

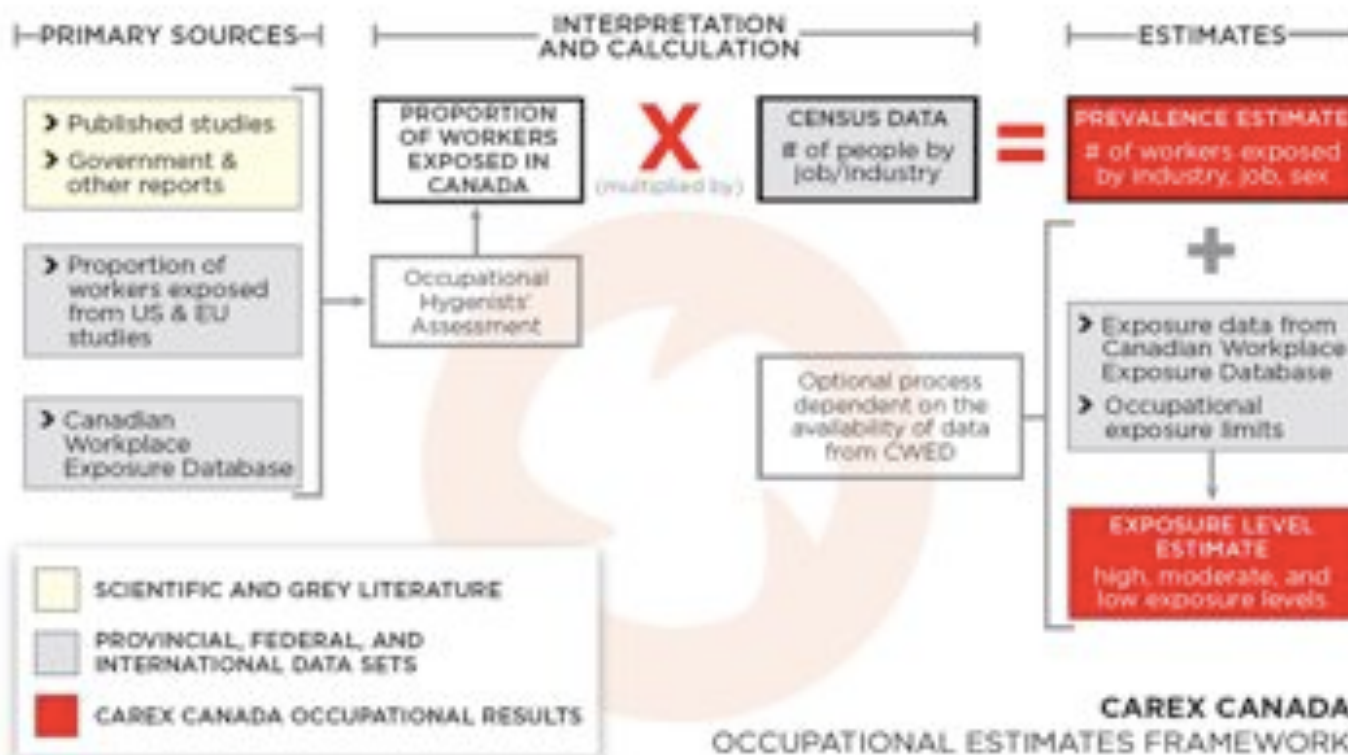
Outline

- Methods:
 1. The occupational estimate approach
 2. Tools and data management
- Results:
 1. Numbers exposed by agent
 2. Detailed examples
- Concluding remarks

Occupational Exposure Estimates

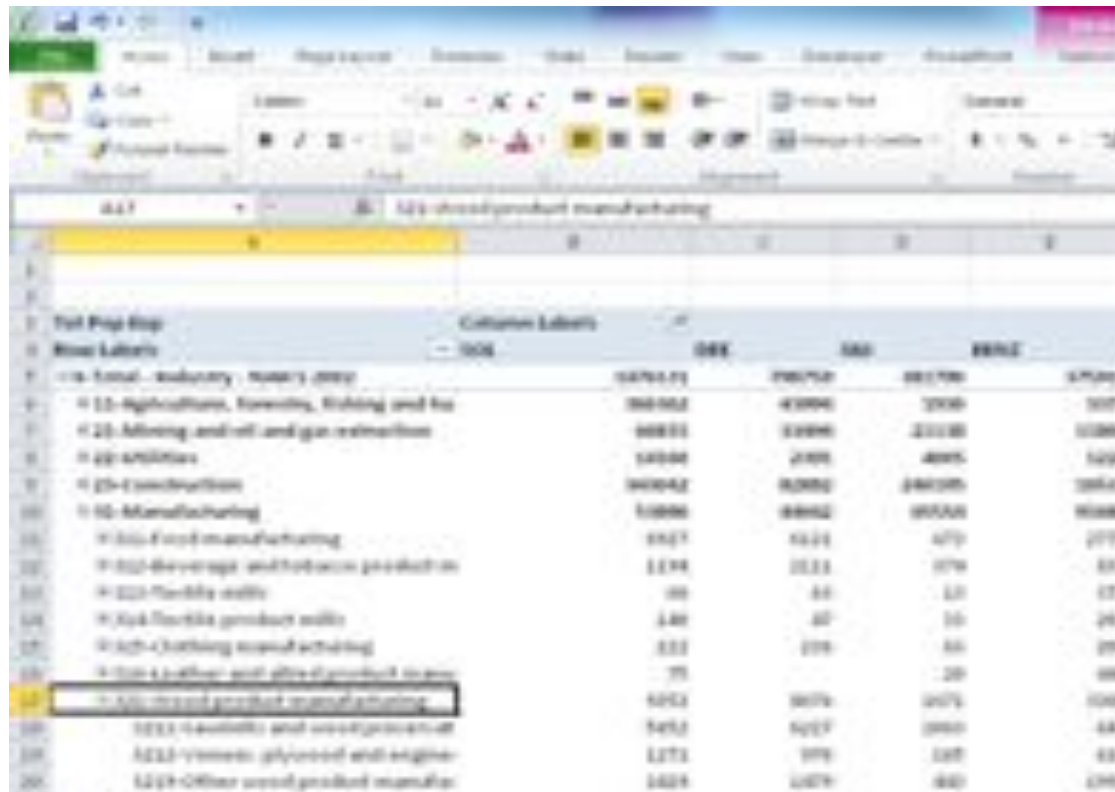
METHODS (1)

General approach

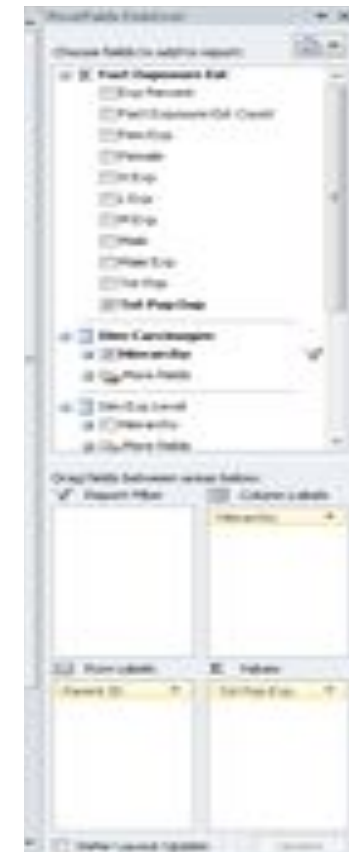


Tools and data management

METHODS (2)



Total Pop. Exp.	Row Labels	2006	2007	2008	2009
44.1	44.1 Wood product manufacturing				
44.1	44.1 Wood product manufacturing	14764.71	15675.2	16179.6	17549.8
44.1	44.1 Agriculture, forestry, fishing and hunting	361.662	4399.6	3709	3075
44.1	44.1 Mining and oil and gas extraction	668.11	3399.6	2313.8	1086.6
44.1	44.1 Utilities	143.64	2195	4895	5496
44.1	44.1 Construction	3604.2	6260	2461.6	384.1
44.1	44.1 Manufacturing	10886	6662	955.6	6086
44.1	44.1 Food manufacturing	1517	1411	479	1775
44.1	44.1 Beverage and tobacco products	1194	1111	579	117
44.1	44.1 Textile mills	88	11	11	173
44.1	44.1 Textile product mills	140	17	16	264
44.1	44.1 Lumber and wood product mills	111	119	11	179
44.1	44.1 Lumber and wood product mills	75	11	11	111
44.1	44.1 Wood product manufacturing	14764.71	15675.2	16179.6	17549.8
44.1	44.1 Chemical and allied products	14764.71	15675.2	16179.6	17549.8
44.1	44.1 Chemical and allied products	14764.71	15675.2	16179.6	17549.8
44.1	44.1 Chemical and allied products	14764.71	15675.2	16179.6	17549.8



Methods: Exposure levels

METHODS (3)

- Example: Wood dust

HIGH EXPOSURE

- ≥ 25 samples
- $\geq 20\%$ of the samples $\geq 2.5 \text{ mg/m}^3$ (1/2 the historical OEL)



MODERATE EXPOSURE

- ≥ 25 samples
- $\geq 20\%$ of the samples $\geq 0.5 \text{ mg/m}^3$ (1/2 the current OEL)



LOW EXPOSURE

1) CAREX identified potential exposure, OR 2) any # samples, AND expert assessment confirmed likely exposure



Who is at risk?

exposed and cancer sites

RESULTS (1)

Known or suspected carcinogen	# Exposed	Confirmed	Suspected
Shiftwork with potential circadian disruption	2,800,000		Breast, prostate
Solar radiation	1,500,000	Skin	
Diesel engine exhaust	804,000	Lung	
Silica (crystalline)	349,000	Lung	Others?
Polycyclic aromatic hydrocarbons (PAHs)	307,000	Lung, skin, bladder	
Benzene	297,000	Acute non-lymphatic leukemia	ALL, multiple myeloma, NHL
Wood dust	293,000	Sinonasal, nasopharynx	
UV radiation (artificial sources)	141,000	Skin, eye	
Lead	202,000		Lung, stomach
Asbestos	152,000	Lung, mesothelioma, larynx, ovary	Pharynx, colon, rectum, stomach

RESULTS (2)

Other wood products manufacture
24,000 exposed

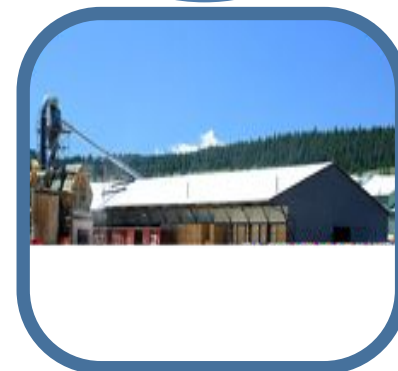
Building finishing contractors
29,000 exposed

Wood dust exposure

Furniture manufacture
32,000 exposed

Residential Building Construction
94,000 exposed

Sawmills
39,000 exposed



RESULTS (3)



**Amusement &
Recreation**
45,000
exposed



Farming
264,000 exposed



**Foundation &
Building Exterior
Contractors**
68,000 exposed

**Residential Building
Construction**
108,000 exposed



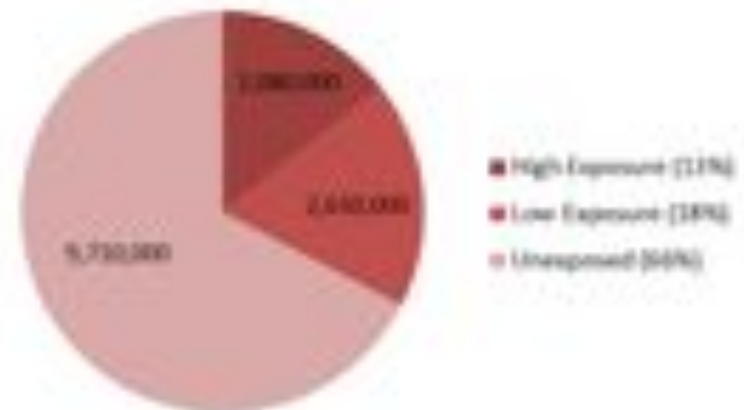
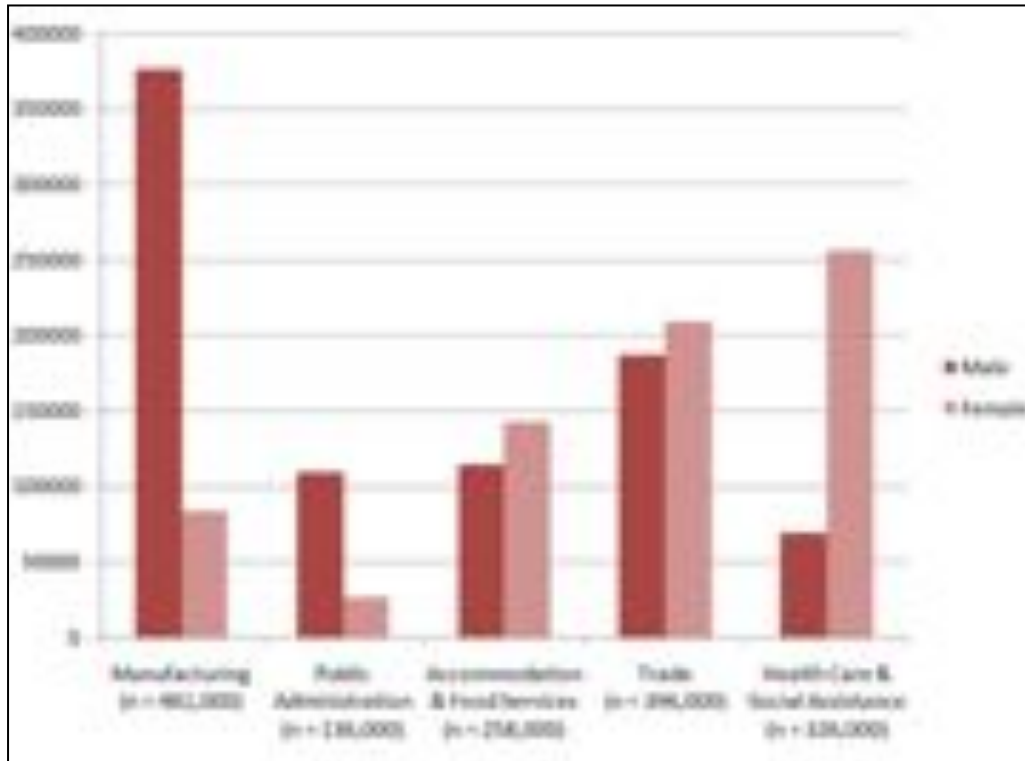
**Solar UV
exposure:
Outdoor
workers**

**Services to
Buildings**
83,000 exposed



Results: Shift work

RESULTS (4)



High: Work between 12 and 5am

Unexposed: Day shift

Low: Other evening and irregular shifts

Results: Antineoplastic agents (prevalence)

RESULTS (5)

Total number of workers exposed = 65,000

70% female, 30% male

100 women

18,000 Nurses
60% female, 40% male

21,000 Pharmacy Assistants
50% female, 50% male

18,300 Pharmacists
50% female, 50% male

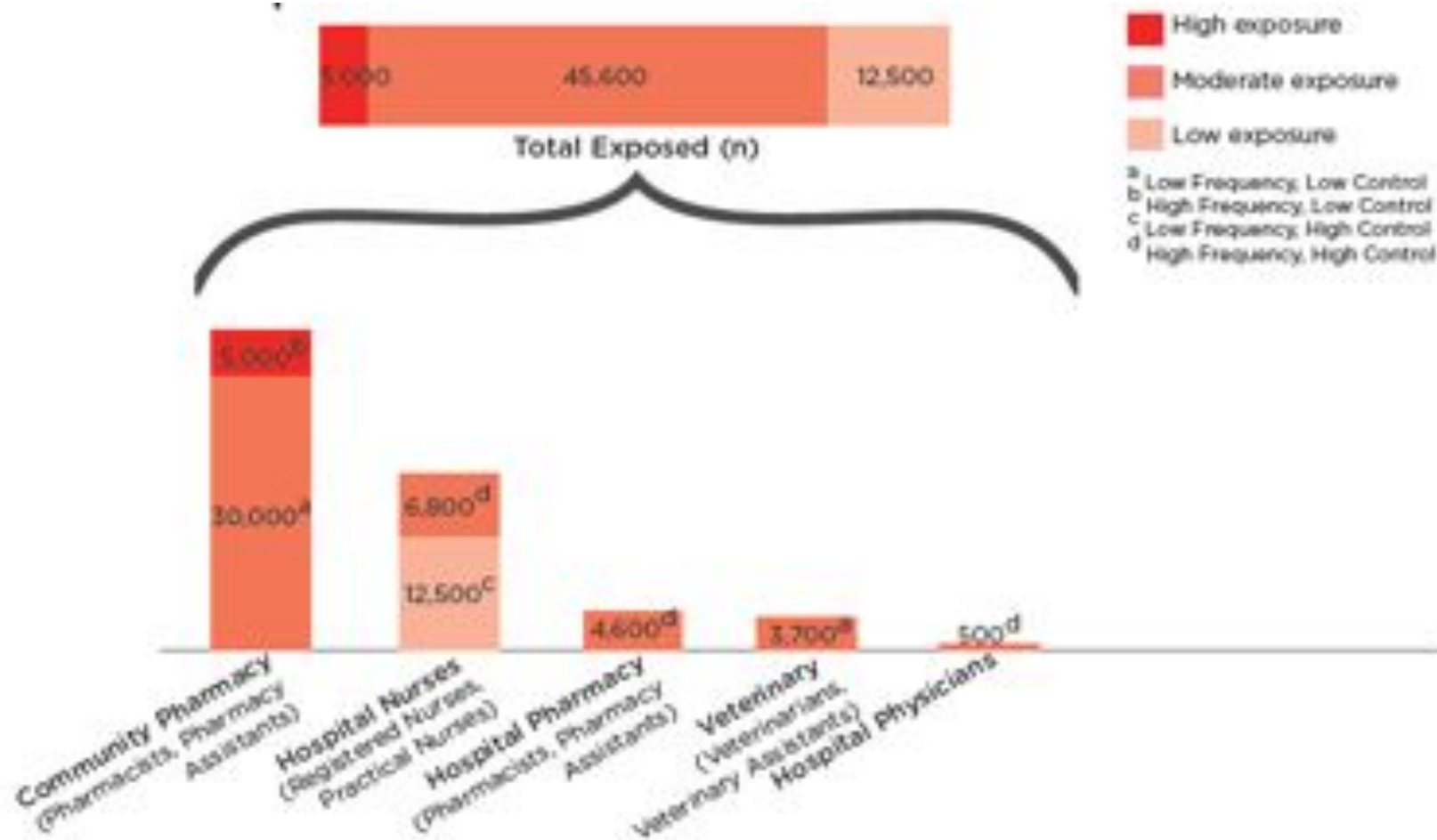
3,300 Veterinary Staff
50% female, 50% male



Other potentially exposed workers
in hospital: housekeeping, laundry, shipping/
receiving, transport
(outside of hospital: manufacturing
industrial laundry)

Results: Antineoplastic agents: Levels of exposure

RESULTS (6)



Conclusions

CONCLUSIONS (1)

- Exposure to carcinogens is an important workplace health issue in Canada
- Very large sectors of the work force are at risk of exposure
 - some sub-sectors at risk of high exposure.
- This data provides information of use to policy makers on reducing the risk of cancer in Canada

Antineoplastic agents: Levels of exposure

		B. Control of Exposure	
A. Frequency of Exposure		LOW ^a	HIGH ^b
	LOW (weekly or less)	Moderate Exposure	Low Exposure
	HIGH (daily to weekly)	High Exposure	Moderate Exposure

^aFewer than two of the following are typically observed:

^bTwo or more of the following are typically observed:

- * industry/worker awareness of hazard
- * Exposure controls in place, e.g. Handling Protocols, Protective Clothing
- * Environmental/Medical monitoring of workplaces/workers