

## SCIENTIFIC CONTEXT, NEEDS AND PRIORITIES

### Ontario needs an Occupational Cancer Research Centre

In order to prevent occupational cancer, we need to find out:

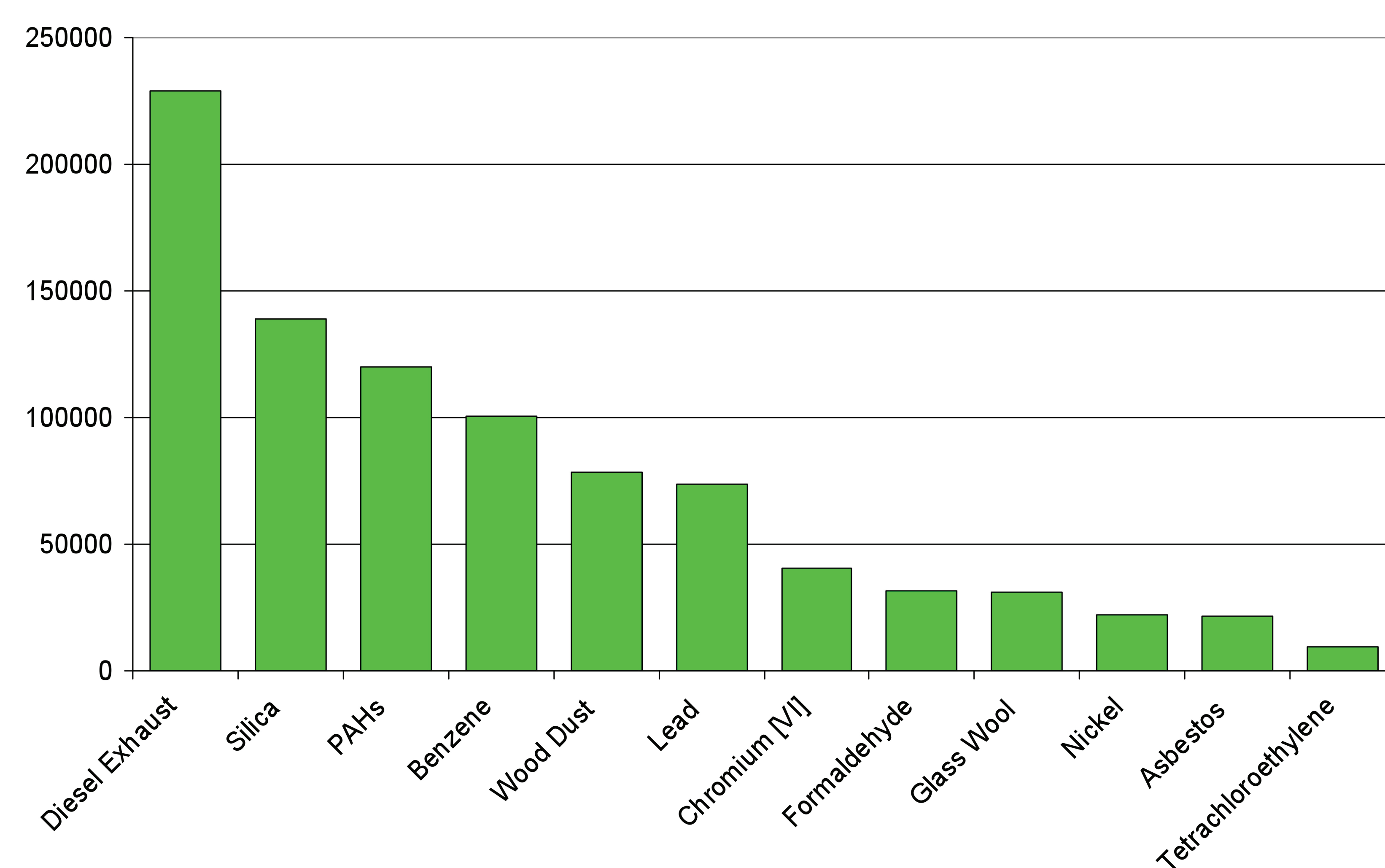
- What carcinogens currently exist in Ontario workplaces
- How many workers are exposed to these and in which workplaces
- What the risks of cancer associated with today's exposures are
- How many cancers in Ontario may be related to workplace exposures

### Workplace carcinogens

- ~60 workplace substances are definite or probable human carcinogens\*
- 100+ are 'possible' carcinogens\*
- Many more are suspected to be human carcinogens, but lack sufficient evidence to reach the possible, probably or definite levels
- Workplace carcinogens can end up in the environment
- \* As determined by expert consensus by the International Agency for Research in Cancer (IARC)

### Estimated number of workers exposed to carcinogens in Ontario workplaces\*

- 600,000 Ontarians may be exposed to carcinogens other than solar radiation at work
- Note: These are crude estimates and need to be verified
- \* CAREX for use in Canada, 2008



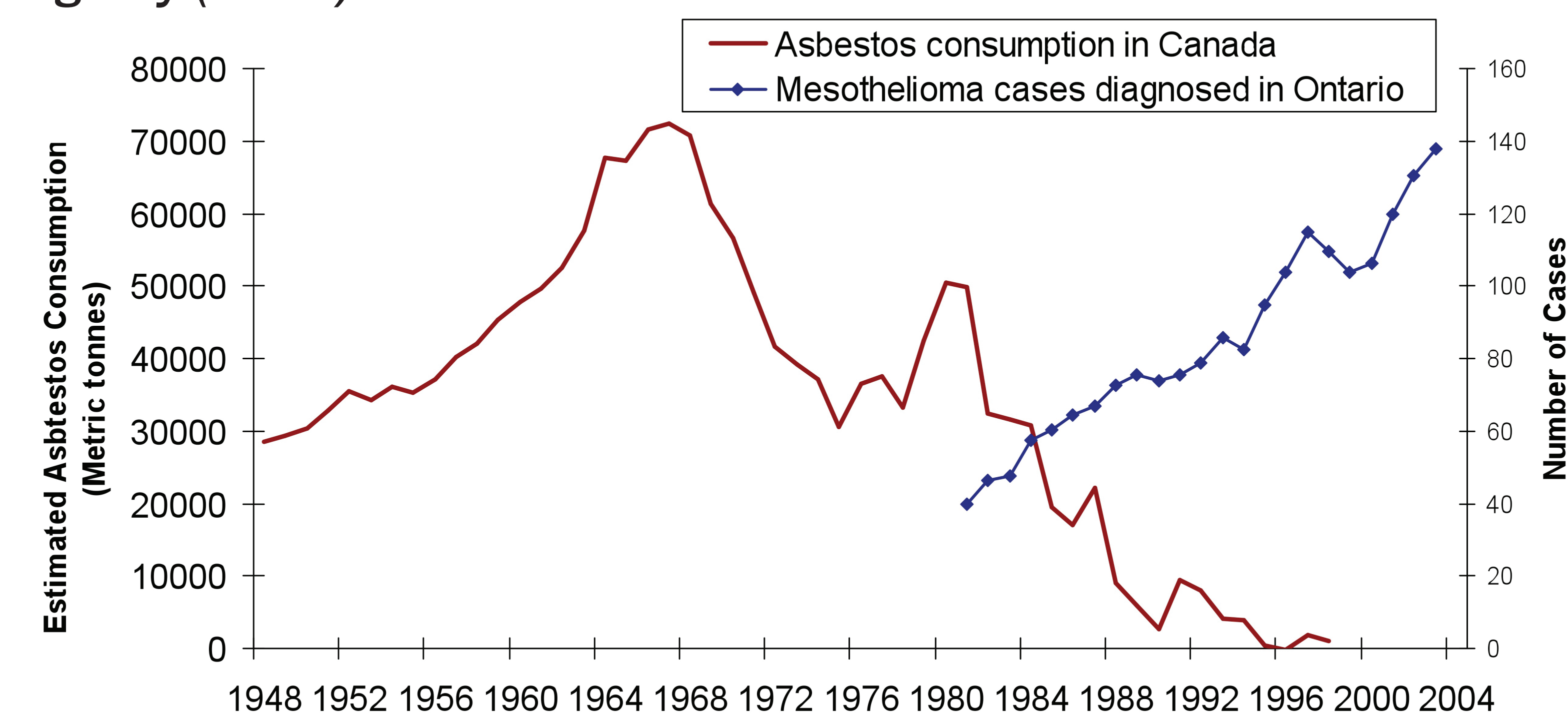
### Work-related cancers

- Past estimates suggest that 4-10% of cancer deaths in developed countries may be due to workplace exposures\*
  - This is an underestimate because so little is known about workplace exposures and cancer
  - The ONLY more important causes of cancer are tobacco and diet/physical activity/obesity
  - Occupational exposure may have a comparable impact on the cancer burden to other risk factors (e.g., hormones, radiation, medical conditions, medical therapies and infectious agents)
- Burden uneven - 20-30% of cancers in blue collar workers may be related to things in the workplace
- We don't know the numbers in Ontario
- \* See Nurminen et al. 2001; Steenland et al 2003; Robson et al. 2008 for recent estimates in FI, US and UK respectively

### Asbestos use in Canada and mesothelioma in Ontario

- Mesothelioma, a rare but highly fatal cancer, is a sentinel for workplace asbestos exposure
  - Increase parallels past rise in asbestos use
- Mesothelioma underestimates true cancer burden of asbestos
  - 2 additional lung cancers for every mesothelioma

Sources: Asbestos data from Natural Resources Canada, Canadian Minerals Yearbook (1944-2002); Mesothelioma data from the Ontario Cancer Registry (2006)



### Some definite workplace carcinogens\*

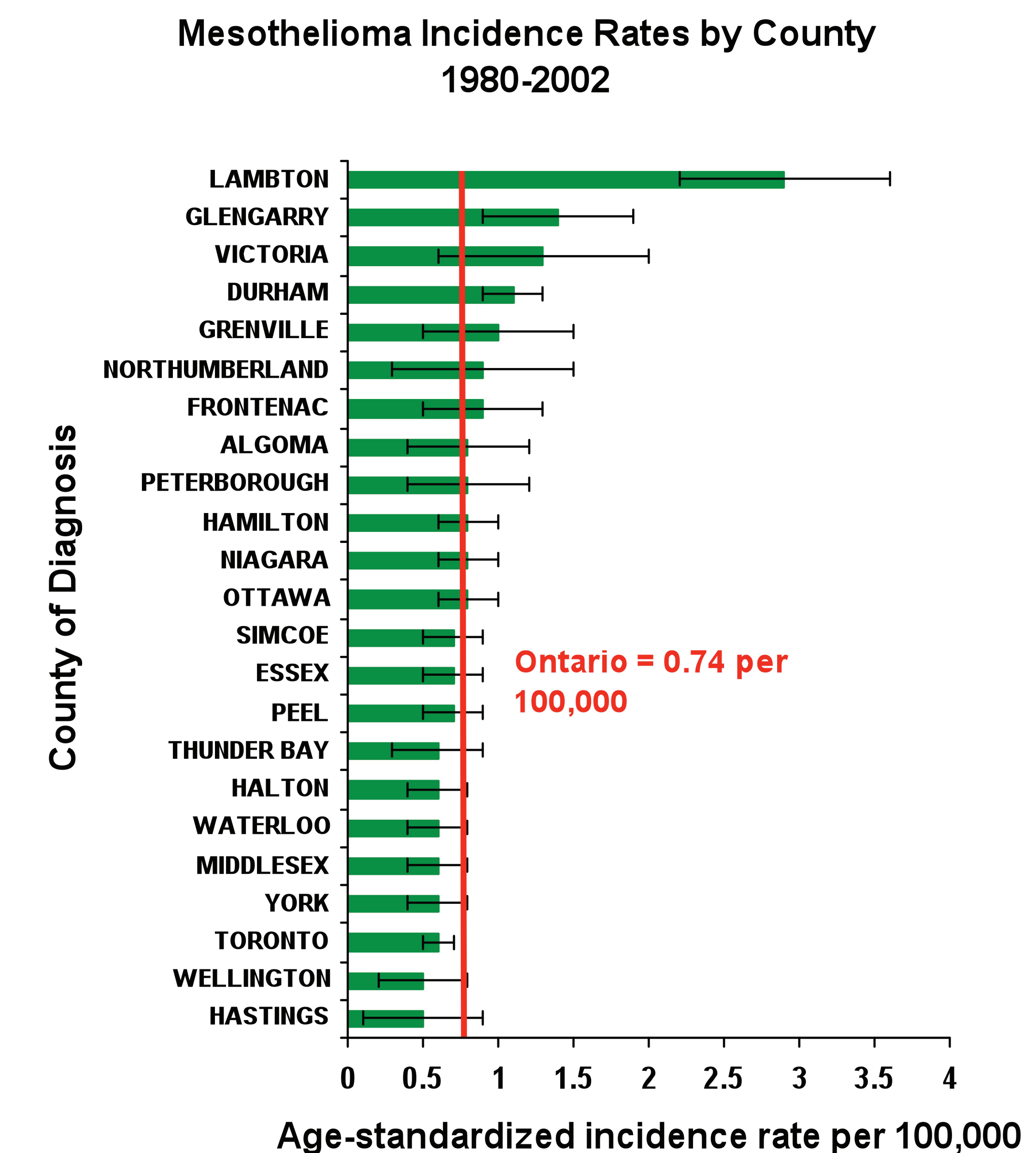
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Physical agents: ionizing radiation in various forms, ultraviolet radiation  
Dusts and fibres: asbestos, crystalline silica, wood dust

Industrial chemicals: vinyl chloride, formaldehyde, benzene, coal tars/pitches, soots, mineral oils, some plastic/rubber manufacturing intermediates, aromatic amine dyes, some pesticides, ethylene oxide

Metals: arsenic, beryllium, cadmium, chromium, nickel compounds  
Others: PAHs, sulfuric acid-containing acid mists, mustard gas, aflatoxin

### Ontario mesothelioma incidence rates 1980-2002



- Lambton County had major asbestos industries, and now has the highest rate of mesothelioma

Note: Counties where N<20 not shown

Source: Ontario Cancer Registry, 1980-2002 (SEER, 2004)

### OCRC priorities

- Determine the most prevalent workplace carcinogen exposures in Ontario
- Determine successful ways to reduce such exposures
- Establish effective knowledge transfer mechanisms
- Develop research projects for specific priority worker groups/exposures
- Establish system to estimate and monitor workplace cancers

### OCRC modus operandi

- Highest quality of science
- Applied research focus
- Fully collaborative - researchers, worker organizations and employers
- Emphasis on transfer of knowledge into action, education, legislation and policy
- Multi-disciplinary