

Exploring the Evidence and Finding Solutions

What do we know about the environmental roots of cancer?

An overview of the evidence

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Causes of Cancer

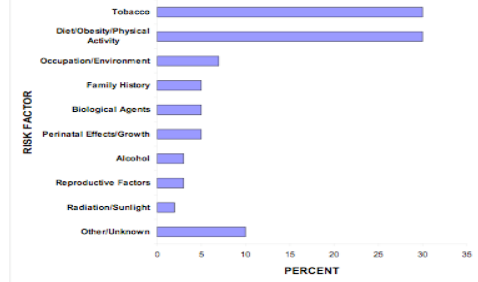
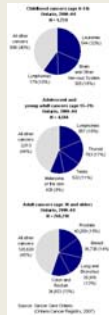


Figure 2: Causes of Cancer Deaths in Developed Countries
Source: Adapted from Adami et al., 2001 and Coidtz et al., 1996

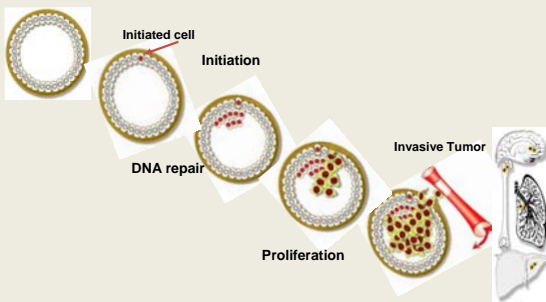
Cancer in Ontario: Childhood and Adolescent



Early Life Exposures

- Exposures
 - Preconception
 - In-Utero
 - Infancy and childhood
- Cancer
 - Childhood cancer
 - Early-life exposures causing later cancer

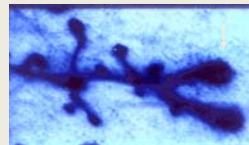
How does cancer occur?



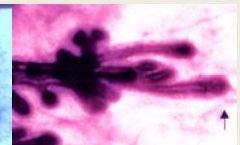
Timing of Exposure

Early exposures can affect breast cancer risk

- Terminal end buds
 - Target for cancer-causing chemicals



TEB, CD-1 mouse, 45 days old



TEB, Human, 13 yrs. old

Photo whole mount collection of Snedeker and DiAugustine, 1987

Ref: Howard and Gusterson, J. Mam. Gland Biol. Neoplasia, 5:119-137, 2000

Chemicals

- Carcinogens
- Endocrine disruptors

IARC Human Carcinogens

- IARC 1 (definite)
102 agents
- IARC 2A (probable)
69 agents
- IARC 2B (possible)
246 agents



Endocrine Disruptors

- PCBs and dioxins
- Some pesticides
- Phthalates
- Bisphenol A

Limitations in Research

- "What's causing my child's cancer?"
- Measures of exposure
- Mixtures of chemicals
- Small numbers of cases
- Gene environment interactions

National Pollutant Release Inventory

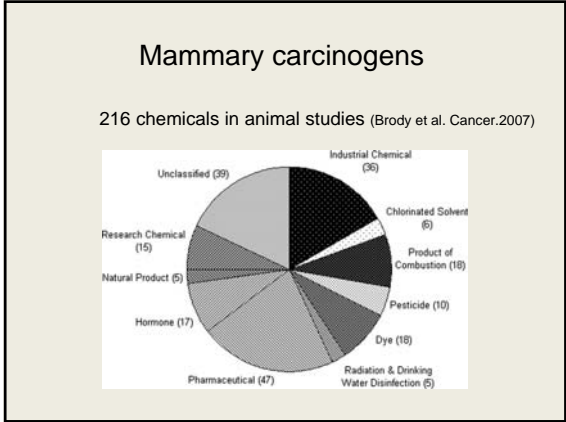
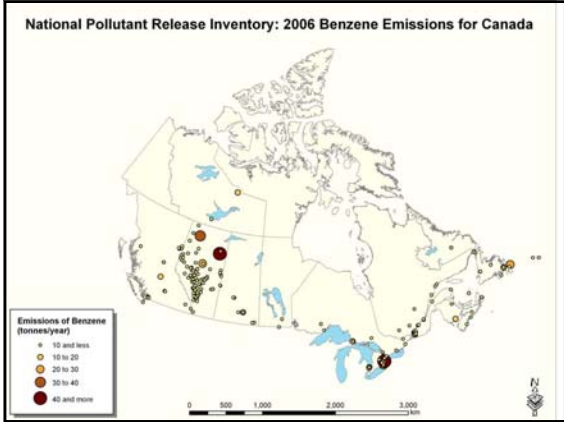


http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm

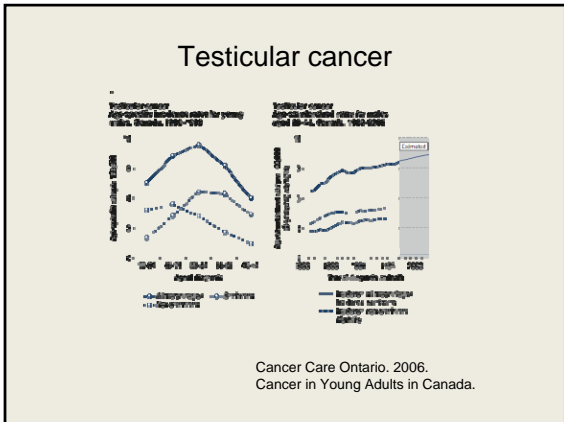
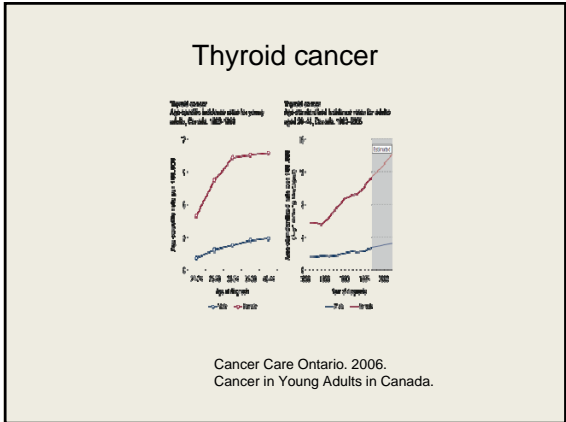
CAREX Canada: Workplace & Environmental Carcinogen Surveillance

- How many Canadians are exposed to workplace and environmental carcinogens?
- Where are they exposed?
- How high are their exposures?

UBC: Funded by CPAC

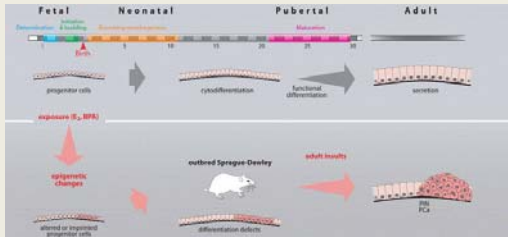


- ### Examples of Concern
1. Thyroid cancer
 2. Testicular cancer
 3. Bisphenol A



- ### BisPhenol A?
- Early exposures
 - Prostate cancer
 - Breast cancer

BPA and Prostate Cancer



Prins, Birch, Tang, Ho. *Reproductive Toxicology*, 23(3):374-82, 2007

Primary Prevention: Removing the cause of cancer

- Reducing personal exposure to carcinogens in the environment
 - Voluntary exposures
 - Involuntary exposures
- Reducing or eliminating the release of carcinogens into the environment

National Committee for Occupational and Environmental Carcinogens Best practices report

- Precautionary principle
- Occupational exposures
- Environmental exposures
 - Quantify exposure:
 - Pollution prevention: including Toxic Use Reduction
 - Control of cosmetic pesticide use
 - Right to know: Labelling of consumer products containing carcinogens