BVLD AMS 2010 AGM
Air Quality and Your Health

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Shawna Scafe, Public Health Planner

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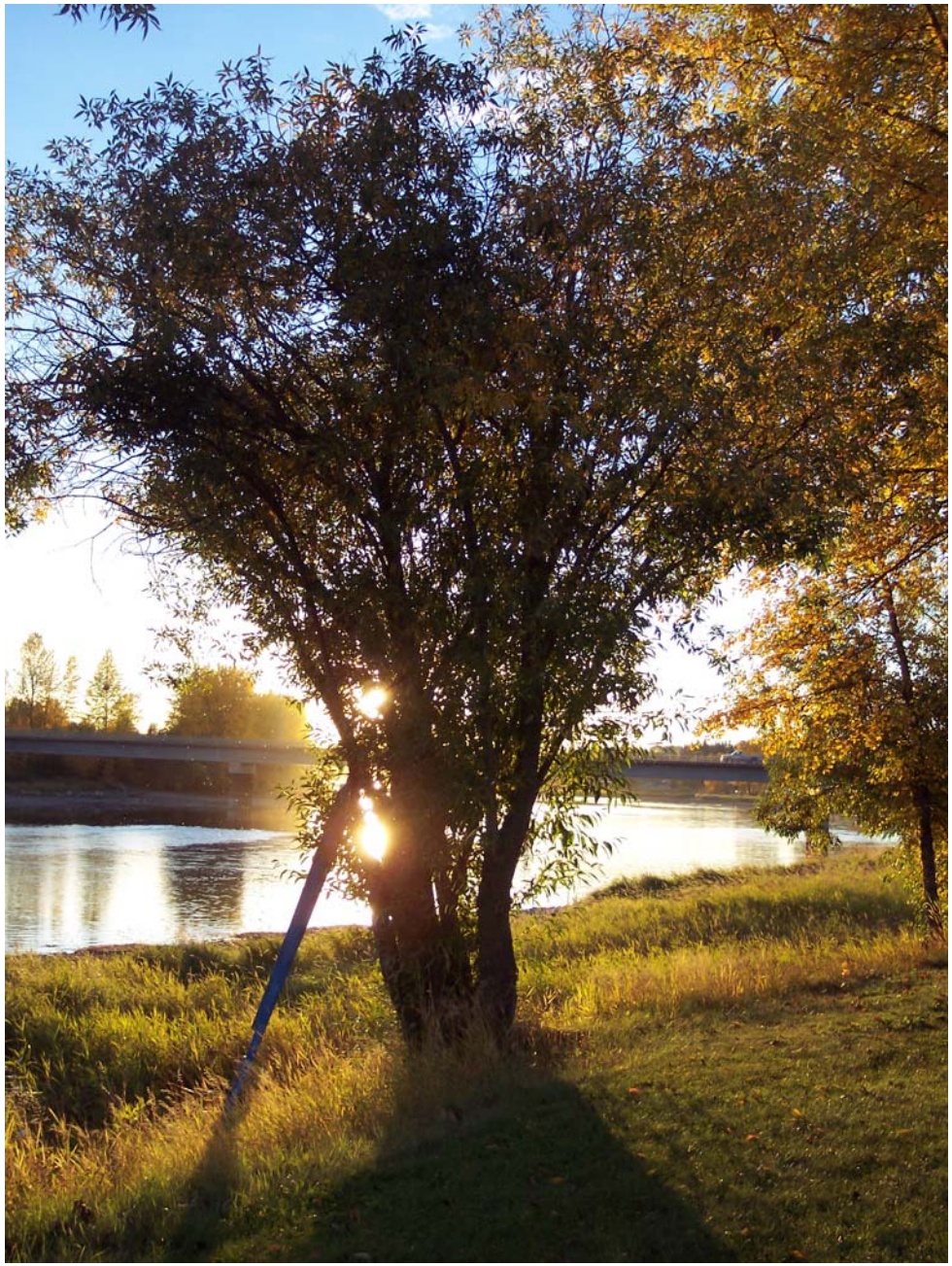
Overview of Tonight's Presentation

- The Health Impact Of Air Pollutants
- Particulate Matter
- Respiratory Diseases in the BVLD AMS Area
- Ways to Reduce Air Pollution
- Ways to Protect Your Health
- Where to Go For More Information

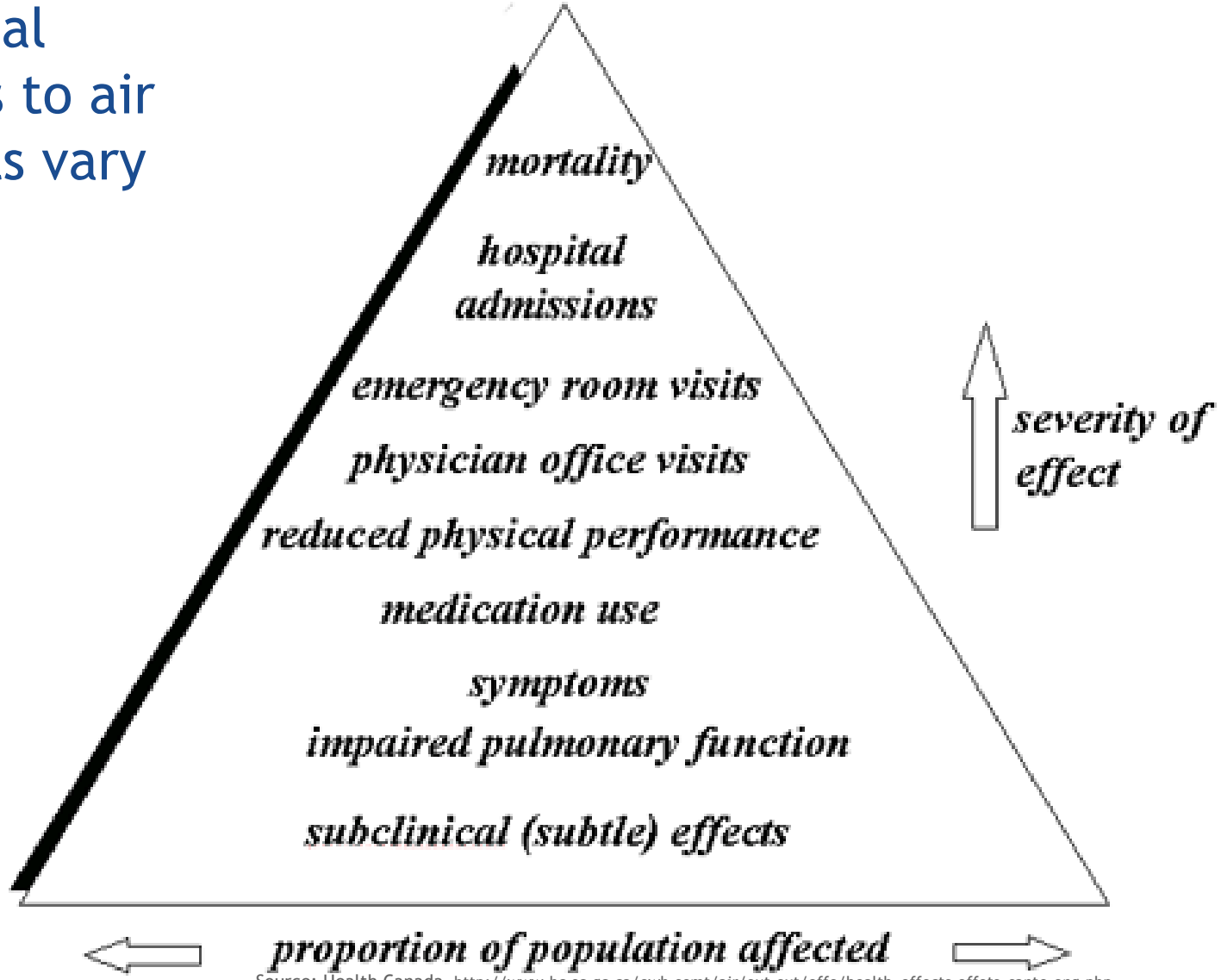
Health Impact of Air Pollution

- Estimates that air pollution causes 2 million deaths in the world each year
- Estimated 130 deaths every year in Northern BC (Study by Elliot and Copes, 2007)
  - A greater numbers will have health effects, including increased coughing, reduced lung function, etc



Pyramid of health effects of air pollution

- Individual reactions to air pollutants vary



Source: Health Canada, http://www.hc-sc.gc.ca/ewh-semt/air/out-ext/effe/health_effects-effets_sante-eng.php

Who Is Most Affected By Air Pollution

- Elderly
- Young children
- Those who have respiratory disease, cardiac disease and diabetes
- Those with weakened immune systems
- Studies suggest women are more at risk
  - Kunzli et al., Air Pollution and Atherosclerosis in LA, 2005 (Univ. of Southern CA)
  - Chen et al., Fatal CHD & Air Pollution, 2005 (Loma Linda Univ.)
  - Miller et al.,*"Long-Term Exposure to Air Pollution and Incidence of Cardiovascular Events in Women", The New England Journal of Medicine*," vol. 356 no. 5, February 2007

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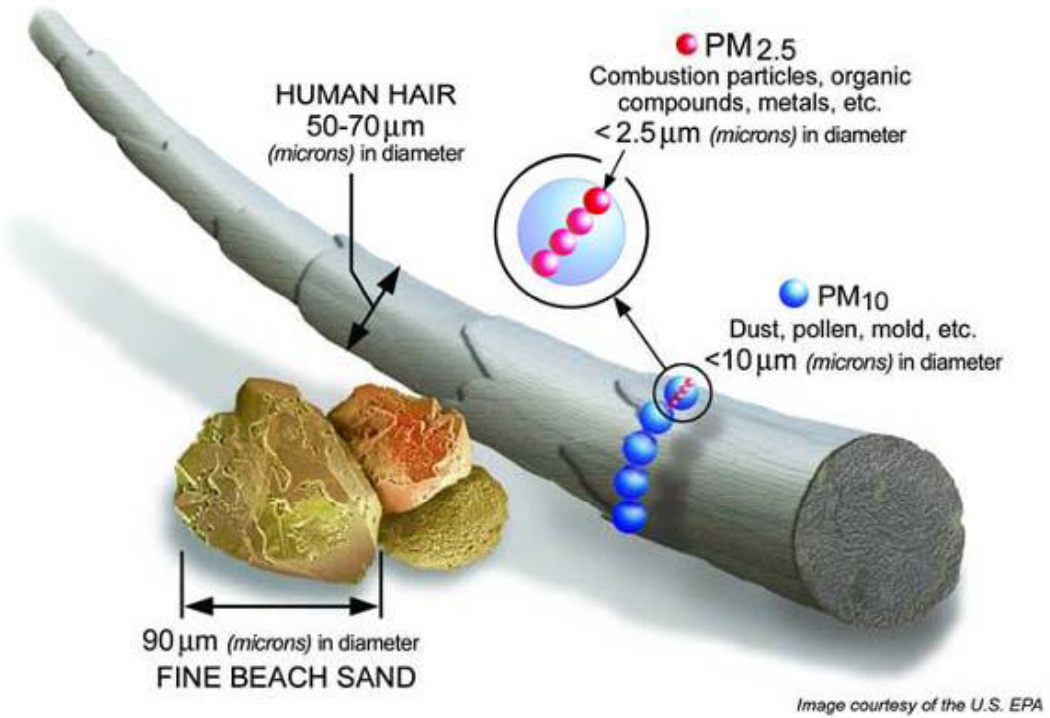
Particulate Matter….

What is Particulate Matter (PM) ?



PM > 40 is visible to the naked eye

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Where Does PM Come From?

Source: http://www.dust-control-inc.com/images/road-dust-control-1.jpg

Source: MOE, http://www.env.gov.bc.ca/epd/regions/skeena/air/particulates/case-study.htm

Source: http://www.proprecycles.org/Open%20Burning%20Information.html

Source: Cariboo News, http://www.cariboo.bc.ca/news/past02Nov25/stories02nov25/kyotok.html

Source: http://www.smi.ca/FireManagement.html

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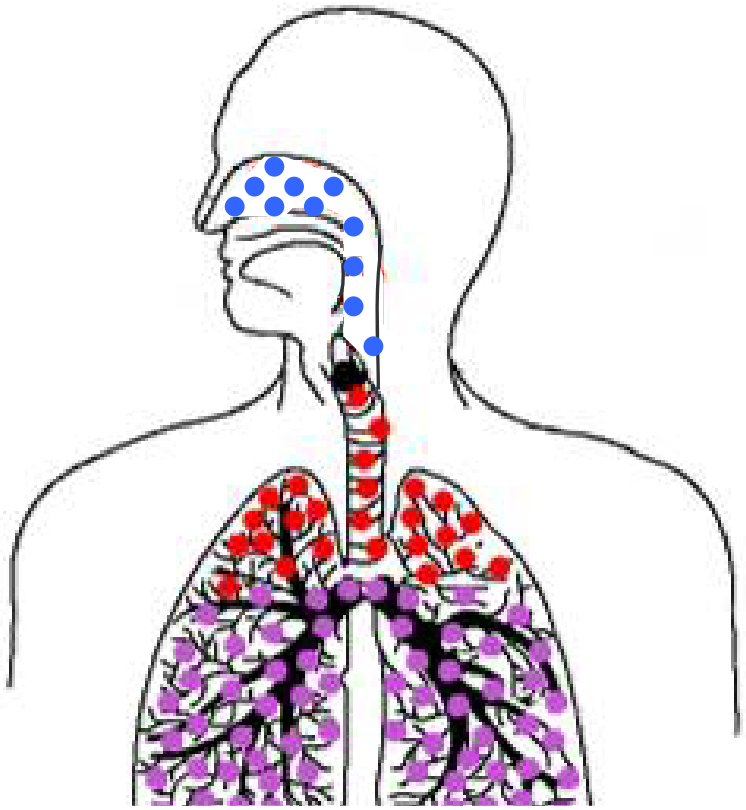
What Happens to PM In Our Bodies

- Adsorb toxic combustion products, metals, atmospheric air toxics, and carry them deep into the lung
- Fine and ultra-fine particles behave like a gas:
  - penetrate indoors from outside air
  - penetrate deep into lungs

PM > 10 = caught in the nose and throat

PM ≤ 10 = upper respiratory system

PM ≤ 2.5 = lower respiratory system



PM2.5 Is Our Main Health Concern

- Airways irritant
- Impairs lung function and growth
- Associated with increased respiratory illness in children

- Mortality associated: cardiac, pulmonary, cerebrovascular

- Exacerbates existing heart disease
- **Reductions in PM levels are associated with decreases in cardiovascular mortality within a time frame as short as a few years** (American Heart Association, 2010)

It is expected that particles from combustion, particularly mobile sources, are most harmful to health (Elliott C, Copes R. *Brief Report: Estimate of Mortality Burden of Air Pollution in Northern and Interior British Columbia, 2001-2005*. 2007)

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Mortality attributable to annual mean PM 2.5 increment above the lowest in the province (Terrace 3.39 ug/m3) for 2001 to 2005 inclusive

		Five-Year Mortality		
Location	PM 2.5	Central Estimate	Low Estimate	High Estimate
Fort Nelson	4.2	1	0	2
Fort Saint John	3.8	3	0	7
Kitimat	3.8	1	0	3
Terrace	3.4			
Smithers	6	5	1	13
Houston	6.5	6	1	16
Prince George	9.6	165	25	409
Quesnel	8.3	41	6	101
Rest of NH (median PM 2.5)	5.1	41	6	102

Source: Elliot C and Copes R. Estimate of Mortality Burden of Air Pollution in Northern and Interior British Columbia, 2001 – 2005. 2007

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Other Pollutants

- **Ozone (O_3)**
  - Main Sources: formed when NOx reacts with other chemicals in the atmosphere in the presence of sunlight
  - Health Impacts: Destroys molecules it comes in contact with and can injure biological tissues and cells. Associated with reduced lung function
- **Sulphur dioxide (SO_2)**
  - Main Sources: base metal smelters; electric power plants fueled by coal, oil and natural gas; oil and gas refineries; and vehicle emissions from diesel vehicles
  - Health Impacts: Can cause breathing problems in people with asthma, but at relatively high levels of exposure. Some evidence that exposure to elevated levels may increase hospital admissions and premature deaths
- **Nitrogen dioxide (NO_2)**
  - Main Sources: vehicle emissions; electric power plants fueled by coal, forest fires; oil and gas production; high temperature combustion
  - Health Impacts: Can impair lung function, irritate the respiratory system and, at very high levels, make breathing difficult, especially for people who already suffer form asthma or bronchitis

Reported Prevalence of Respiratory Diseases in the BVLD AMS Area

Diseases of the Respiratory System

- Source: Discharge Abstract Database, Management Information, Health System Planning Division, BC Ministry of Health Services
- Data includes: Acute upper respiratory infections, Influenza and pneumonia , Other acute lower respiratory infections, Other diseases of upper respiratory tract, Chronic lower respiratory diseases, Other
- Residents of B.C. treated out of province are included. Non-BC residents are excluded.
- Rates are crude, volume divided by population.

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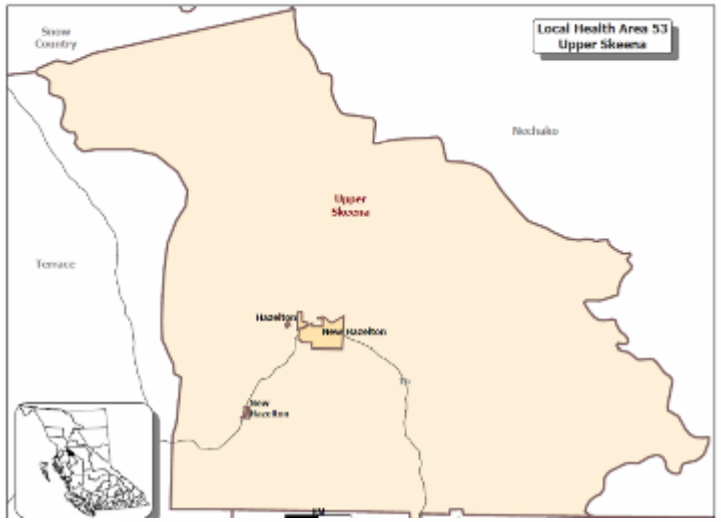

BVLD AMS covers LHAs:
Upper Skeena, Smithers, Burns Lake, and small portion of Nechako

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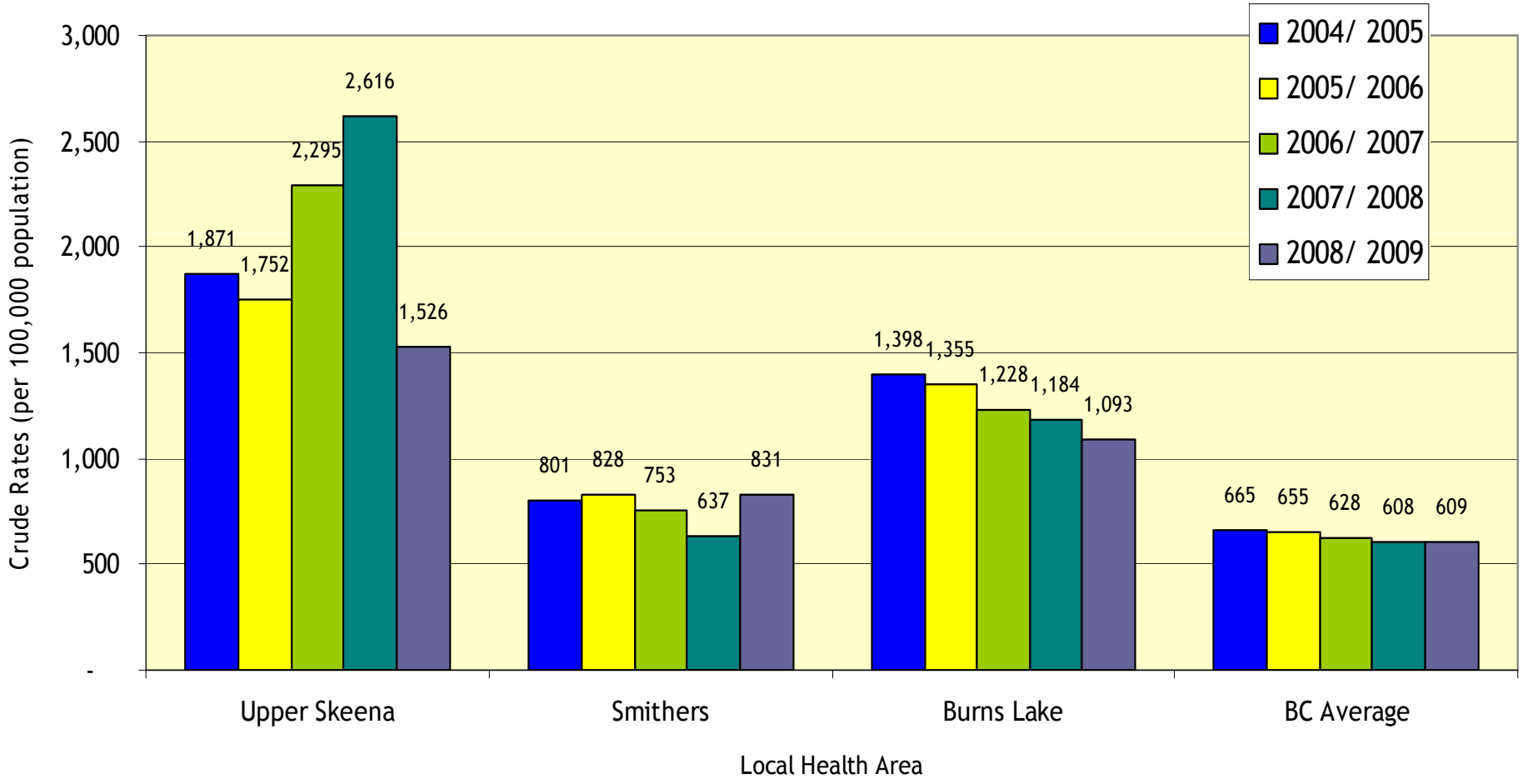
Reported Prevalence of All Respiratory Diseases in Upper Skeena, Smithers and Burns Lake Local Health Area

Data for 2004/4005 - 2008-2009



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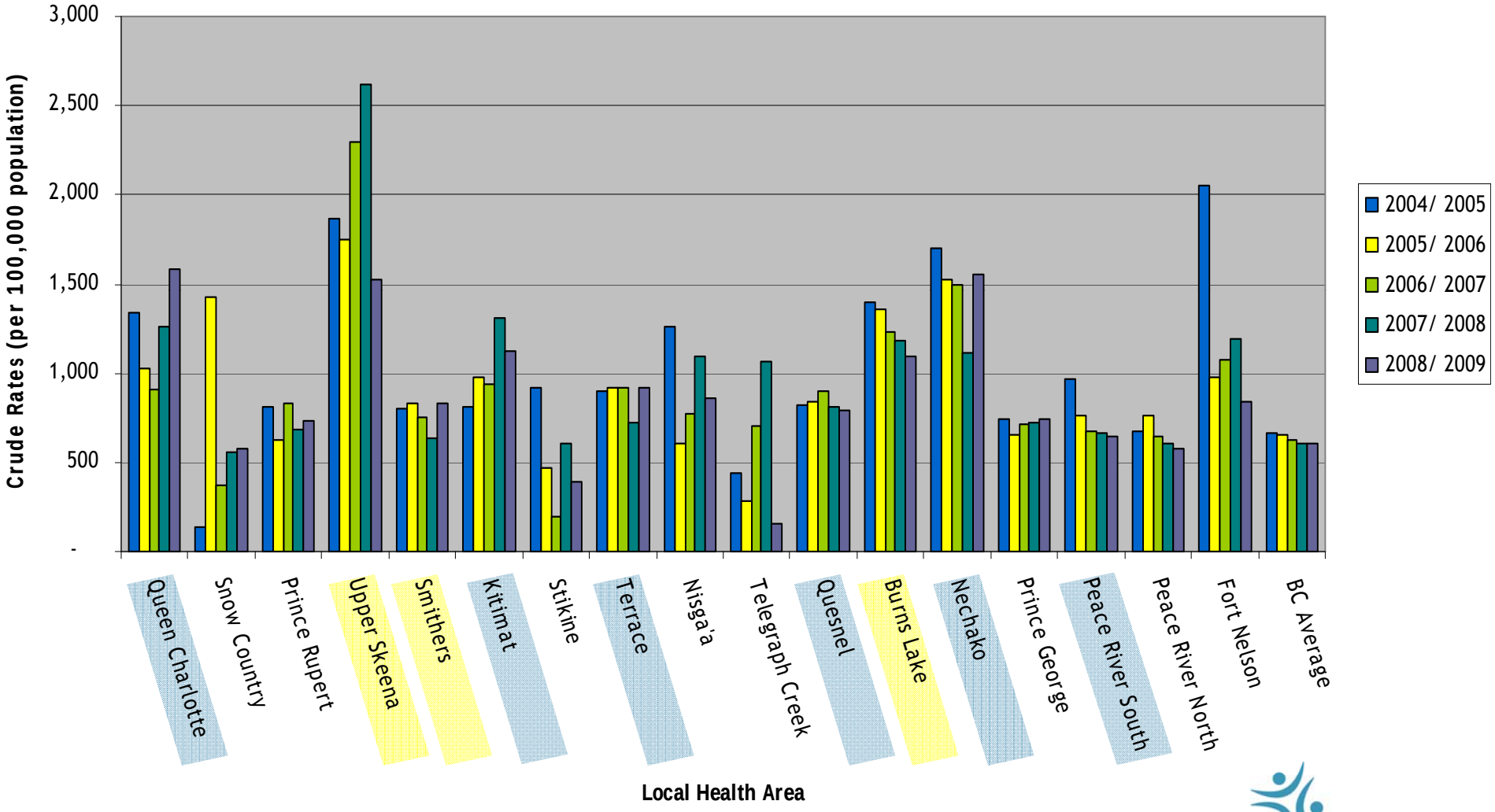
Reported Prevalence of All Respiratory Diseases in Northern BC by Local Health Area

Data for 2004/2005 to 2008/2009



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What Can I Do?……

Ways You Can Reduce Air Pollution

- Reduce smoke
  - Use wood stoves that meet CSA/EPA emission standards
  - Burn wood that is dry and seasoned, rather than wet and green
  - Compost or mulch your garden wastes instead of burning them
- Reduce vehicle emissions
  - Turn off you vehicle rather than idling
  - Keep your vehicle tuned up and running efficiently
  - Make sure your tires are properly inflated
  - Take transit or car pool
  - For shorter trips try walking, or biking
- Encourage your community to improve AQ

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Ways to Protect Your Health From Air Pollution

- **Stay Healthy**
  - Healthy diet, exercise, no smoking, etc.
- **Avoid being near more polluted areas & pollution sources**
  - Try to work, live and exercise away from local pollution sources (such as traffic, industrial areas and smoky neighbourhoods)
  - Where it is possible, try to avoid areas such as valley bottoms and “bowl” areas where pollutants can get trapped
  - Try exercising at times during the day when air pollutants tend to be lower— avoid times when rush hour traffic is high, and the night when wood smoke levels are highest
  - Try minimizing commuting times since air pollution concentrations in vehicles can be especially high
- **Follow the advice distributed during Air Quality Advisories**
- **Contact your physician for more advice on how air pollution may affect your health**

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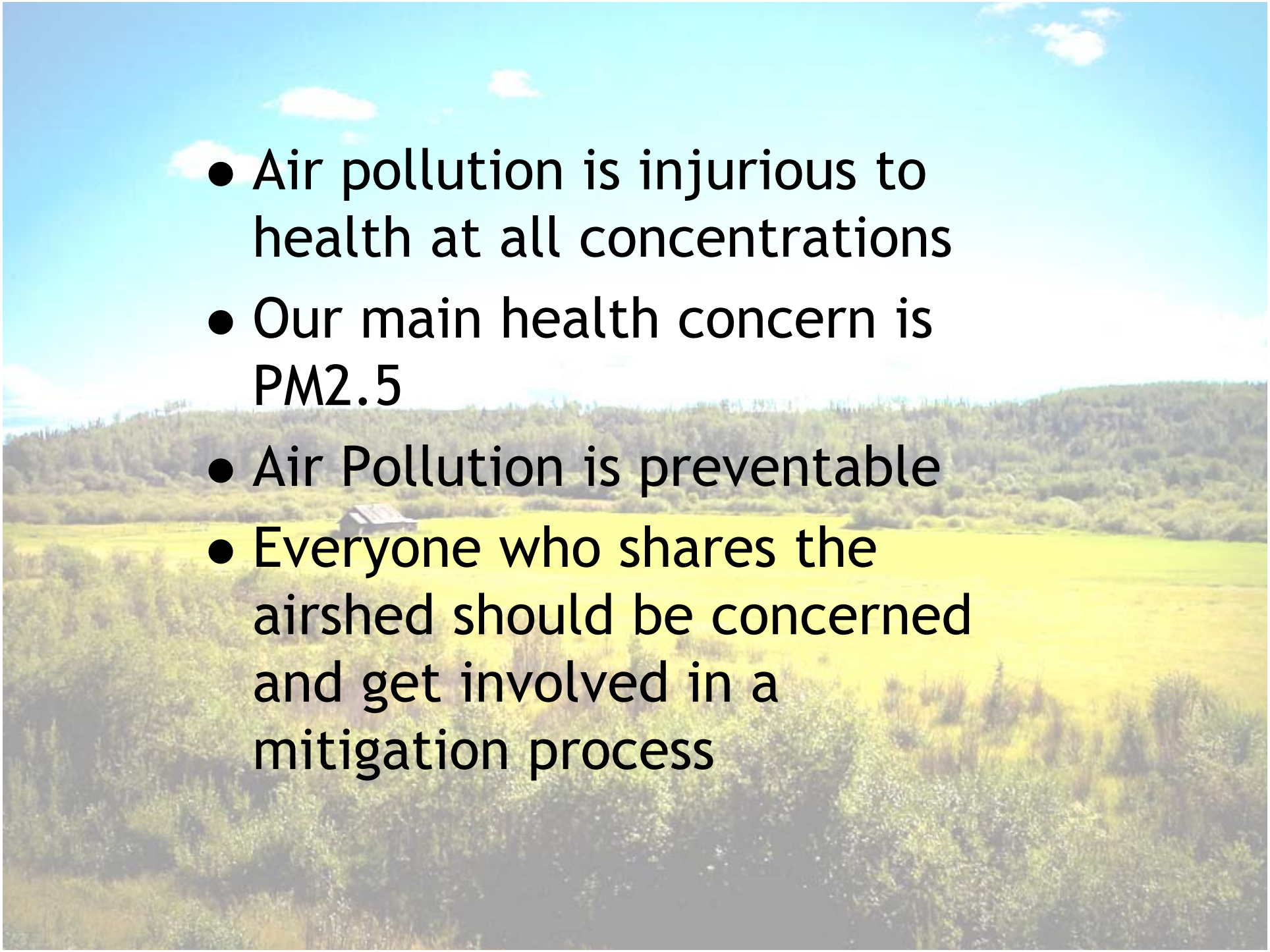
In Conclusion.....



- Air pollution is injurious to health at all concentrations
- Our main health concern is PM2.5
- Air Pollution is preventable
- Everyone who shares the airshed should be concerned and get involved in a mitigation process

For More Information….

- B.C. Air Quality (sign up to receive notification of Air Quality Advisories at this site)
  - www.bcairquality.ca/
- Idle Free BC
  - www.idlefreebc.com
- B.C.'s Air Quality Readings
  - www.bcairquality.ca/readings/index.html
- Air Quality and Your Health
  - www.bcairquality.ca/health/index.html
- BC Lung Association
  - www.bc.lung.ca/airquality/airquality.html
- Provincial Health Officer's Annual Report 2003, Every Breath You Take
  - www.hls.gov.bc.ca/pho/pdf/phoannual2003.pdf
- A Provincial Airshed Planning Framework: Summary of Findings from Stakeholder Consultations
  - http://www.env.gov.bc.ca/epd/bcairquality/reports/pdfs/aqconsult2_summary.pdf

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