PENN SUPERFUND RESEARCH AND TRAINING PROGRAM CENTER: OVERVIEW

Asbestos, fate, exposure, remediation and adverse health effects

DIRECTOR: IAN A. BLAIR, PhD
DEPUTY DIRECTOR: TREVOR M. PENNING, PHD

NIEHS Grant: P42ES023720
http://www.med.upenn.edu/asbestos/
Asbestos sites in EPA Regions 2, 3, 5, & 8-10

10. Sumas Mountain Asbestos
9. North Ridge Estates Superfund Site
9. Clear Creek Management Area, San Benito
9. South Bay Asbestos Area
9. Coalinga Asbestos Mine
9. El Dorado Hills
8. Libby Superfund Site
5. Minneapolis Tremolite Asbestos Site
5. Milwaukee Solvay Coke & Gas Site
5. Torch Lake Superfund Site
5. American Cyanamid, Millington
5. BoRit Asbestos Site, Ambler
5. Western Mineral Products Site
5. Johns Manville Corporation, Waukegan
7. Carter Carburetor Site in St. Louis
5. Illinois Beach State Park
Ambler and Asbestos Manufacturing

- 1881 Henry G. Keasbey and Dr. Richard Mattison moved their pharmaceutical company to Ambler known initially for the production of “milk of magnesia”
- Dr. Mattison discovered that milk of magnesia (magnesium carbonate) could be combined with asbestos to make pipe insulators and shingles
- K&M leading manufacturer of asbestos textiles and products in 20th Century
- Eventually became Nicolet Industries and manufacturing continued until 1987
- Asbestos waste sites covered 63 acres with highest waste piles 92 feet high
Ambler Superfund Site

BoRit Superfund Site
Aerial View

Historic White-Hills of Ambler
CEET Identified Questions from the Ambler Community

• Can asbestos be remediated?
• Is asbestos transported by water?
• Why is there a cluster of mesotheliomas among women in Ambler?
• Is there a genetic pre-disposition to asbestos-induced mesothelioma?
• Can asbestos-induced mesothelioma be prevented?
• Is it possible to develop blood tests for asbestos exposure and mesothelioma?
Penn SRP Center Organizational Structure

Mechanistic Toxicology
- Health effects
- Epidemiology
- Environmental Justice
- Hydrogeology
- Fate and Transport
- Remediation Engineering

Project 1: Asbestos remediation
Project 2: Asbestos mobility and transport
Project 3: Social determinants of asbestos exposure
Project 4: Mesothelioma rodent models
Project 5: Chemoprevention of asbestos-induced lung diseases
Project 6: Biomarker of asbestos exposure

Core A
Admin Core

Core B
Community Engagement

Core C
Research Translation

Core D
Biostatistics
Research Support

Core E
Interdisciplinary Training

CEET Administration, Translational Biomarker Facility Core, and Integrative Health Sciences Facility Core, Certificate Program, and T32 Training Program
Project 1: Alteration and remediation of asbestos fibers

PI: Brenda Casper, PhD

Asbestos-contaminated soil

Size-dependent fractionation

Soil amendments
Project 2: Asbestos mobility and transport

Co-PI: Douglas Jerolmack, PhD
Co-PI: Reto Gieré, PhD
Project 3: Social determinants of asbestos risk

Co-PI: Frances K. Barg, PhD
Co-PI Douglas Wiebe, PhD
Project 4: Animal models of mesothelioma

Co-PI: Joseph Testa, PhD
Co-PI: Rebecca Simmons, MD

Crocidolite or Chrysotile

Bap1+/- vs. Bap1+/+ Mice
Project 5: Chemoprevention of asbestos-induced lung diseases

Co-PI: Melpo Christofidou-Solomidou, PhD
Co-PI: Steven Albelda, MD

The Path to Drug Development

Flaxseed flower → Flaxseed Seed-Capsules → 1.3% SDG → Gold/brown flaxseed → 1.3% SDG → Ground gold/brown flaxseed → 35% SDG → Extracted Flaxseed Lignan Complex (FLC) → Purified (or synthetic) SDG

10% Flaxseed = 10% FLC

(1.18g SDG/Kg)
Project 6: Biomarkers of asbestos exposure and mesothelioma

Co-PI: Ian A. Blair, PhD, Anil Vachani, MD
# Acknowledgements

## PROJECTS

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