

Minnesota Taconite Workers Lung Health Partnership

Update Meeting

Wednesday, December 8, 2010



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Agenda

- Welcome – John Finnegan, Ron Dicklich, Co-chairs
- Agenda Overview – Jeff Mandel
- Taconite Worker Respiratory Health Survey – Jeff Mandel
- Mortality and Cancer Incidence Studies – Bruce Alexander
- Occupational Exposure Assessment – Gurumurthy Ramachandran
- Environmental Exposure Characterization Study – George Hudak
- Discussion – All Partnership Members



Health Studies Overview

- Respiratory Health Survey
- Epidemiology Studies
- Exposure Assessment



Respiratory Health Survey

- Testing completed at VRMC in August
- Testing completed at Silver Bay in October
- Over 1800 people participated (~1300 workers; 500 spouses)
- Analysis of data underway; should be complete in March 2011
- Around 16% of those tested have obstructive lung disease
- Around 4.5% of those tested have restrictive lung disease



Respiratory Health Survey

- We will incorporate exposure information to further understand lung testing results
- Specifically, we will look at lung testing results to see if there's relation between diminished air flow and highest exposure jobs



Taconite Workers Health Studies

Mortality and Cancer Incidence



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Activities

- Linked cohort with cancer surveillance and death records
- Traced those with unknown or uncertain vital status
- Identified cases of interest
 - Mesothelioma
 - Lung cancer
 - Nonmalignant respiratory disease
- Selected control population
- Abstracted work history records
- Mapping work histories to SEG (similarly exposed groups) to link to exposure assessment



Taconite Mining Study Population Born After 1920: Status Through 2008

Status	
Alive	31,385
Deceased	13,786
Presumed deceased	506
Unknown/presumed alive	525
Total	46,202



Diseases of Interest from Cancer Registry and Death Records

Cause	MCSS*	Death	Total
Mesothelioma	63	17***	80
Lung cancer	991	734	1725
NMRD**	na	2064	2064

* MCSS=Minnesota Cancer Surveillance System, 1988 forward

** NMRD = Nonmalignant Respiratory Disease

*** Mesotheliomas identified on death certificates and not identified in MCSS. Cases are mostly from states other than MN. These cases are considered presumptive and additional information will be sought to confirm the diagnoses.



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Exposure Assessment

- On-site testing completed for 5 mines
- Remaining on-site testing to be done by January, 2011
- Review of company data in process
- Review of all MSHA data done
- Creation of SEGs (similar exposed groupings of jobs) in progress



Exposure Assessment

- Will be focusing on exposure reconstruction
- Will supply exposure information for use by all other studies



Related Activities

1. Digital radiographs to replace traditional x-rays-discussions with NIOSH
2. High-frequency chest compression to eliminate dust from lungs-looking at pilot
3. Development of more comprehensive occupational exposure assessment-in progress
4. Development of occupational lung center-in progress



Natural Resources Research Institute

Environmental Study of Airborne Particulates – Dec. 2010 Summary

- Community Sampling – Now Completed

Iron Range Communities	Sampling Events	Non-Iron Range Communities	Sampling Events
Silver Bay High School	11 (4W/7S)	Duluth NRRI Rooftop	10 (4W/6S)
Virginia Court House	9 (4W/5S)	Ely Fernberg Site	7 (4W/3S)
Hibbing High School	9 (4W/5S)		
Keewatin Elementary School	6 (3W/3S)		
Babbitt Municipal Building	15 (7W/8S)		

- In-Plant Sampling – Now Completed

Taconite Facility	Sampling Events	Taconite Facility	Sampling Events
United Taconite (Cliffs Natural Resources)	2 active	Keetac (U.S. Steel Corp.)	1 inactive 1 active
Hibtac (Cliffs Natural Resources)	1 inactive 1 active	Northshore (Cliffs Natural Resources)	1 inactive 3 active
Minntac (U.S. Steel Corp.)	1 active	Minorca (ArcelorMittal)	3 active

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Environmental Study of Airborne Particulates – 2009 Summary

- Sample Analysis - Filters

Sample Type	Number
Mineral Fibers in air utilizing MDH 852 TEM Method (Braun Intertec Corp.)	127
Indirect TEM Analysis (EMSL Analytical, Inc.)	39
Proton-induced X-ray Transmission Analysis (Elemental Analysis, Inc)	220
Modified Elutriator Method (EMS Laboratories)	10
Scanning Electron Microscopy / Energy Dispersive Spectroscopy (UMD/NRRI)	11

- Lake Sediment Sample Analysis

Lake	General Location	Comments
“North of Snort”	Eastern Mesabi Range	Core has been age dated by Pb ²¹⁰ method; sediment dates to ~1840
Silver Lake	Central Mesabi Range	Samples currently being age-dated using Cs ¹³⁷ method

Next Step – Mineral Extraction and Analysis for samples from both lakes

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Environmental Study of Airborne Particulates – 2010

Plans for First Quarter 2011

- Completion of Quality Assurance Project Plan (QAPP)
- Completion of Glossary
- Completion of lake sediment age dating
- Completion of laboratory analysis of samples (TEM, PIXE, SEM/EDS/EBSD)
- Completion of Community Gravimetric Data Reports and In-Plant Gravimetric Data Reports
- Continued Evaluation and Interpretation of Laboratory Data
- Initiation of Final Project Report



Report to Legislature

- To be submitted in February
- We're expecting to have a timeline of when reports can be expected
- We're working on a communication plan that takes this information into account



Discussion

Question: What is the location of the 10 samples being analyzed by the Elutriator Method?

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Answer: One drill hole is located in the eastern Mesabi Range near Cliffs Natural Resources, Peter Mitchell Mine, and the other is located near Cliffs Natural Resources United Taconite (UTAC) mine in the Virginia Horn area. Both drill holes intersect the Biwabik Iron-Formation. The 10 samples are comprised of 5 from each drill hole, from various depths with in the hole.

