


Road Dust, Air Quality, and Health

By: LTJG Patrick Bloecher  
2014 Tribal Transportation Symposium



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**Road Map**

- **Introduction and Background**
- **Road Dust, Air Quality, and Health**
- **ANTHC Air Quality Program Activities**



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**Road Map**

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## Introduction

- *Who we are...*
  - The Alaska Native Tribal Health Consortium (ANTHC)
  - Largest tribally managed health organization in the nation
  - **Vision:** Alaska Native people are the healthiest people in the world
  - **Mission:** Providing the highest quality health services in partnership with our people and the Alaska Tribal Health System



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## Introduction

- **What we do...**
  - Integrated health care services:



Wellness



Alaska Native Medical Center



Business



Environmental Health,  
Engineering, & Construction



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## What is Environmental Health?

- **“Assessment, identification and control of environmental factors (chemical, physical, biological) to prevent disease and create health-supportive environments.**



Environmental Health







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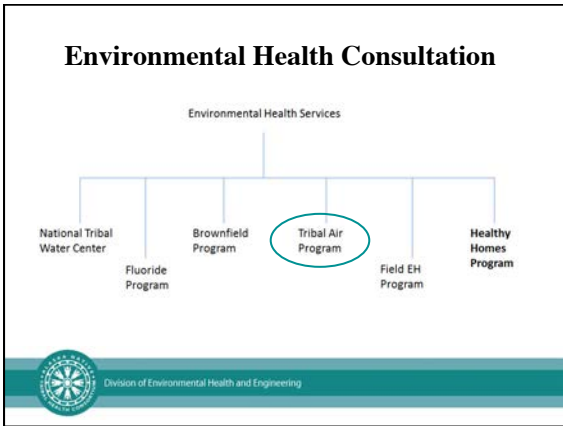
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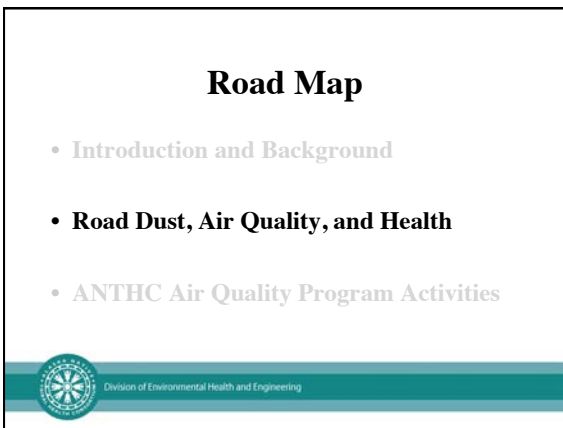
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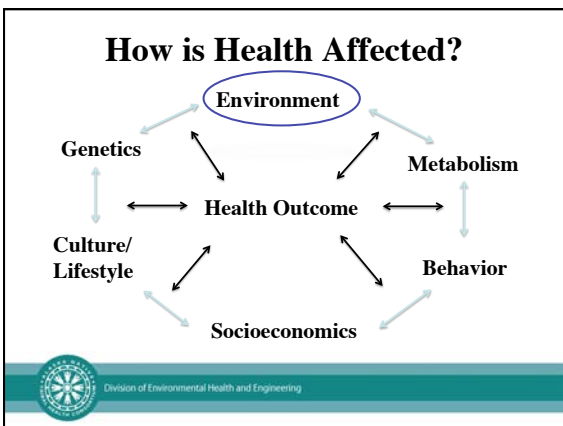
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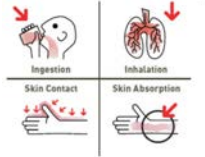
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## How Environment Plays a Role

- Environmental Exposures and Risk

- Routes of Exposures

- Inhalation
- Ingestion
- Absorption



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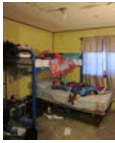
## Respiratory Health



- Alaska Native children have some of the highest rates of respiratory illness ever documented

- Risk Factors

- Lack of in-home piped water services
- Household overcrowding
- Not Breastfeeding
- Using a woodstove
- Poor air quality (indoor and outdoor)



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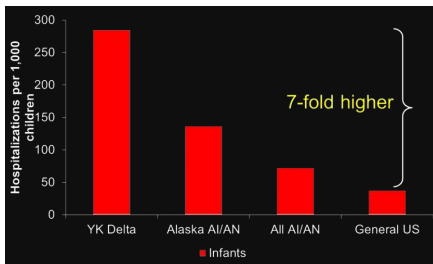
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## Lower Respiratory Tract Infections



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### The Air We Breathe



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### The Air We Breathe



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### Air Quality and Health



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### Air Quality and Health

- **Particulate Matter**
  - *The dose makes the poison*
    - (size, time, amount exposed to, source, what's attached to the dust, etc.)
  - Cardiovascular problems
  - Respiratory problems
  - Eyes and skin
  - Dust as a safety issue



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### Air Quality and Health

- **Evidence for Health Impact**
  - Fine particle exposure studies
  - Dust storm and human health studies
  - University of Michigan study
  - WHO all cause mortality increase
    - 0.2–0.6% per 10  $\mu\text{g}/\text{m}^3$  of  $\text{PM}_{10}$
    - Cardiopulmonary mortality risk increases 6–13% per 10  $\mu\text{g}/\text{m}^3$  of  $\text{PM}_{2.5}$



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### Air Quality and Health

- **Size matters**
  - Ultrafine vs.  $\text{PM}_{2.5}$  vs.  $\text{PM}_{10}$
- **What's in the dust matters**
  - Chemicals
  - Bacteria
  - Fungi
  - Heavy metals



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## Air Quality and Health

- **What's safe???**
  - As little as possible
  - Below 24hr. NAAQS
    - 150  $\mu\text{g}/\text{m}^3$
    - 35  $\mu\text{g}/\text{m}^3$



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## Who is Most Vulnerable?



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### ANTHC Air Quality

- Air Quality Consultation
- Technical Assistance
- Air Monitoring Support
- Mini-grants



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### ANTHC Air Quality



- Mini-grants
  - Up to \$10,000
  - Includes onsite training visits from ANTHC staff
  - Air quality project, including road dust



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### ANTHC Air Quality

- Where we've worked
  - Tooksook Bay,
  - Seldovia,
  - Tyonek,
  - Old Harbor,
  - Lower Kalskag
- Where we're working
  - Marshall
  - Seldovia,
  - Tyonek,
  - Sand Point



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### ANTHC Air Quality

- **What we've found**
  - Road dust is widespread
  - Data collection is useful
  - Projects can help, but solutions often come slow

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### ANTHC Air Quality

- **How do I start?**
  - Contact ANTHC
  - Communicate with local environmental dept
  - Conduct Phase I Air Quality Assessment
  - Create project idea and find funds/partners

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## Thank You

**Contact Information:**  
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Phone: 907-729-4465



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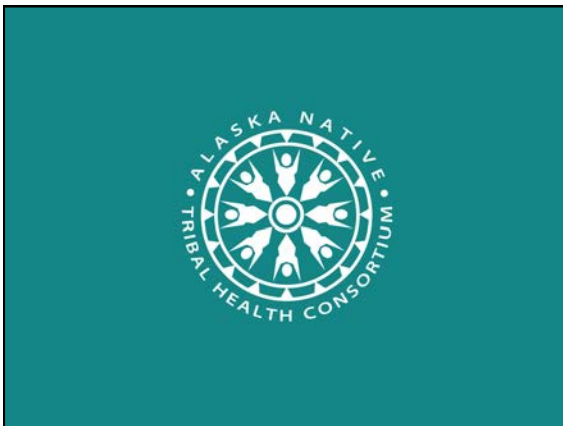
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