



Occupational
Cancer
Research
Centre

The effectiveness of asbestos-related interventions in reducing cancer rates: a systematic review

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Background: Prevention



- A key reason to discuss the burden of occupational cancer is to encourage prevention
- Primary prevention:
 - i. Avoiding the introduction of carcinogenic agents
 - ii. Eliminating or drastically reducing exposure to carcinogenic agents

“Although primary prevention of occupational carcinogens must logically result in lowered cancer rates, such reductions are not easily documentable in quantitative terms because most of the published reports on the subject are limited to *predicting* declines in cancer risk.”

Source: Tomatis et al., 1997

Background: Asbestos



- Global asbestos production highest in the mid-20th century
 - ~181 million metric tonnes produced over the century
 - Peaked in 1975 at ~5 million tons
- Production declined in the 1960s and 1970s following the recognition of negative health consequences
 - Asbestos fibres have a specific shape and dimension that enables inhalation and deposition in the respiratory tract
- Despite the implementation of many dust-reduction techniques, the use of asbestos is now banned in most industrialized countries

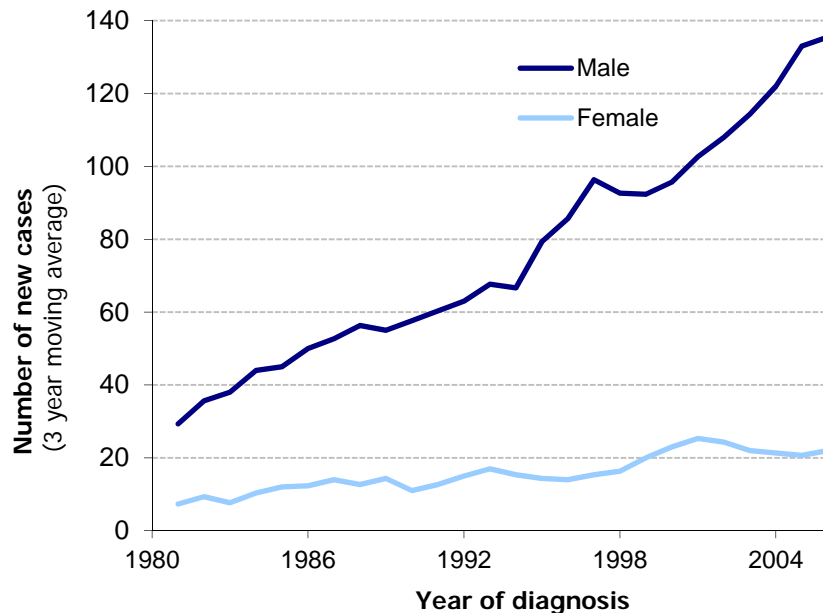
Source: International Agency for Research on Cancer, 2009

Background: Asbestos-Related Cancers



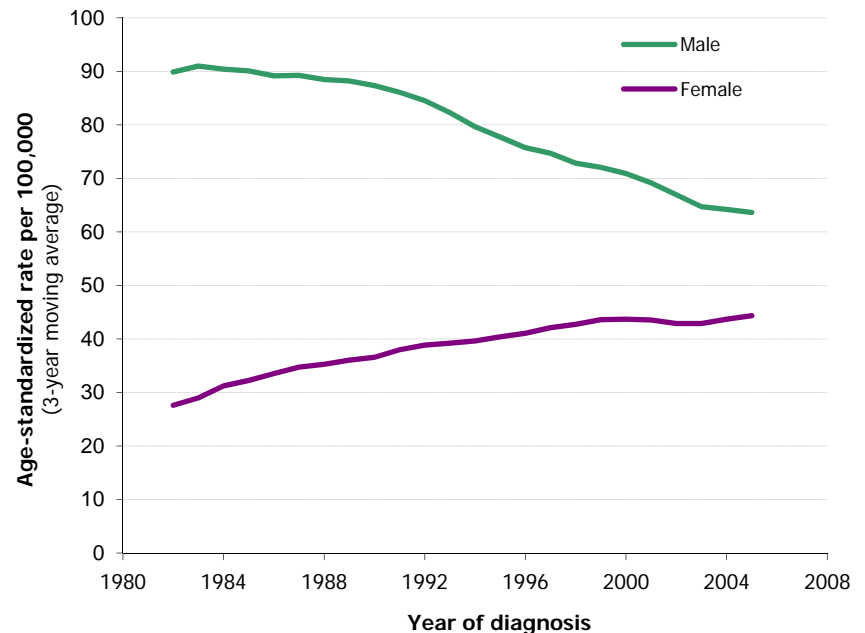
- Rates of mesothelioma continue to rise in most industrialized countries; almost entirely attributed to past asbestos exposure
- Rates of lung cancer stable or declining in many industrialized countries; largely due to ↓ smoking

Ontario cases of pleural mesothelioma, 1980 - 2006



Source: Ontario Cancer Registry

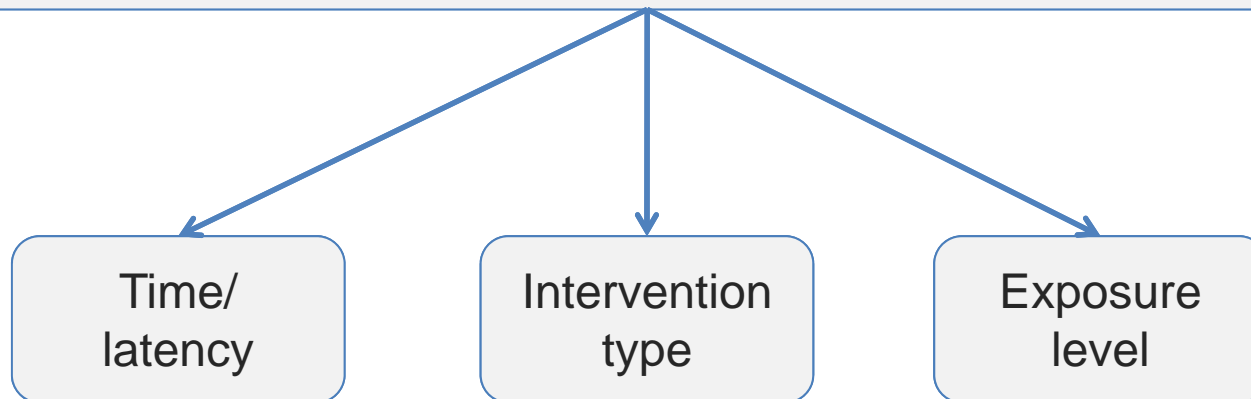
Ontario lung cancer incidence rates, 1981 - 2006



Project Objective



To quantify the effectiveness of asbestos-related interventions in reducing *incidence* of lung cancer, mesothelioma, overall malignancy



Search Methods

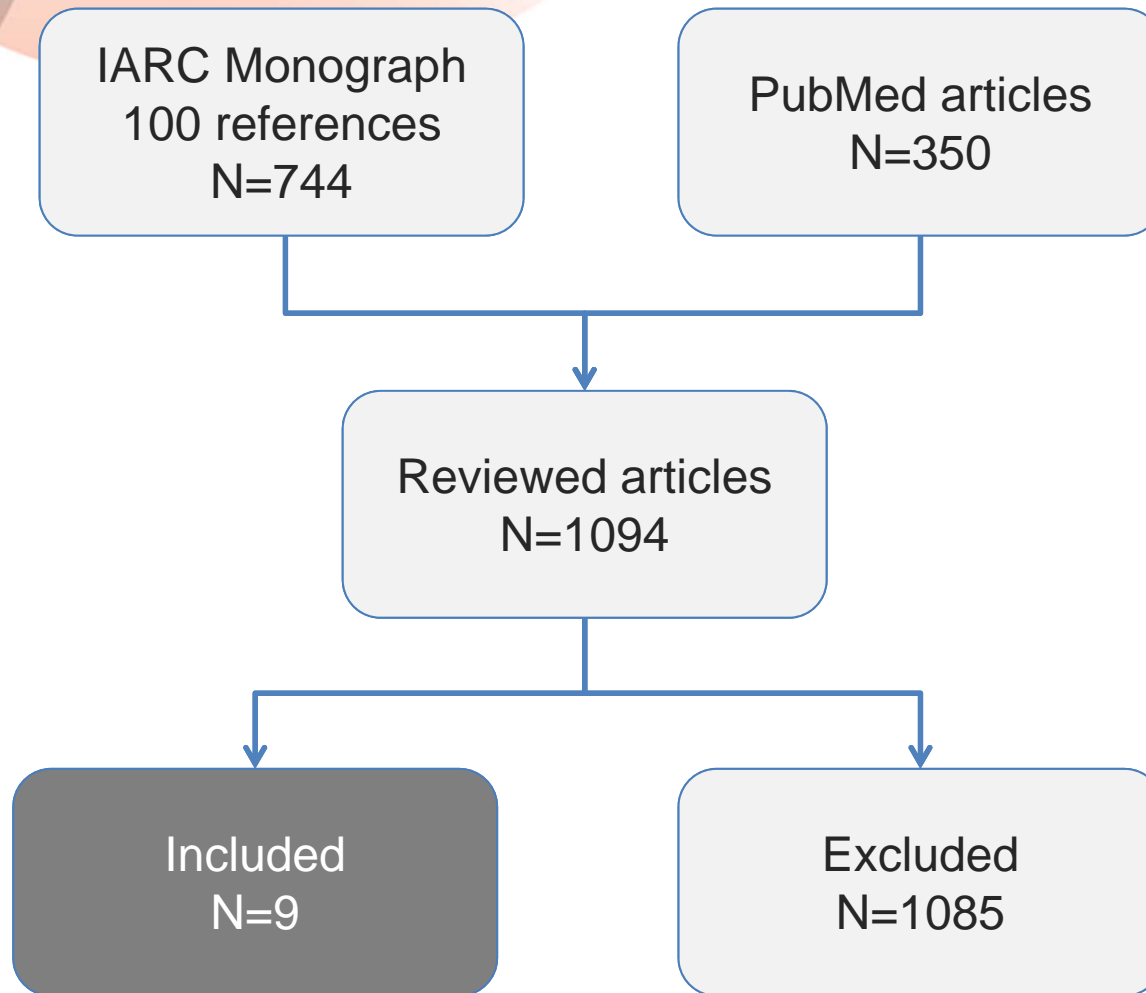


- Relevant information often buried within papers; not captured using traditional search methods

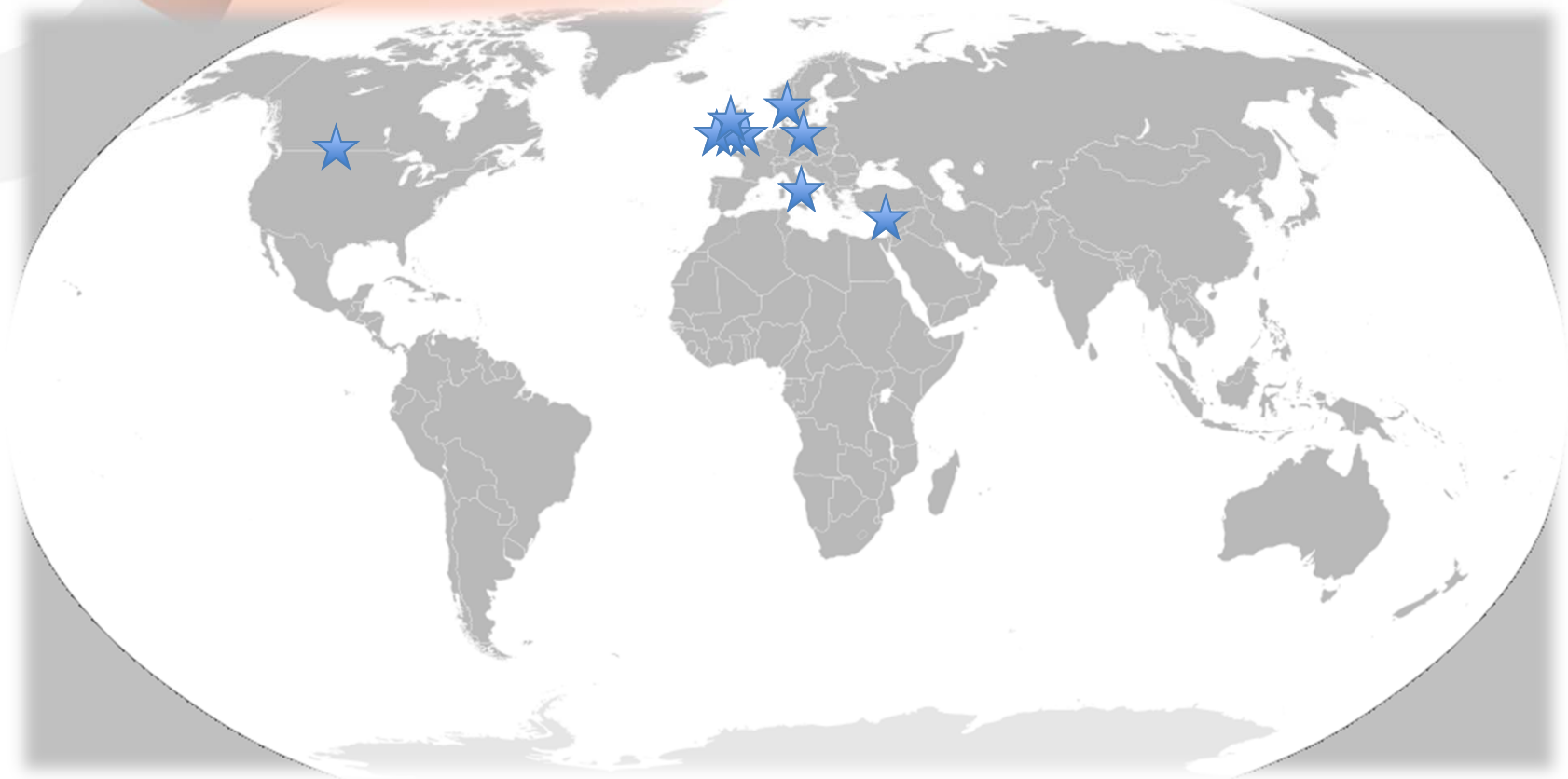
1. Review of all IARC Monograph 100 references on asbestos
2. Review of all articles on 'asbestos and cancer' indexed in PubMed since the monograph was completed

- Inclusion criteria:
 - Article evaluates an asbestos-related intervention on cancer risk, *or*
 - Article provides risk estimates stratified by time of exposure

Articles Reviewed



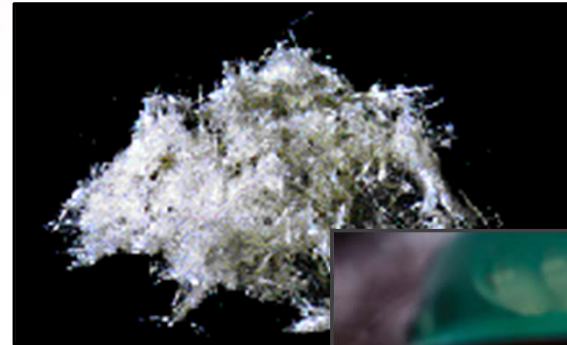
Geographic Location



- Canada and the United States, United Kingdom, Italy, Germany, Norway, Israel

Interventions

- Hygiene efforts (process)
 - Dust reduction
 - Improve crushing techniques
 - Use of dust-free bags
 - Use of closed-drum mixing
 - Use of wet processes
- Exposure-control policies
- Discontinuing use
 - Total halt of production
- Government bans



Conclusions



- Evidence in the literature that prevention efforts have been effective in decreasing incidence of lung cancer and mesothelioma
- Unsure of size of decrease in relationship to time
 - More pronounced effect observed for lung cancer than mesothelioma, probably due to disease latency
- Next steps - summarize findings examining:
 - Temporality
 - Exposure levels
 - Magnitude of decrease
- Final results may be informative for mesothelioma and lung cancer projections/future burden of cancer



Towards a cancer-free workplace