



# Towards a New First Nations Framework for Human Environmental Health Impact Assessment

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BC First Nations Mining Summit Workshop  
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# Past Producing Mines & Sites of Environmental Concern in British Columbia 1852 - 2007

## MineType

- ✕ Coal Mine
- ✕ Industrial Mineral
- ✕ Metal Mine

## Priority & Candidate Risk Sites

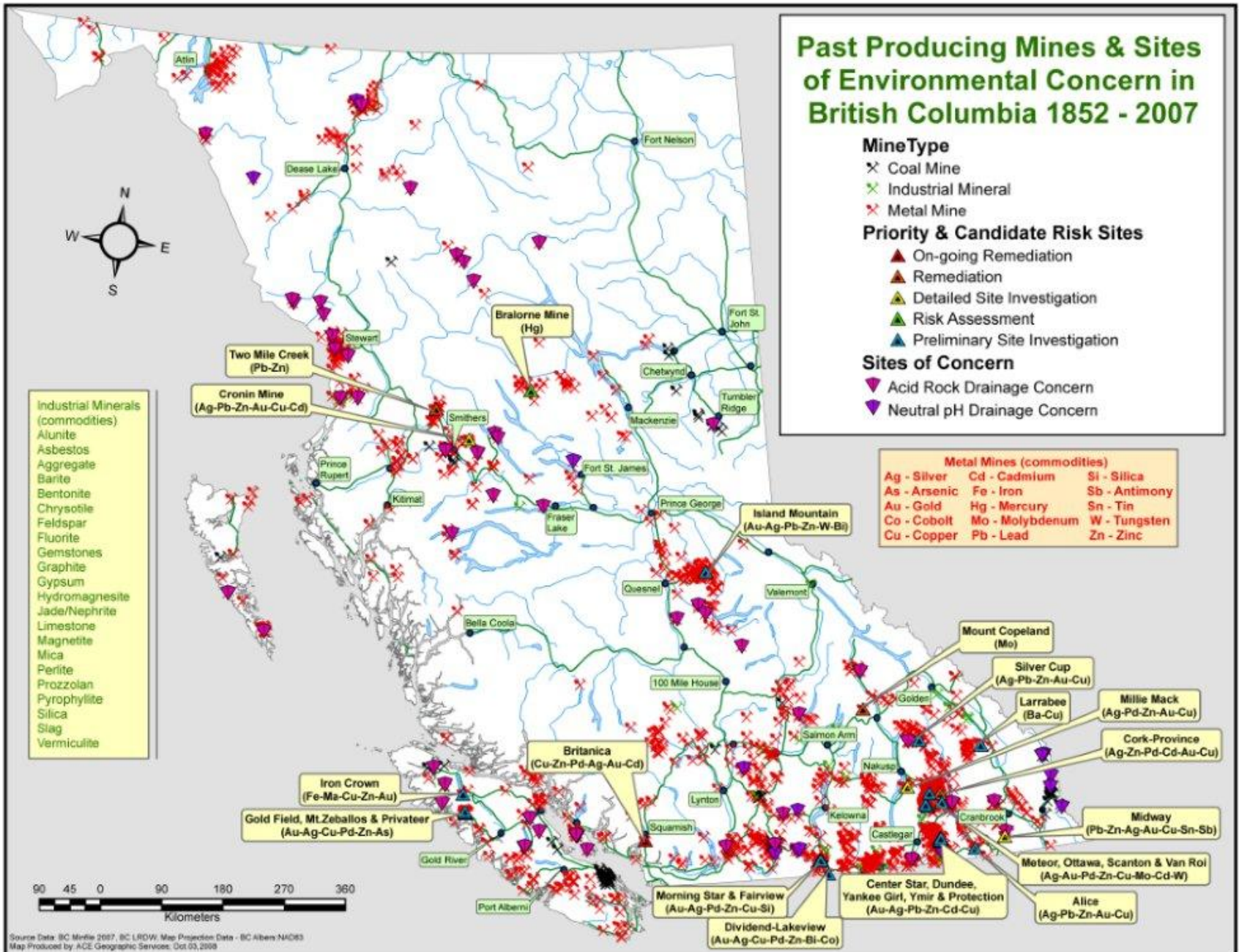
- ▲ On-going Remediation
- ▲ Remediation
- ▲ Detailed Site Investigation
- ▲ Risk Assessment
- ▲ Preliminary Site Investigation

## Sites of Concern

- ▼ Acid Rock Drainage Concern
- ▼ Neutral pH Drainage Concern

- Industrial Minerals (commodities)**
- Alunite
  - Asbestos
  - Aggregate
  - Barite
  - Bentonite
  - Chrysotile
  - Feldspar
  - Fluorite
  - Gemstones
  - Graphite
  - Gypsum
  - Hydromagnesite
  - Jade/Nephrite
  - Limestone
  - Magnetite
  - Mica
  - Perlite
  - Prozolan
  - Pyrophyllite
  - Silica
  - Slag
  - Vermiculite

- Metal Mines (commodities)**
- |              |                 |               |
|--------------|-----------------|---------------|
| Ag - Silver  | Cd - Cadmium    | Si - Silica   |
| As - Arsenic | Fe - Iron       | Sb - Antimony |
| Au - Gold    | Hg - Mercury    | Sn - Tin      |
| Co - Cobalt  | Mo - Molybdenum | W - Tungsten  |
| Cu - Copper  | Pb - Lead       | Zn - Zinc     |



# Canadian Environmental Assessment Act (CEAA Act) 1995; 2003

- EA legislated – 10 provinces; 100+ countries
- CEAA Act applies to a project when the federal government:
  - is the proponent,
  - sells or leases land,
  - contributes money,
  - issues a prescribed approval (*Law List Regulations*).

# Health Impact Assessment

HIA is a new, holistic approach to Environmental Impact Assessment, that clearly places human beings at the centre of development planning, while seeking to ensure the durability of the ecosystem of which they are an integral part.



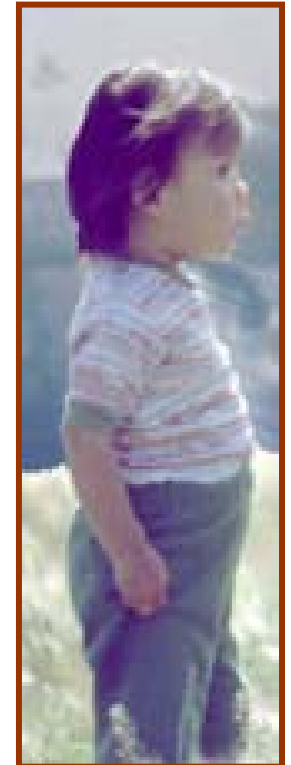
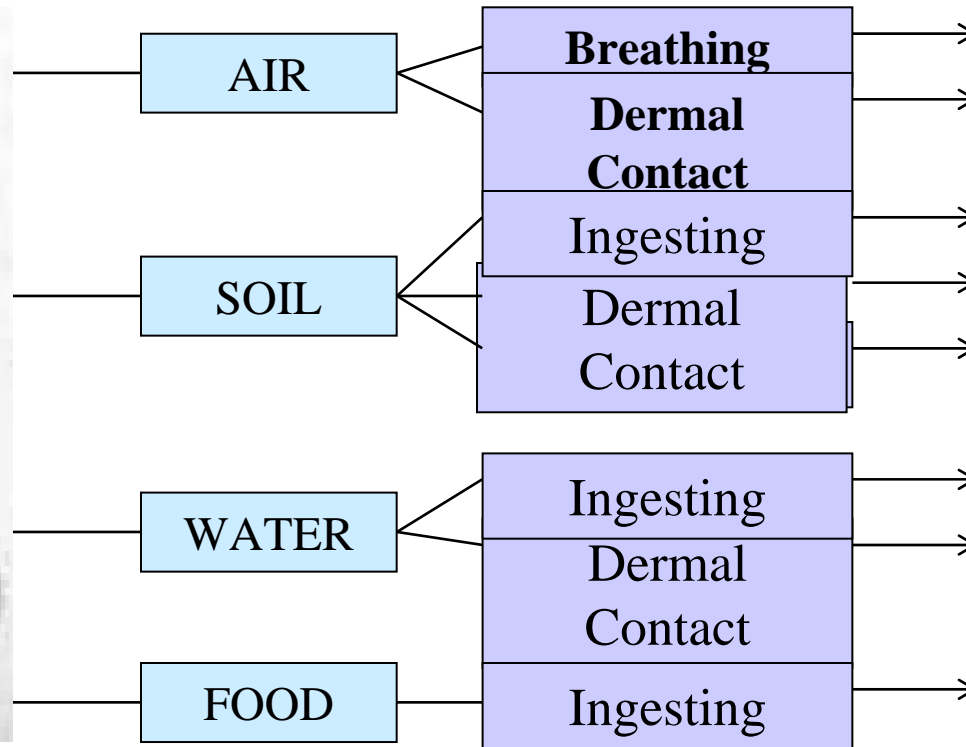
# Exposure Assessment

Contaminant Source

Environmental Fate

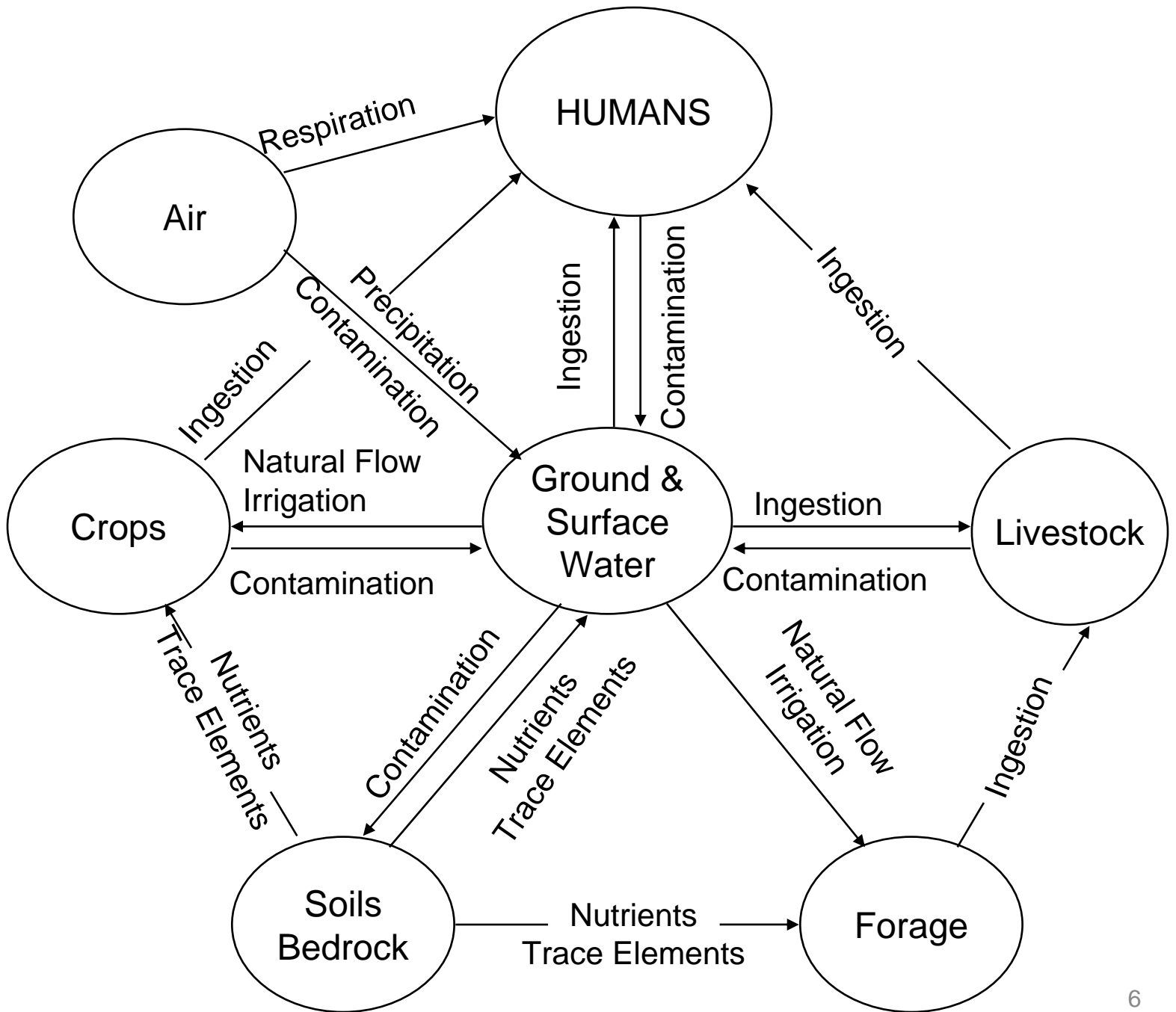
Exposure Pathway

Human Receptor

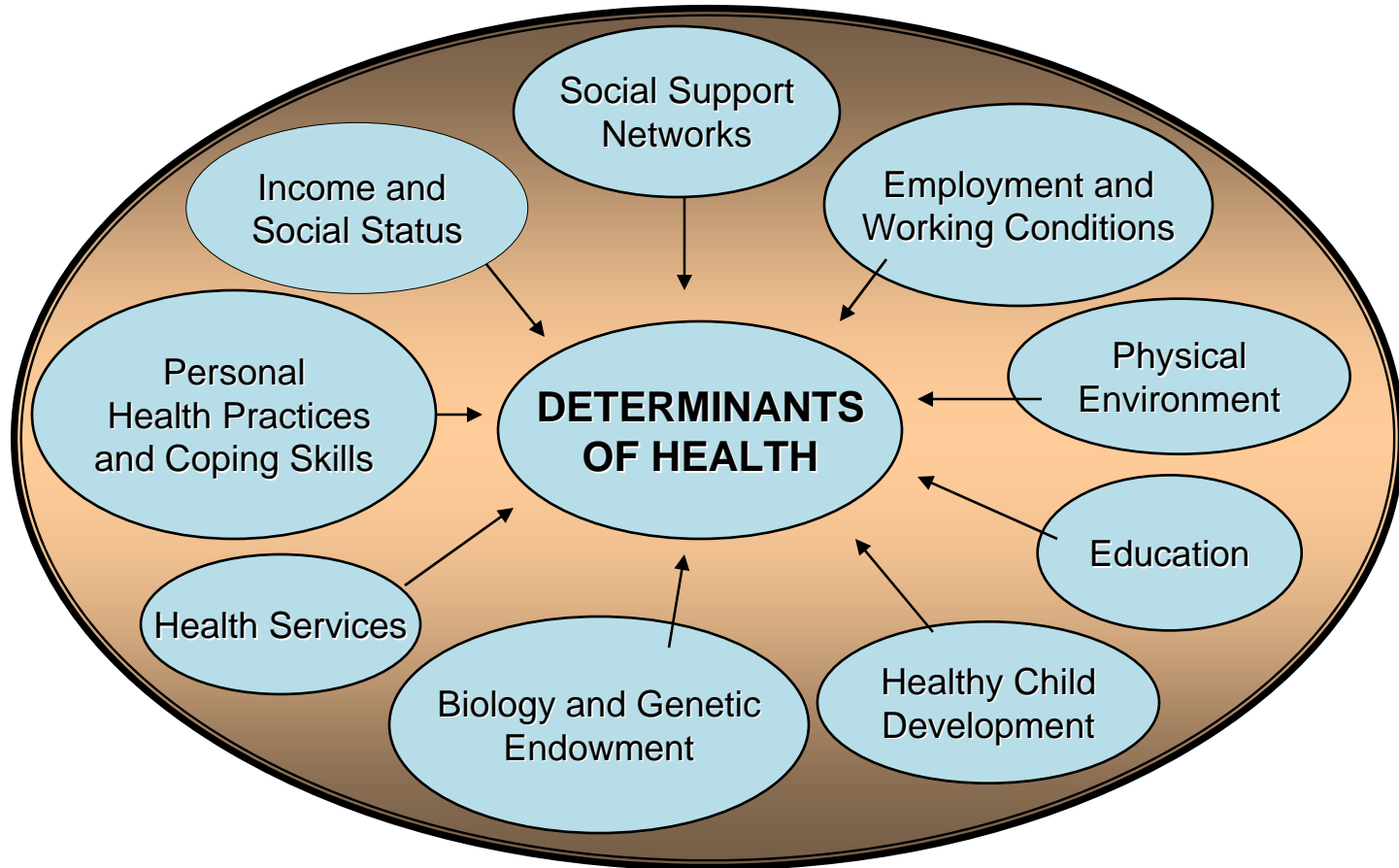


(Adapted from Health Canada, 1995.)

# PHYSICAL ENVIRONMENT



# The Determinants of Health



THEME		SAMPLE INDICATOR TOPICS
Health Status	Well-being	<ul style="list-style-type: none"> <li>• Self-rated health status</li> <li>• Job satisfaction</li> </ul>
	Activity limitation	<ul style="list-style-type: none"> <li>• Disability/activity limitation</li> <li>• Conditions causing activity limitation</li> </ul>
	Injuries	<ul style="list-style-type: none"> <li>• Hospitalization due to trauma</li> <li>• Motor vehicle accidents</li> </ul>
	Conditions and diseases	<ul style="list-style-type: none"> <li>• Low or high birth weight</li> <li>• Chronic conditions (e.g. diabetes, cancer)</li> <li>• Infectious diseases (e.g. tuberculosis, HIV)</li> </ul>
	Death	<ul style="list-style-type: none"> <li>• Life expectancy at birth</li> <li>• Infant mortality</li> <li>• Suicide</li> </ul>
Determinants of health	Social and Economic Environment	<ul style="list-style-type: none"> <li>• Marital status, family composition</li> <li>• Education, literacy, employment, income</li> <li>• First Nations control of services</li> </ul>
	Physical Environment	<ul style="list-style-type: none"> <li>• Crowded homes, mould</li> <li>• Exposure to second-hand smoke</li> <li>• Drinking water quality</li> <li>• Mercury levels in fish</li> </ul>
	Health Services	<ul style="list-style-type: none"> <li>• Access to a regular physician</li> <li>• Availability/use of screening (e.g. mammography, PAP smear)</li> <li>• Aboriginal representation in health professions</li> <li>• Difficulties accessing First Nations health benefits (NIHB)</li> <li>• Health expenditures</li> </ul>
	Personal Resources	<ul style="list-style-type: none"> <li>• Social support</li> <li>• Use of and access to home care services</li> </ul>
	Health Knowledge	<ul style="list-style-type: none"> <li>• Knowledge of impacts of smoking</li> <li>• Knowledge of healthy eating practices</li> </ul>
	Lifestyle behaviours	<ul style="list-style-type: none"> <li>• Smoking, drinking, drug use</li> <li>• Physical activity</li> <li>• Sexual practices</li> <li>• Breastfeeding</li> </ul>

Health Canada  
2006

# Challenges

- First Nation communities have to deal with issues resulting from exploration and exploitation of natural resources
- How to allow sustainable development and promote health or well being of the community at the same time
- First Nation concept of well being and determinants of health may be different than those of the general populations

# Research Objectives

- To develop a First Nation Driven/Relevant Human Health Impact Assessment Model (s)
- To define what are the appropriate/relevant determinants of health that needs and can be measured
- To blend traditional knowledge and Western science through collaborative processes

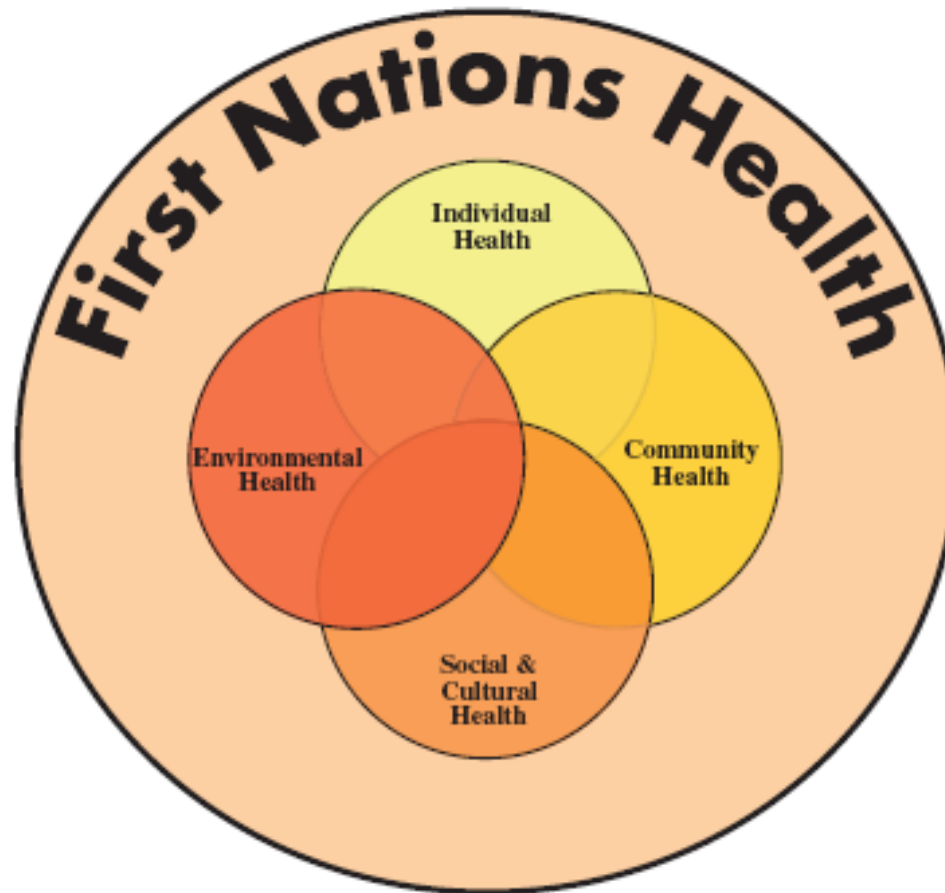
# Key Questions

- Is the community concerned about impacts of industrial development on health?
- What does the community think that are important to their health?
- What do we need to measure? Who should measure them and how do we measure them? before and after the industrial development

# AFN First Nation Health Reporting Framework (2006)

- Support reciprocal accountability;
- Serve both as a planning and reporting tool;
- Allow for comparison with Canadian data;
- Include feasible/existing indicators;
- Exclude traditional indicators that are not measurable; and,
- Respect the principles of OCAP (Ownership, Control, Access and Possession).

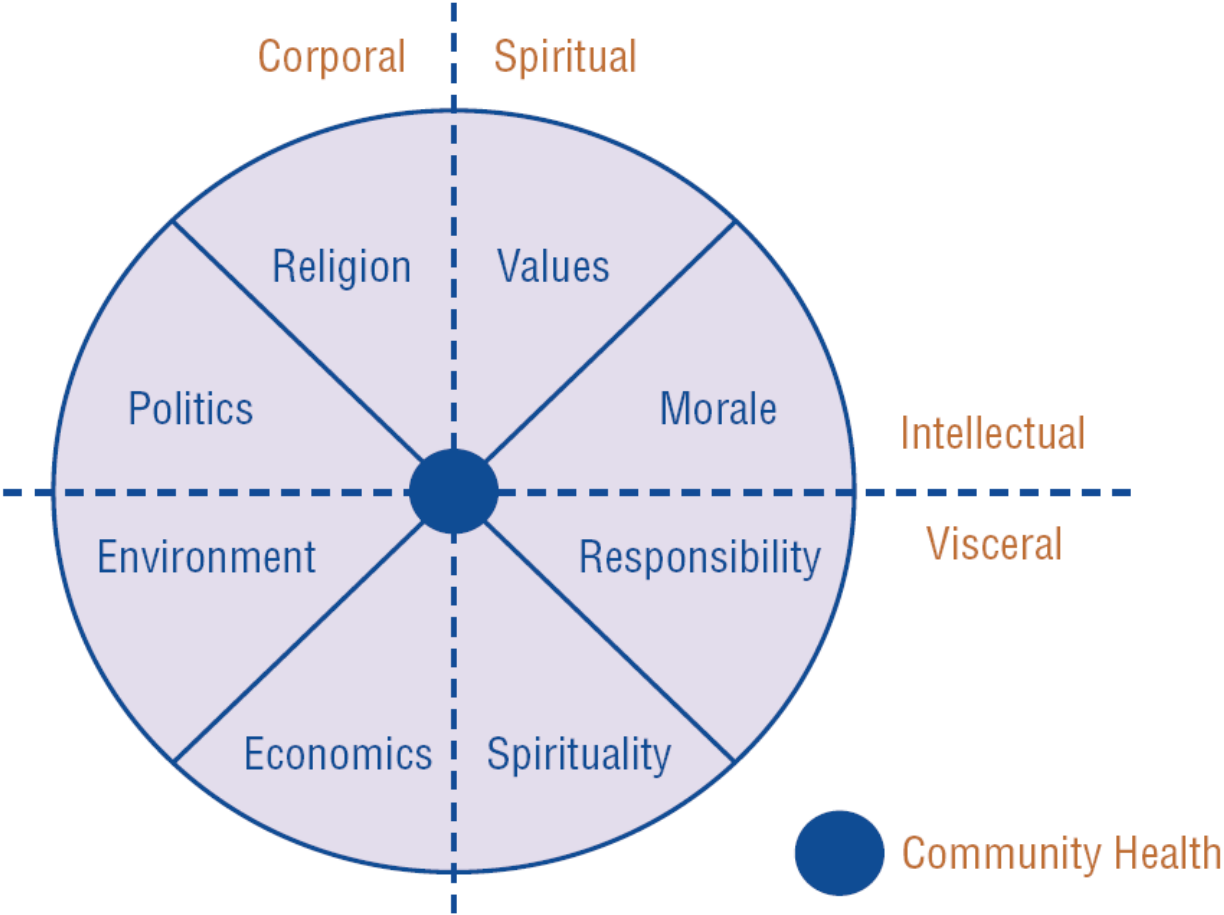
**Figure 6: First Nations Determinants of Health  
(FNHRF)**



# Examples of Social and Cultural Health

- Effects of colonization, residential schools;
- Self-determination;
- Language;
- Cultural practices; and,
- Traditional land use.

**Figure 5: Community Life Indicators Wheel.**



### Economics-Values

- Number of hunters in the community
- Catch rate of ungulates (e.g. deer)
- Ungulate population

### Environment-Morale

- Number of community or group celebrations
- Size of forest area
- Extent and types of forest usage

### Religion-Spirituality

- Number of drums in community
- Number of drumming occasions per year
- Number of religious space (e.g. churches, sweat lodges) in the community

# Criteria for Health Indicators

- Validity
- Reliability (Reproducibility)
- Sensitivity
- Acceptability
- Feasibility
- Universality
- Inclusiveness

# Plan of study

- Signed research agreement with Takla Lake First Nation
- Conduct interviews or workshops to ask the communities the key questions
- Build a model using this information as well as experience learnt from other FN
- Validate the model with the community in a 1-day workshop
- Report results to the community
- Share experience with other communities and test the applicability of the model