HEALTH EFFECTS MONITORING PROGRAM

Baseline Study Results

North Slave Métis Alliance

Presented by Dr. Laurie Chan, Project Leader

Yellowknife, May 15, 2019

What is the Health Effects Monitoring Program?

A long-term program to monitor the levels of arsenic and other contaminants in the body of residents of Yellowknife, Ndilo and Dettah.

HEALTH EFFECTS
MONITORING PROGRAM

Objectives

Establish | Baseline levels of arsenic exposure in body

Monitor | Levels of contaminants in the body over time

Ensure | That remediation efforts do not negatively impact people's health

Address | Public concerns through clear and transparent communication

HEALTH EFFECTS
MONITORING PROGRAM

Prospective Cohort Study

Baseline sample collection

Child and Adult participants

2017-2018

Follow-up sample collection

Child participants

2022

Child and Adult participants

2027

HEALTH EFFECTS
MONITORING PROGRAM

Health Effects Monitoring Program Team

Principal Investigator: Dr. Laurie Chan

Professor and Canada Research Chair in Toxicology and Environmental Health at the University of Ottawa

- Renata Rosol, Project Manager
- Elizabeth Liske, Community Project Coordinator
- Anna Bergen, Nurse Practitioner
- Iana Nazarenko, Research Assistant
- Carine Côté-Germain, Field Coordinator
- Emmanuel Yumvihoze, Laboratory Manager
- Rajendra Parajuli & David Hu, Post-Doctorate Fellows
- Janet Cheung & Claudia Tanamal, Graduate Students

HEALTH EFFECTS
MONITORING PROGRAM

Partnerships

Advisory Committee

- Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)
- GNWT- Environment and Natural Resources
- GNWT-Health and Social Services
- Yellowknives Dene First Nation
- North Slave Métis Alliance
- City of Yellowknife
- Giant Mine Oversight Board (GMOB)
- Health Canada

Other research partners

- Statistics Canada
- Institute for Circumpolar Health Research
- Génome Québec

HEALTH EFFECTS MONITORING PROGRAM

Research Team

2017

2018

HEALTH EFFECTS
MONITORING PROGRAM

April 2017
Community Meetings

Sample Collection

Wave 1 **Sept-Dec 2017**

Wave 2 **Apr-June 2018**

HEALTH EFFECTS
MONITORING PROGRAM

Who participated in 2017-2018?

1

Yellowknife population

Random selection of households

1 Adult, 1 Child from consenting household

2

- **Volunteers**
- **Yellowknives Dene First Nation**
- **North Slave Métis Alliance**

HEALTH EFFECTS MONITORING PROGRAM

Who participated in 2017-2018?

Yellowknives Dene First Nation (YKDFN)	North Slave Métis Alliance (NSMA)	Yellowknife General Population	
		Random Selection	Volunteer
225	46	890	876

2037 participants in total

HEALTH EFFECTS MONITORING PROGRAM

Who participated in 2017-2018?

NSMA

11 Children

35 Adults

46 Total

Overall

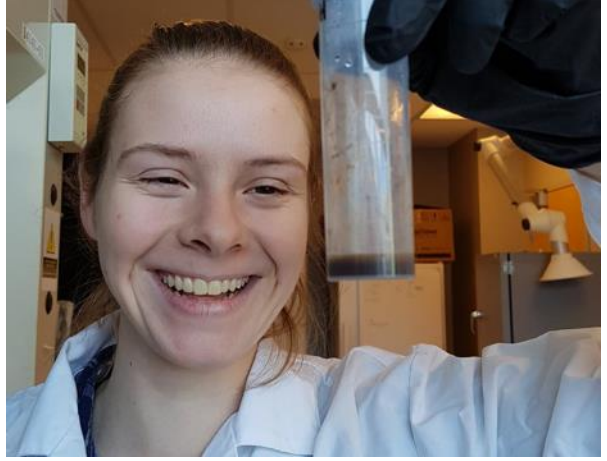
506 Children

1531 Adults

2037 Total

HEALTH EFFECTS
MONITORING PROGRAM

Laboratory Analysis



What was collected?

Results so far

Questionnaire

Urine

Toenail

Saliva

Life-style and Exposure History

Arsenic exposure (days)

Arsenic exposure (months)

Genetic factors for arsenic metabolism

HEALTH EFFECTS MONITORING PROGRAM

What was measured so far?

- Total arsenic
- Arsenic species
- Other metals of concern

Total arsenic

HEALTH EFFECTS
MONITORING PROGRAM

WHAT GUIDELINES DO WE COMPARE OUR RESULTS TO?

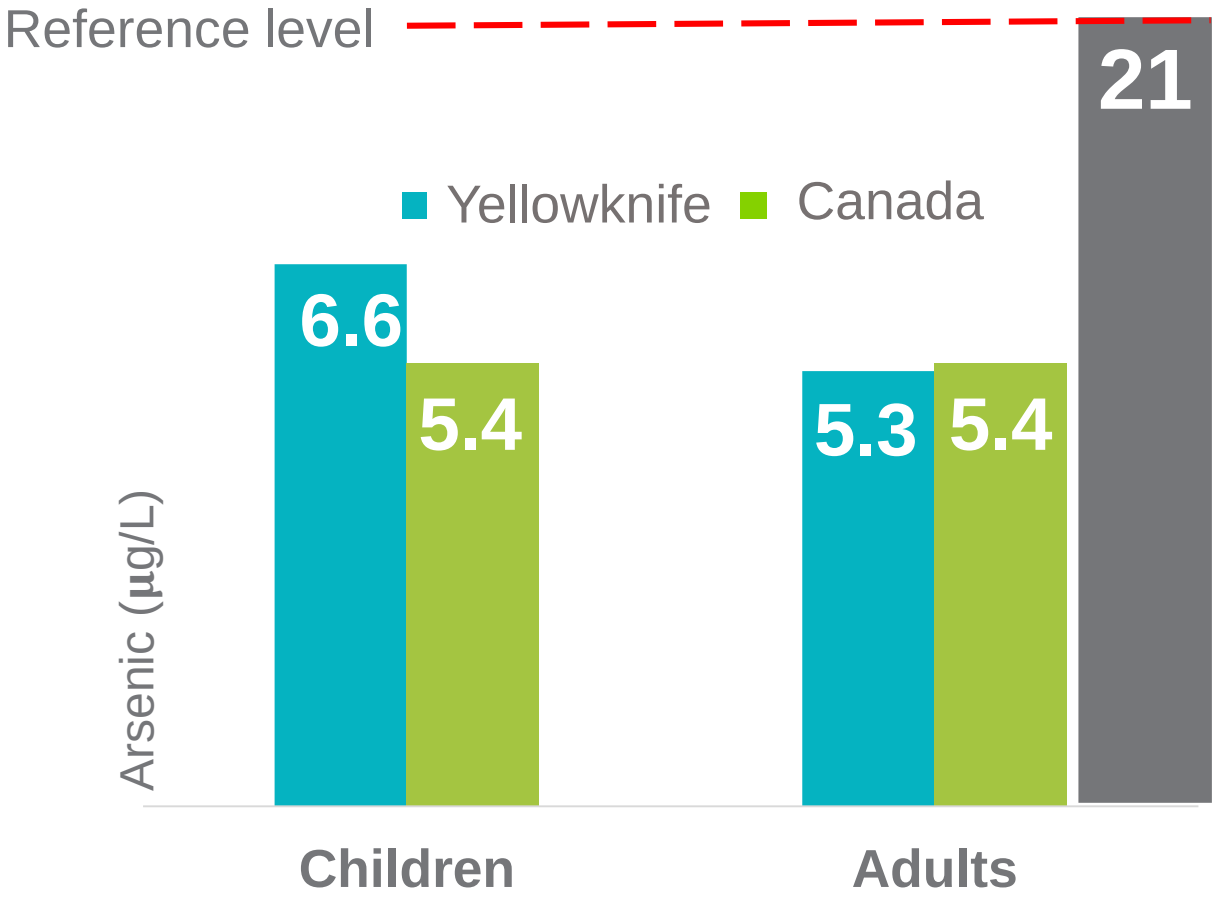
The CHMS has similar participant numbers, ages, and gender.

Canadian Health Measures Survey (CHMS) → **represents** → **Canadian population**

REFERENCE LEVEL set by CHMS is 21 ug/L Arsenic in URINE

HEALTH EFFECTS MONITORING PROGRAM

Urine Results Yellowknife (random) Comparison with CHMS

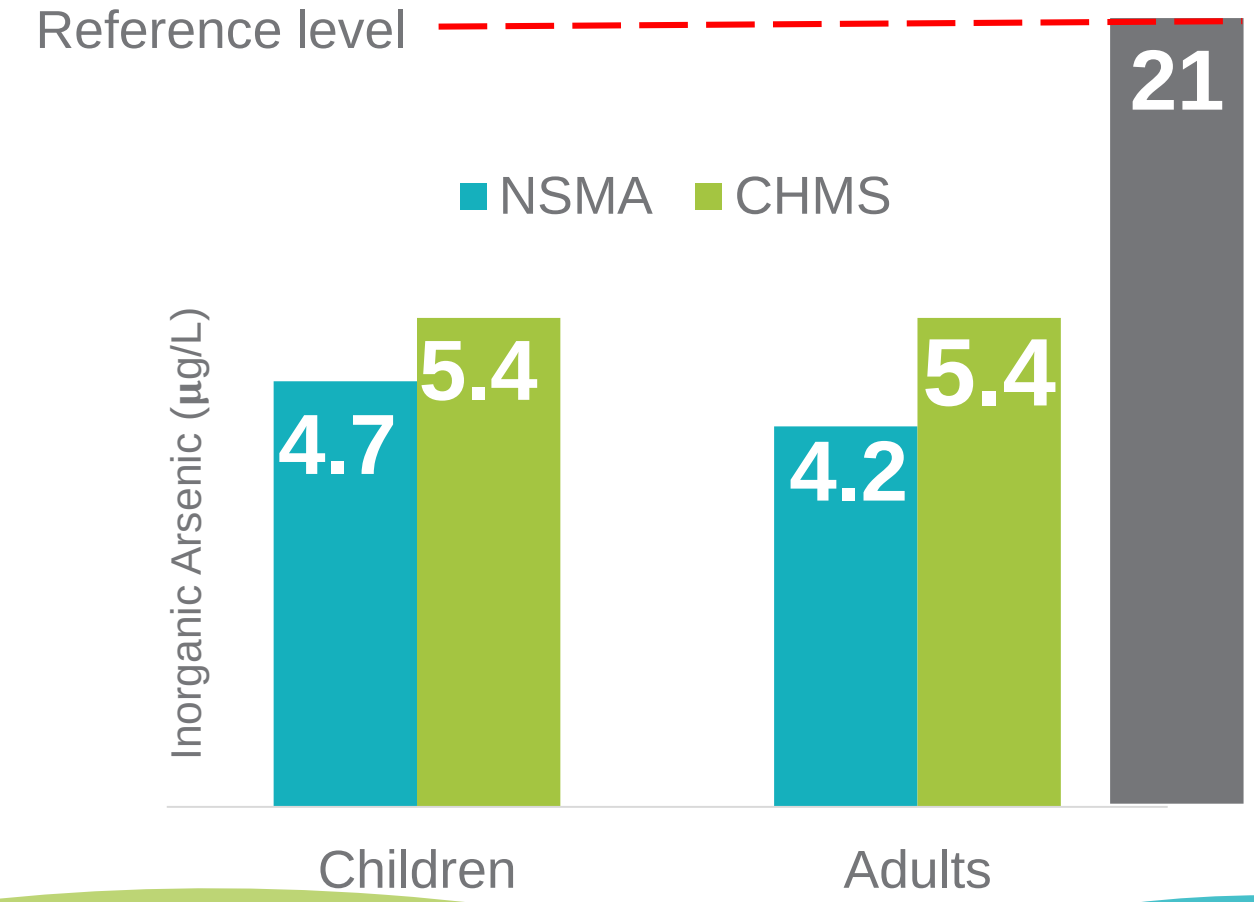


REFERENCE LEVEL set by CHMS is 21 ug/L Arsenic in URINE

Children	HIGHER
Adults	SIMILAR

HEALTH EFFECTS MONITORING PROGRAM

Urine Results North Slave Métis Alliance
Comparison with CHMS

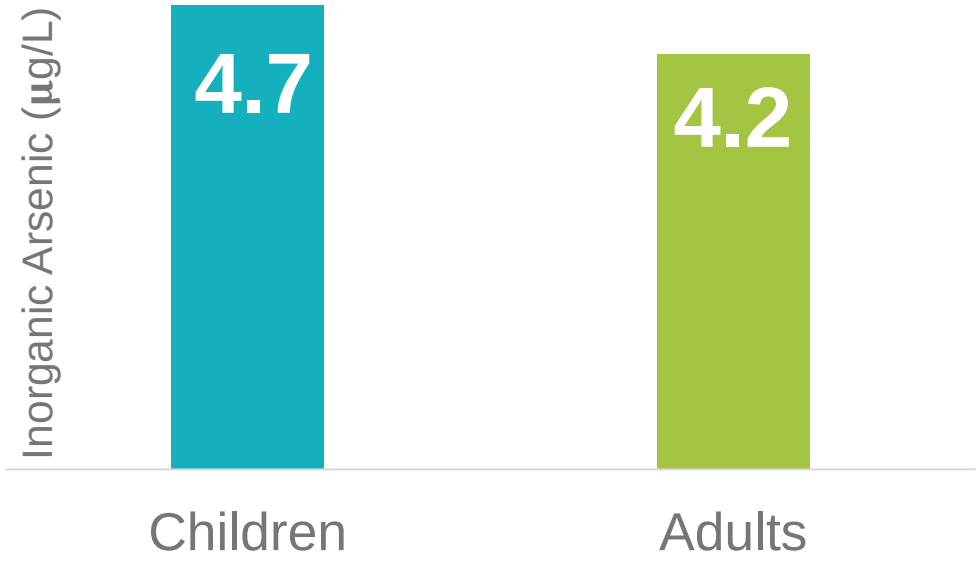


REFERENCE LEVEL set by CHMS is 21 ug/L Arsenic in URINE

Children	Similar
Adults	Lower

HEALTH EFFECTS MONITORING PROGRAM

Urine Results North Slave Métis Alliance



Inorganic arsenic levels are similar between adults and children

HEALTH EFFECTS MONITORING PROGRAM

How does North Slave Métis Alliance compare to the other populations tested in Yellowknife?

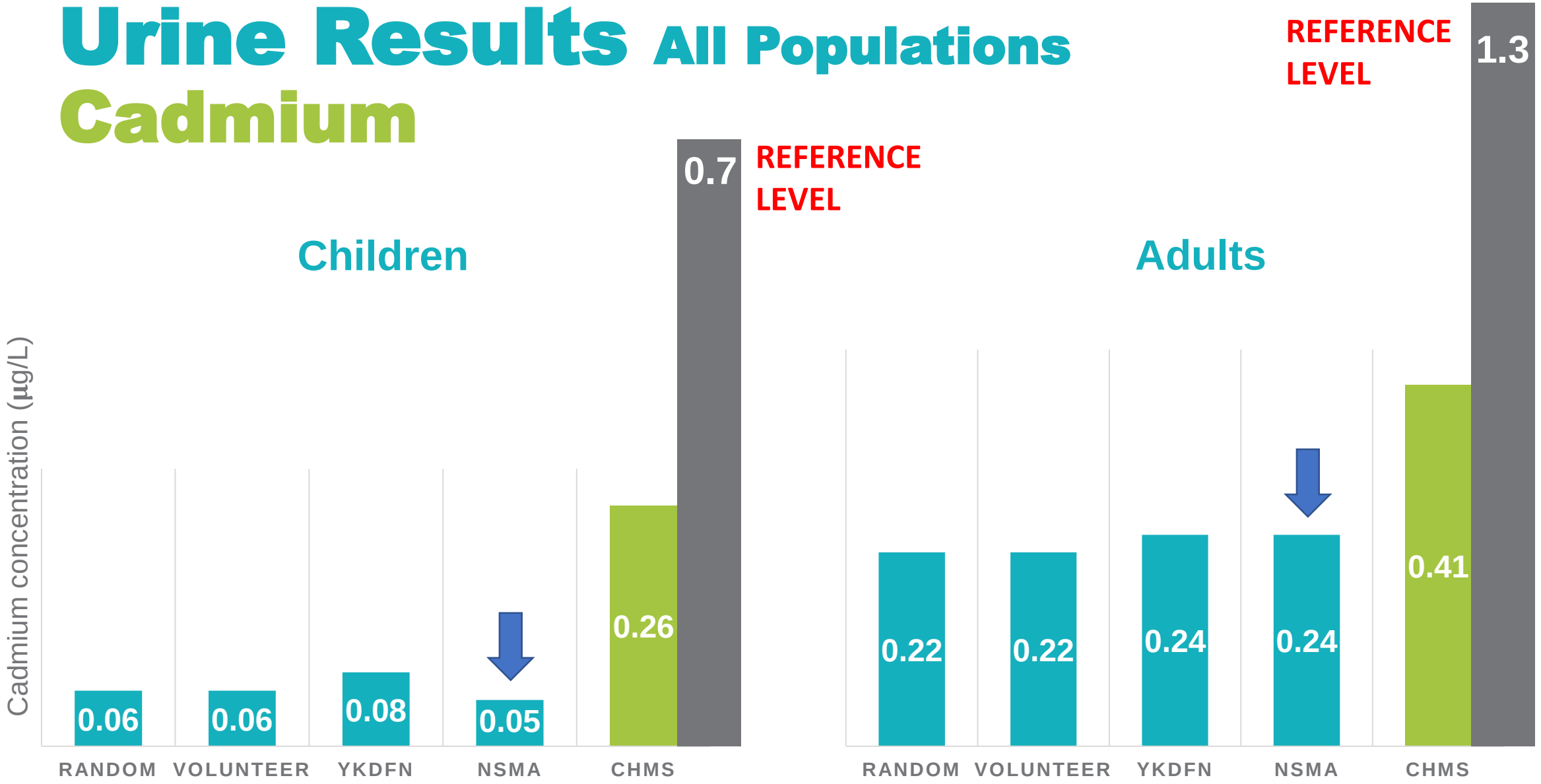
HEALTH EFFECTS
MONITORING PROGRAM

Urine Results All Populations

Arsenic

HEALTH EFFECTS MONITORING PROGRAM

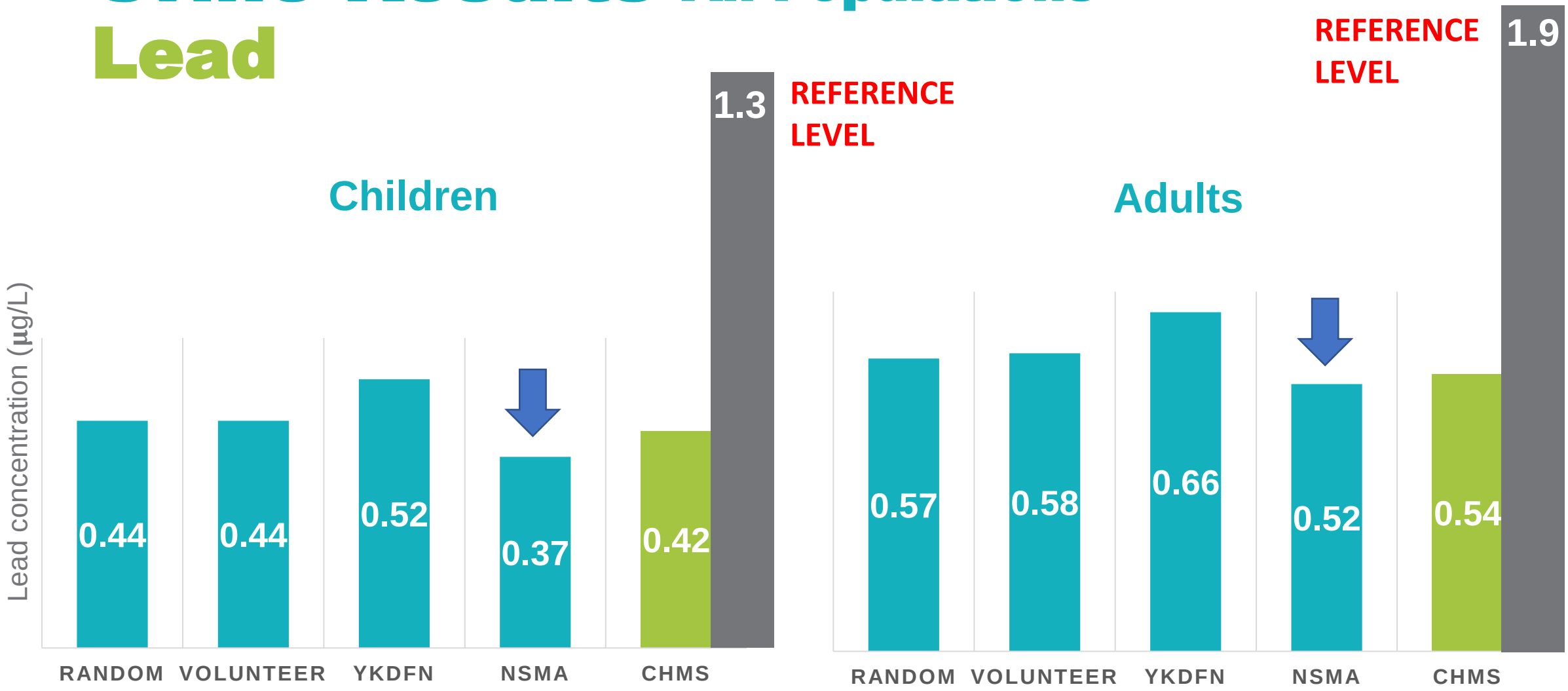
Urine Results All Populations
Cadmium



HEALTH EFFECTS MONITORING PROGRAM

Urine Results All Populations

Lead



HEALTH EFFECTS MONITORING PROGRAM

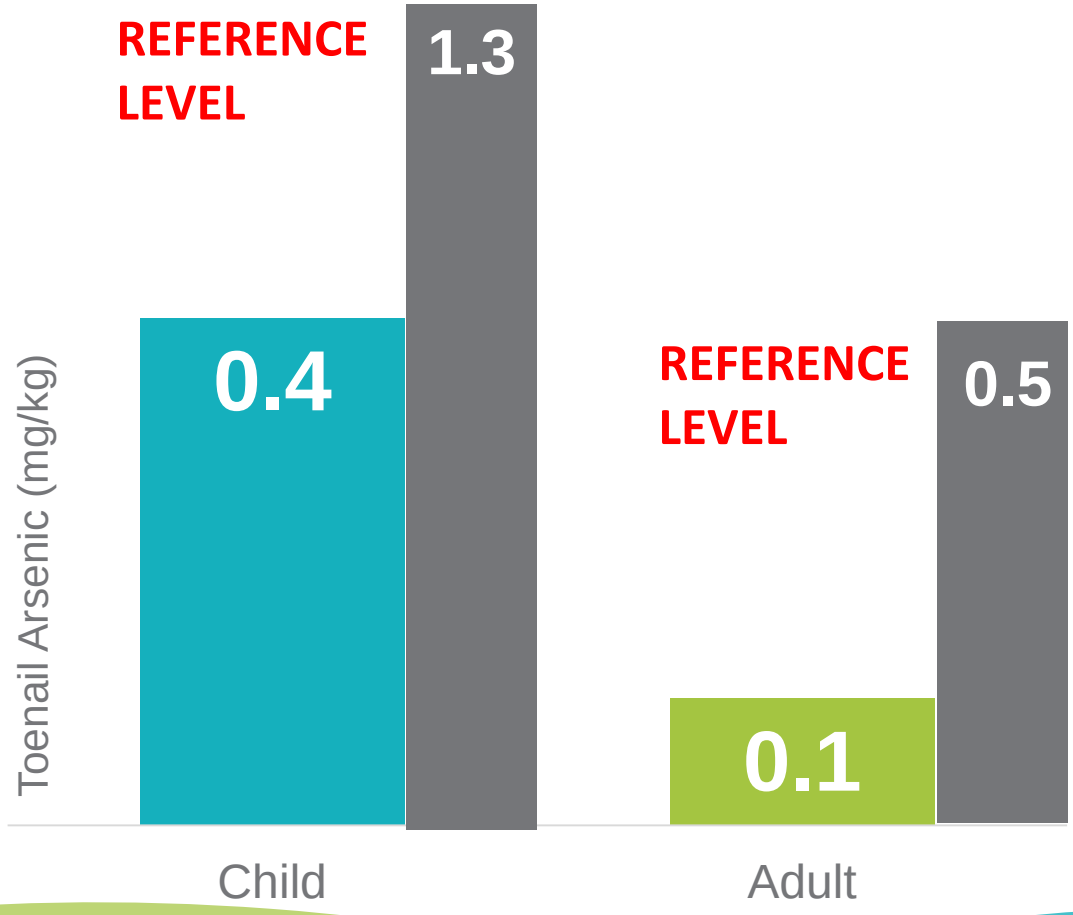
Anyone above the reference level for arsenic or lead

- Follow-up with nurse practitioner
- Answer additional questions
- Provide additional samples

The higher result does not mean that your health is at risk.

HEALTH EFFECTS
MONITORING PROGRAM

Toenail Results All Populations



- CHMS has NO toenail reference level so we compared to our study data.
- These findings are comparable to other old mining towns in Arizona, Australia and the United Kingdom.

A higher result does not mean that your health is at risk.

HEALTH EFFECTS MONITORING PROGRAM

Toenail Results All Populations

Child toenail arsenic was higher than adults.

Toenail arsenic was higher in Wave 2 (Spring) participants than Wave 1 (Fall).

HEALTH EFFECTS
MONITORING PROGRAM

Number of NSMA above Reference Levels for All Populations

HEALTH EFFECTS
MONITORING PROGRAM

Exceedances All Populations
URINE Arsenic

Total

	Yellowknife	YKDFN	NSMA
	36	2	0
	49	0	0
Total	85	2	0
	out of 1726	out of 194	out of 46

HEALTH EFFECTS MONITORING PROGRAM

Exceedances All Populations

URINE Lead

	Yellowknife	YKDFN	NSMA
	25	6	0
	81	5	0
Total	106	11	0
	out of 1726	out of 194	out of 46

HEALTH EFFECTS MONITORING PROGRAM

Exceedances All Populations
URINE Cadmium

	Yellowknife	YKDFN	NSMA
	4	0	0
	33	0	4
Total	37 out of 1726	0 out of 194	4 out of 46

HEALTH EFFECTS MONITORING PROGRAM

Exceedances All Populations
TOENAIL Arsenic

	Yellowknife	YKDFN	NSMA
	78	6	2
	68	4	0
Total	146	10	2
	out of 1645	out of 187	out of 40

HEALTH EFFECTS MONITORING PROGRAM

What is next?
More results to come in 2020

More testing of toenails

Diet and lifestyle factors

Genetic info related to arsenic

Medical History

HEALTH EFFECTS MONITORING PROGRAM

What is next?
Timeline

HEALTH EFFECTS MONITORING PROGRAM

Contact Us

Project Leader

Dr. Laurie Chan
University of Ottawa
Phone: (613) 325-9080
Email: ykhemp@uottawa.ca

Project Manager

Renata Rosol
University of Ottawa
Cell: (613) 325-9080
Email: ykhemp@uottawa.ca

Follow up appointment with nurse:

Call: (867) 445-1574
Email: ykhemp@uottawa.ca

YKHEMP Office

5112 52nd Street, main floor

**Yellow building passed Fiddles and Stix*

Check out our website!
www.ykhemp.ca

HEALTH EFFECTS
MONITORING PROGRAM