Investigating the need for asbestos management standards

ANYA KEEFE, PAUL DEMERS, MANISHA PAHWA, SOHAM PARELKAR

OHCOW OCC-TOBER SYMPOSIUM, OCTOBER 16, 2020

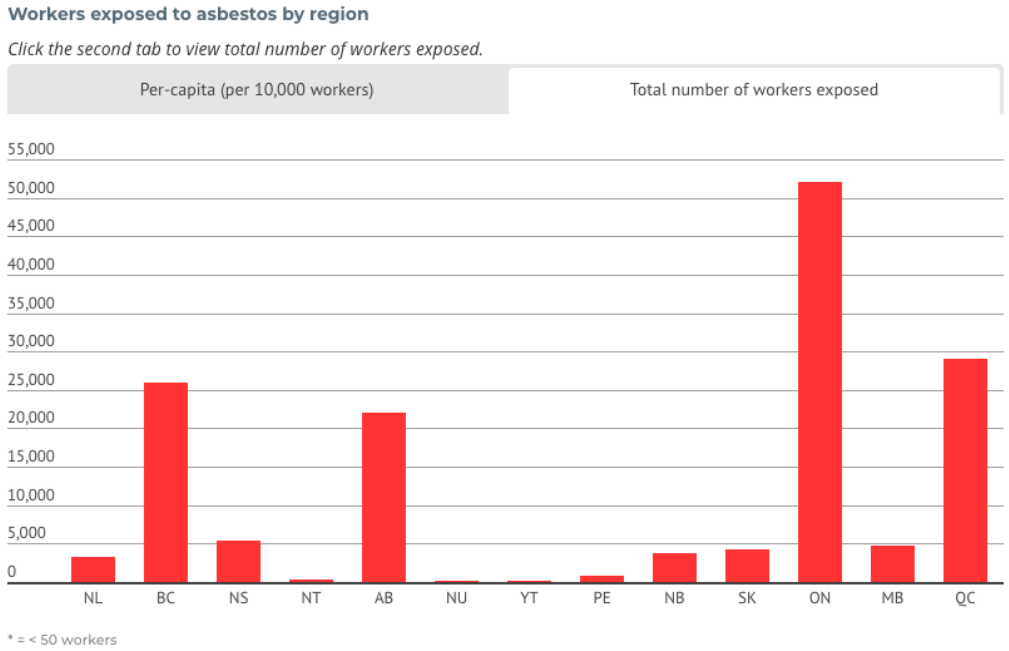
About the project

1. Literature review
   a) peer-reviewed publications
   b) grey literature
2. Environmental scan
   a) all Canadian jurisdictions
   b) selected international jurisdictions
      (Australia, European Union, United Kingdom, United States)
3. Key informant interviews
4. Gap analysis and recommendations

Background & context

152,000 WORKERS (EST.) ASBESTOS EXPOSURE IN CANADA

FIVE LARGEST EXPOSURE GROUPS BY INDUSTRY		PROPORTION OF INDUSTRY EXPOSED
Specialty trade contractors	82,000	14%
Building construction	52,000	14%
Automotive repair and maintenance	4,300	<5%
Ship and boat building	4,200	36%
Remediation and other waste management	1,700	17%



Source: CAREX Canada (Asbestos Occupational Exposures)

Literature review

Asbestos abatement

Hazard identification

- asbestos-containing materials

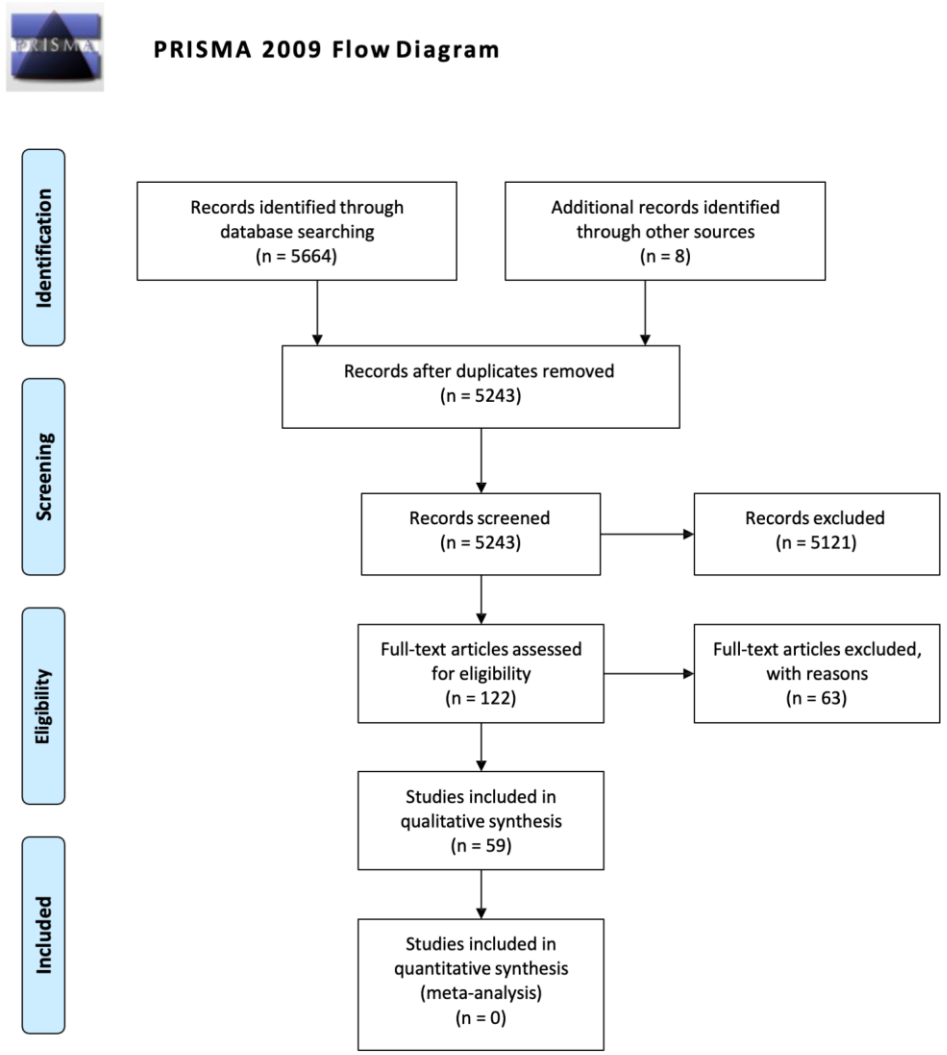
Exposure surveillance

- registries of exposed workers

Waste management

Asbestos management in public buildings

Education and training



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Preliminary findings: literature review

Thematic cluster	# studies	Main findings
Asbestos abatement	4	Need for: improved procedures and/or better protection, proactive exposure surveillance system
Exposure surveillance	10	Some workers may still be exposed at levels > OEL, data collection systems are useful for evaluating impact of regulatory milestones, national exposure registries may stimulate preventive measures, exposed worker registries and exposure databases are useful but should be based on established principles of effective occupational surveillance
Waste management	11	Innovative methods of treating asbestos-containing waste exist but there are barriers to widespread adoption/implementation, multi-level government support and stakeholder engagement required for implementing dedicated national asbestos elimination strategy

Preliminary findings: literature review

Thematic cluster	# studies	Main findings
Evaluation of regulations	6	Bans are effective but require multiple decades of surveillance, high number of mesotheliomas forecast to 2060 - even with most health-protective OELs, need for a holistic approach to asbestos management (regulations + training + monitoring + surveillance + better diagnosis), build strategic policy frameworks that integrate political context but are grounded in science, importance of government and stakeholders working together
Managing asbestos in public buildings	2	Key evidence gaps: removing asbestos vs. managing in place, effectiveness of controls during removal/clearance, techniques to measure airborne levels at lower levels than currently feasible; best practices for removal: asbestos registry, training/competency
Education and training	2	Training appears to have positive impact on asbestos management (i.e., creates significantly more awareness of responsibilities), potential for disparities in knowledge between different occupations

Environmental scan

- Legislative & regulatory context
- Definition of key terms
- Hazard identification and risk assessment
- Prevention and protective measures
- Competency and training
- Documentation
- Monitoring and measurement

Legislation and regulations

Definitions

- Asbestos: 9 jurisdictions
  - fibrous form of crocidolite, amosite, chrysotile, anthophyllite, actinolite, tremolite (or mixture thereof)
- Asbestos-containing material: 13 jurisdictions
  - containing some minimum % of asbestos (0.1-1.0%)
  - 5 jurisdictions: vermiculite as separate category of ACM
- Asbestos dust: 5 jurisdictions
  - airborne (or likely to be so) after settling out
- Friable: 13 jurisdictions
  - “crumbled, pulverized, or powdered” (10 jurisdictions)
  - “when dry” and “by hand pressure” (12 jurisdictions)

Hazard identification & risk assessment

- Hazard identification: 6 jurisdictions
- Testing requirements: 12 jurisdictions
  - NIOSH vs. EPA vs. IRSST vs. “appropriate” or ”approved”
- Asbestos inventory: 11 jurisdictions
  - Location of asbestos-containing materials (10 jurisdictions)
  - Documentation of type of asbestos (7 jurisdictions)
  - State of material (5 jurisdictions)
  - Must be kept current (5 jurisdictions)
  - Annual inspections (3 jurisdictions)
- Risk assessment (10 jurisdictions)
  - Location, type of ACM, condition (10 jurisdictions)
  - Low vs. moderate vs. high risk activities (9 jurisdictions)

Prevention & protective measures

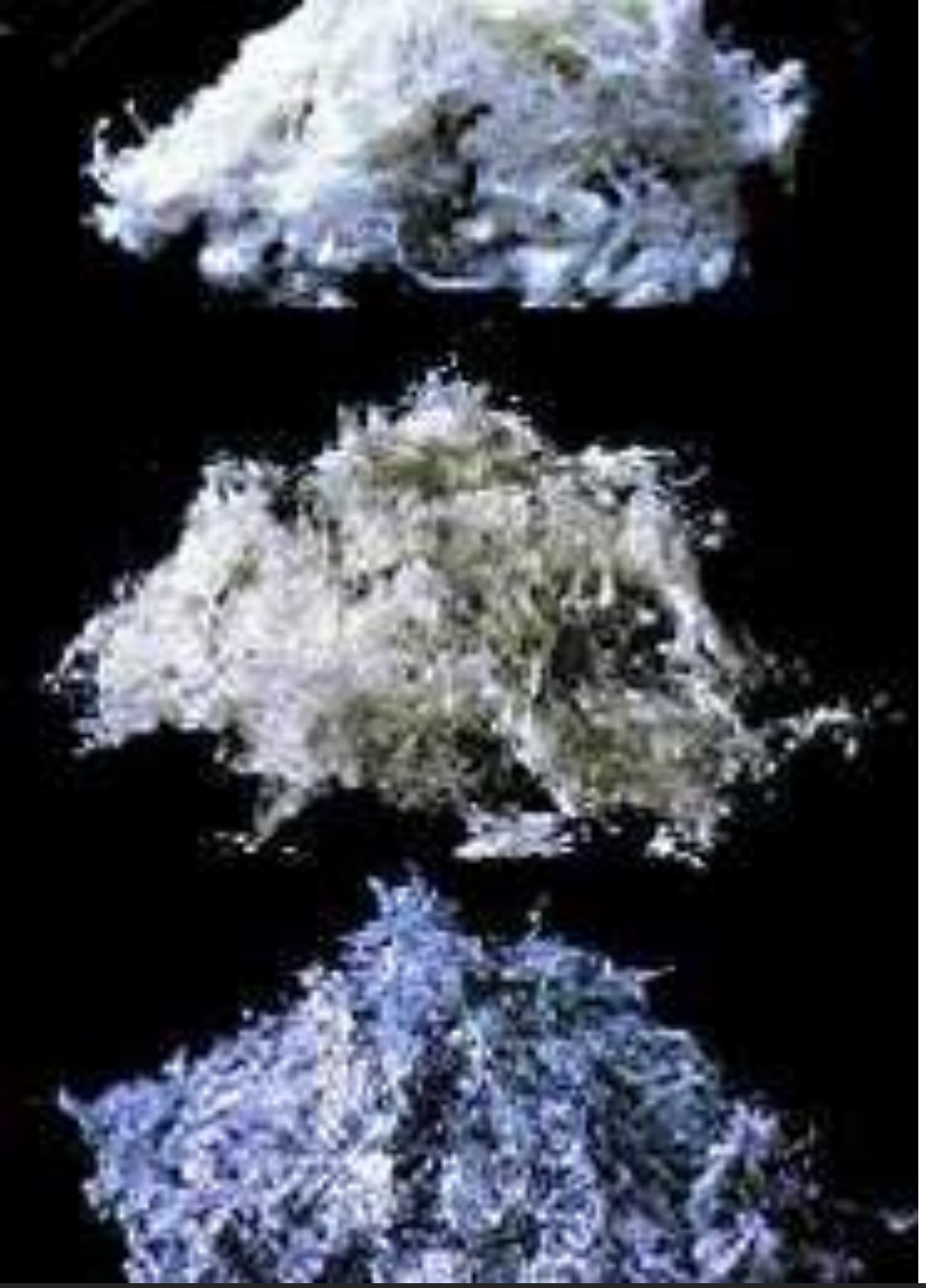
- Prohibitions on use/activity: 12 jurisdictions
  - use of crocidolite (8 jurisdictions)
  - spraying of asbestos or ACM (8 jurisdictions)
- Hierarchy of controls: 13 jurisdictions
  - elimination/substitution (5 jurisdictions)
  - isolation (11 jurisdictions)
  - engineering controls (13 jurisdictions)

    HEPA vacuum cleaners (13), LEV (11), containment ventilation (7), filter testing (7)
  - administrative controls (14 jurisdictions)

    wet methods (14), procedures to prevent spread (13), procedures to protect surfaces (5), procedures to repair damaged ACM (8)
  - personal protective equipment (14 jurisdictions)

Competence & training

- Competence: 9 jurisdictions
  - competent, competent worker, competent person, qualified worker, qualified person, qualified individual, qualified contractor
  - combination of knowledge, skills and training to perform assigned or required duty or task (9 jurisdictions)
- Training: 11 jurisdictions
  - “adequately trained” vs. complete approved course vs. receive training “appropriate to the risk”
  - topics to be covered: hazards of asbestos (10), how to identify ACM (7), safe work procedures (9), selection and use of PPE (10), correct operation of required controls (10)



Exposure monitoring

- Personal sampling (9 jurisdictions)
- Area sampling (14 jurisdictions)
  - nature of operation, presence of workers in adjacent area, change in process or control measure(s), “when necessary for worker protection”
  - frequency: once per shift vs. “intermittently” vs. “as necessary”
  - location: perimeter, areas outside and adjacent to work area, inside containment
- Clearance sampling (11 jurisdictions)
  - levels below 0.01 fibres/cc (6 jurisdictions)
  - levels below 0.02 fibres/cc (1 jurisdiction)
  - levels below 0.05 fibres/cc (1 jurisdiction)
  - levels below 0.1 fibres/cc (1 jurisdiction)
  - levels below 0.2 fibres/cc (1 jurisdiction)
  - level not specified (1 jurisdiction)

Exposure limits: 8-hour TWA

- 8 jurisdictions: 0.1 fibres/cc for all forms of asbestos
- 3 jurisdictions: OEL varies by type of asbestos

	Quebec	Prince Edward Island	Yukon
actinolite	1.0		
anthophyllite	1.0		
amosite	0.2	0.5	0.2
chrysotile	1.0	2.0	0.5
crocidolite	0.2	0.2	
tremolite	1.0		0.5

Exposure limits: 15-minute STEL

- 2 jurisdictions: varies by type of asbestos

	Quebec	Yukon
actinolite	5.0	
anthophyllite	5.0	
amosite	1.0	2.0
chrysotile	5.0	5.0
crocidolite	1.0	5.0
tremolite	5.0	
talc (fibrous)		5.0

Health monitoring

- Health monitoring program: 8 jurisdictions
- Pulmonary function tests: 10 jurisdictions
- Chest x-rays: 6 jurisdictions
- Frequency of assessment
  - at baseline (5 jurisdictions)
  - periodic assessments (8 jurisdictions)
    annually, bi-annually, every 3 or 5 years
  - after acute exposure (1 jurisdiction)
- Cost to be borne by employer (10 jurisdictions)
- Documentation of exposure history (4 jurisdictions)

Next steps

- Preliminary report being reviewed by CSA Group Research Project Advisory Panel

  John Beckett (FETCO/BC Maritime Employers), Alec Farquar (Asbestos Free Canada), Kimberly O'Connell (OHCOW), Troy Winters (CUPE)

- Key informant interviews
  - Minimum of 20
  - Completion date: end of November 2020
- Report and recommendations to CSA
  - Early 2021

Questions?