of SCM reduce GHG emission by up to 1T.
5. Superior appearance.
6. Address cement shortage.

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Risks of SCM Concrete

1. Slower setting time particularly in cold climate
2. QA/QC is particularly important
3. "Fly ash makes good concrete better ….and bad concrete worst"

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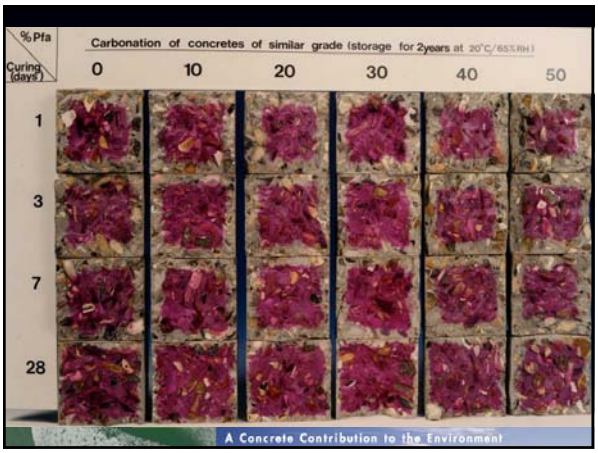

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50% FA

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Optimization

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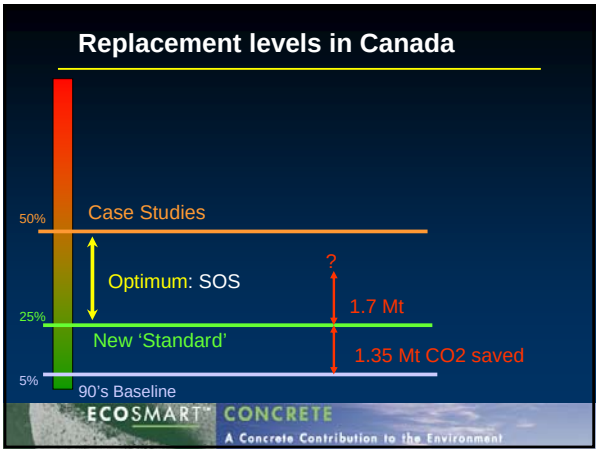
Replacement levels in Canada



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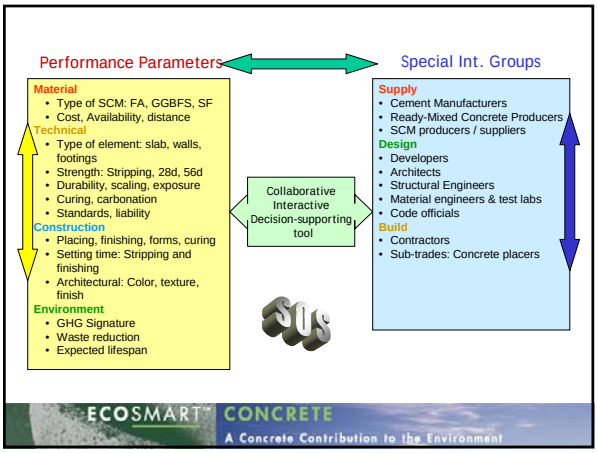

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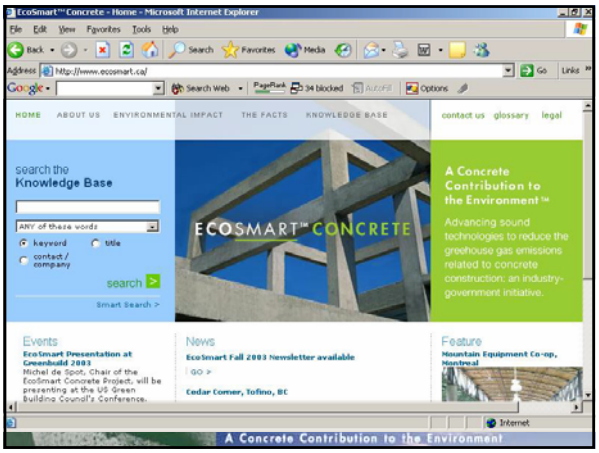

Thank You

Questions
Comments
Suggestions

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