

12/26/2018

Ed Smith  
CLERK OF THE SUPREME COURT  
STATE OF MONTANA

Case Number: AC 17-0694

## W. R. Grace File Review Summary

### Chronological Order of Events (CVID #3726)

1881

#### Vermiculite Mineral Discovered

Robert Rannie and his partner dug a 40-foot shaft following a vein of quartz hoping to discover gold

1919

Edward Alley-part time miner and Libby Hotel owner

- Observed the unique characteristic of vermiculite when heated by flame, expands to large lightweight puffy clusters that did not burn.
- Little known substance called vermiculite was named Zonolite

1924

Alley produced 4 tons of Zonolite per day

1926

Zonolite plant produces 100 tons of Zonolite per day

- Vermiculite ore was removed from the top of the mountain and hauled to a mill, it was separated into various commercial sizes by a screening process
- Vermiculite ore was shipped either unprocessed, or
- Processed at 2000° F causing it to expand 15 times its original size

1935

#### Edward Alley Died

- Thousands of products being sold around the world contain vermiculite mined from the mountain in Libby

1939

Universal Zonolite Insulation Company

- Alley's Zonolite business merged with another company mining at the bottom of the mountain

1940

Universal Zonolite Insulation Company contacts the State of Montana

- Sept. 17, Company requests information from Dr. Lloyd Farner, M.D., Director of Division of Industrial Hygiene State Board of Health on whether the insurance with the State of Montana protects the company on occupational disease and what steps need to be taken to secure insurance coverage
- Insurance with State Industrial Accident commission does not give coverage for occupational disease. Dr. Farner suggests contacting a private insurance carrier. There is no compensation in the State for occupational disease at this time

1941

State visits site to discuss purpose of Industrial Hygiene Division

- March 27: Plant shut down for remodeling, Company plans to install dust collection system in future
- December 9: State Board of Health conducts inspection of mine relating to occupational health

1942

State issues occupational health report

- Air and CO samples collected at mill and load out station

Results: Air Sample = 7.9 million particles per cubic foot (mppcf)  
(Threshold limit of 50.0 mppcf);

CO Sample = 95.0 particles mppcf (Threshold limit of 100.0 mppcf)

State Board of Health report-requested ventilation pipe for gas; workers loading materials be required to wear respirators; and duct installed to remove dust to improve ventilation

1944

July 31: Universal Zonolite completes installation of dust control equipment:  
Memorandum to Dr. Cogswell from Division of Industrial Health

- Milling process equipped with covers and exhaust ventilation which prevent the dust from these operations escaping into the work place
- Changes still needed-larger exhaust fan to increase velocity at specific point and control dust at the mine tailings load out

Air samples collected in workplace (silica) 10 and 20 mppcf

(Threshold 50 mppcf)

Summary of report states the proper and adequate means of controlling the dust have been or are in the process of being installed

1948

Zonolite Company emerges

- Universal Zonolite Insulation Company changes name to Zonolite Company

1955

Letter to Ben Wake, State Board of Health from Paul Woolrich, Occupational Health of Department of Health, Ed and Welfare, Salt Lake City- addresses several questions Wake asked during Mr. Woolrich's recent visit to Helena

- Mineralogical formula for vermiculite has been unsuccessful due to its highly variable composition
- Pneumoconiosis twice as likely to occur among workers exposed to mica dust

1956

Ben Wake, Industrial Hygiene Engineer for Division of Disease Control for State of Montana conducted a study at Zonolite Company to evaluate the working environment.

- Concentration of dust in the air vary 11.6 to 83.0 mppcf. Concentration in relation to free silica are not excessive although the concentration of nuisance dust in the dry milling process exceeds the 50.0 mppcf
- Asbestos content of the dust has not been determined; however, company records of 8-21% asbestos dust concentration would indicate asbestos content in the air should not be greater than 25-30 mppcf (Limit 5 mppcf). Recommendation will follow when concentration of the fibers is known.
- Report recommends improvements of the ventilation system and mandate use of respirators in the dry milling process.

Report from Department of Health, Ed and Welfare, UT (from Dohrman Byers) concerning samples analysis of dust collected during Wake study

- Do not have a reliable method to determine asbestos in samples-If company will cooperate and control the dust the asbestosis and silicosis hazard would certainly be minimal

Wake reiterates concern that the asbestos in the dust would be higher than comparing asbestos content in the ore and requests additional information when available

## 1958

Ben Wake requests that Mr. Byers analyze three sputum samples from three men exposed to asbestos dust

- No response in file

## 1959

Ben Wake conducts study at Zonolite Company: follow up investigation of the previous study in '56'

- Some progress noted to reduce dust in the dry milling process but not to a satisfactory level

Dust concentration levels lower than in '56 study but are significant in view of the amount of asbestos fibers in the dust concentration equal to 27%

Exhaust system needs constant maintenance/repair

Closed system needed for ore carrying and treating systems

Dr. Benjamin Highman analyzed sputum samples from Montana for W. Clark Cooper, Occupational Health-Dept. H, Ed and W in Washington DC

- No asbestosis bodies were found

## 1962

Ben Wake sends air samples and ore samples to Occupations Health Research Facility in Ohio for analysis- (Results)

- To determine if asbestos is present in the ore: Yes
- Type of asbestos: Tremolite
- Percent of asbestos fibers in air-borne dust samples submitted: 40 %-petrographically-x-ray diffraction was not possible

Ben Wake conducts follow up investigation of Zonolite Company

- Conclusion: No progress had been made in reducing dust concentration in the dry mill to an acceptable level

Classification of dust changes, no longer nuisance dust because of vermiculite mining but should be classified in the same category as talc, and asbestos content should be closely

observed at 5 mppcf

April 19<sup>th</sup> Zonolite Company is requested to attend meeting before the State Board of Health on May 19<sup>th</sup>

- Discuss lack of compliance with recommendation in '56, '59 and '62 Wake Studies
- Attendance is not compulsory-but beneficial to you and the workers of your company

Zonolite attends meeting and agrees to conduct dust counting (air sampling)

- Ben Wake letter recommends equipment needed to conduct dust counting studies and updates on the ventilation work being conducted

## 1963

Ben Wake report on Industrial Hygiene Study of Zonolite Company

- 60 days from the date of report, suitable ventilation will be applied to dust control measures to eliminate hazardous conditions
- Samples of vermiculite indicate 6.2% -22.5% Tremolite present

Zonolite Company acquired by W. R. Grace

## 1964

Local Union 361 Letter to Ben Wake

- Request assistance to clean up the serious unhealthy conditions at the Zonolite operation

Wake Letter to Union

- Enforcement Provisions of the Industrial Hygiene Act of 1939 are very poor, AG's office has not strengthened the Act and we can only use certain portions of the Act to achieve compliance with recommendations
- Agrees to make another inspection at plant

Ben Wake report on Industrial Hygiene Study of Zonolite Company

- Ventilation system repaired and new fan installed. Noted improvement in ventilation system are counteracted by poor house keeping
- Recommendations: improve housekeeping, elevate blower discharge off ground and continue to determine dust concentrations at the plant

## 1967

Senator Richard Dzivi, Great Falls representing client with a "fibrotic" condition of the lungs requests information from the State Board of Health (B. Wake)

## 1971

National Institute for Occupational Safety and Health requests information on asbestos exposure from State Board of Health, Ben Wake, Director

Ed Gatzemeier, of State Board of Health- responds:

- Conducts asbestos fiber counting at plant (Occupational Health Lab in UT analyzes sample)
- Reports company has a medical program (chest X-rays)

W.R. Grace submits construction permit application for sources of air pollution

- Dust collector for bagging facility in town

W.R. Grace applies for Mine Permit application #00003

- Submits Reclamation Plan
- Mine site approximately 320 acres/life of mine 1200 acres
- Bond set at \$100/acre
- Issued from Department of State Lands

Montana Fish and Game

- Agencies meet to discuss tailings impoundment and Rainy Creek road relocation

1972

W.R. Grace Report

- Explains the technical aspects of the new vermiculite mill and the pollution control facilities replacing the "Old" mill operations

Department of Health and Environmental Sciences (DHES) Reviewed "Libby Mill Air Pollution Abatement Program"

- Environmental Sciences Division approves and certifies the facilities for the purpose of air and water pollution control (tax purposes)-Ben Wake, Director

W.R. Grace issued Mine operating permit #10

- Department of State Lands conducts inspection to review controls to correct silt problem in Rainy Creek

## 1973

W.R. Grace submits application to install air pollution control equipment to comply with applicable air pollution regulations

Clean Air Act: Asbestos Regulations adopted (Federal)

- Regulations focus:
  - Demolition and Renovation
  - Asbestos as a commercial product

W.R. Grace requests and receives approval to relocate Rainy Creek around impoundment from Department of State Lands(DSL)

W.R. Grace supplies requested information to United States Forest Service concerning impact plan for land exchange

## 1974

Montana DHES inspected W.R. Grace Zonolite plant discussed changes being implemented (Robert T. Hill inspector)

- No dry grinding of ore
- Ore concentration is wet and final screening is totally enclosed
- Asbestos is supposedly removed by the concentration process and should not be a problem in the product
- Asbestos survey:
  - Average concentration in the mill and screen plant are below the TLV of 5.0 fibers/cc
  - Some samples exceeded the proposed TLV where exhaust ventilation is not providing adequate control
  - Need an increase in housekeeping efforts

DSL activity at W.R. Grace site

- July 1<sup>st</sup>: Legislature grandfathered of bonding limits from change in Statute, bond currently \$32,000
- November 15<sup>th</sup>: DSL conducts inspection at mine site

## 1975

DSL attends meeting for land exchange with Forest Service

## 1976

DSL conducts mine site inspection

June 7-10<sup>th</sup>: United States Mining Enforcement and Safety Administration conducts inspection

1977

DSL conducts mine site inspection

Mine Reclamation bond is increased from \$32,000 to \$93,5000, W.R. Grace receives approval to expand mine site to 443 acres

1978

Mine Reclamation bond is increased

- \$93,500 to \$113,500
- W.R. Grace receives approval to expand mine site to 482.6 acres

1979

DSL conducts mine site inspection

EPA issues enforcement action for Air Quality Violation

- Citation following State opacity observation of 61% from plant dryer stack

DHES collects water samples at Rainy Creek

- Analyzed for basic parameters: flow, temp, pH, dissolved O<sub>2</sub> noted sedimentation mica, vermiculite and silt deposits

1980

May 2<sup>nd</sup> occupational health inspection reported by DHES to Wm. Hooper of Zonolite Plant

- Time Weighted Averages (TWA) for asbestos was not exceeded

■ New equipment has reduced airborne asbestos levels

Reclamation bond is increased

- \$113,500 to \$190,000
- Expansion of mine site from 482.6 acres to 635.4 acres

DSL conducts mine site inspection



- W.R. Grace's tailings impoundment
  - Tailings pond dams are considered a high hazard dam monitor by National Dam Safety requirements

1981

DHES conducts Air Quality inspection at W.R. Grace

- Inspected load out facility, dryer, boilers and mine area and observed no visible emissions

W.R. Grace requests Air Quality permit change

- Present sources have been covered by permits to construct requests converting to operating permits

- 8 permits issued between 1970-1980

DSL conducts mine site inspection

Corps of Engineers conducts inspection

1982

EPA Interim Final Report prepared under contract by Versar Inc.

- "Exposure Assessment for Asbestos Contaminated Vermiculite" Official Use Only (W.R. Grace is a data source)

DSL conducts mine site inspection

DHES conducts Air Quality inspection at W.R. Grace

- Source operation conditions during inspection are in compliance for visible emissions and opacity limits

1983

April 20<sup>th</sup> Status report prepared by EPA epidemiology study of past and present workers-Report is to be considered incomplete

- Facts noted in report performed by W.R. Grace

- Medical Surveillance program

- X-rays (1964),

- Pulmonary Function Test (1974),

- Health Status Questionnaires and smoking ban (1978),
- Cooperates with NIOSH Study
- McGill University Study will undertake a thorough analysis of Libby data

W.R. Grace awards a research grant to McGill University to conduct health-related study on former and current Libby mine and mill workers

- Workers employed in the 40's, 50's and 60's had an increase in lung related deaths as compared to the general public
- Libby workers today have a 5-10% increased risk of developing lung opacities

W.R. Grace contracts with Harding Lawson Assoc. to conduct a study of the impoundment dam at the tailings pond

US Department of Labor, Mine Safety and Health Administration conducts inspection

1984

W.R. Grace agrees to DHES request to collect dust samples

- Bagging facility in town
- Screen Plant located on river

DHES collects bulk samples from W.R. Grace pollution control equipment to analyze

- 3 samples collected and each contain Tremolite asbestos

June 27, DHES photographs mine site, tailings pond and screening plant

DHES Air Quality inspection

- No visible emissions, 10-15% opacity (limit 20%)

November 7<sup>th</sup> EPA internal memo: Chemical Coordination Staff and Air & Hazardous Materials division

- Provide information concerning the hazards associated with the use of certain asbestos substitutes
  - Use of substitutes such as vermiculite with a binder is permitted despite the presence of asbestos in excess of 1%
  - NESHAPS addresses asbestos emissions
  - Controls emissions from commercial asbestos mills, renovation and demolition activities, applications, fabrication and insulation materials (Federal)

Attorney Ann Kimmel requests all information concerning Zonolite Vermiculite Plant in

Libby from DHES

1985

W.R. Grace produces 173,000 tons of vermiculite

DSL conducts mine site inspection

DSL and US Department of Labor (MSHA) conduct mine site inspection

May 15<sup>th</sup> DHES Air Quality inspection

- No excessive emissions were noted from any phase of the mining operation

September W.R. Grace develops report which outlines the mines total operation, health studies and related statistics titled "GRACE"

Attorney David Evan requests files from DHES concerning W.R. Grace (files sent)

Attorney David Sheehan requests files from DHES concerning W.R. Grace (files sent)

1986

W.R. Grace produces 166,000 tons of vermiculite

DHES conducts Air Quality inspection

- No visible emissions

- Mill not operating
- Raining

DHES conducts RCRA inspection

- Assigns EPA ID #MTD981543812
- DHES/ S & HW memo –states asbestos is not a hazardous waste in MT and may be disposed of at mine site dump

DSL reviews Lawson Assoc. tailings impoundment plan

- W.R. Grace submits five-year mine Plan

W.R. Grace receives approval for amendment and expands mine from 635.4 acres to 1004 acres

1987

W.R. Grace produces 150,812 tons of vermiculite

US EPA requests information from W.R. Grace operations on air emissions of asbestos and other mineral fibers

- Provide information that will be used in considering the need for national emission standards for hazardous air pollutants for sources of contaminate asbestos under Section 112 of the Clean Air Act (amended 1977)

DHES conducts Air Quality inspection

- No visible emission
  - Plant not operating
  - Requested asbestos sampling information
  - Plant Foreman (Jacobs) stated personnel monitoring for asbestos range from 0.02-0.3 f/cc and ambient air samples did not detect asbestos-Corporate approval for release of sampling data

DHES conducts RCRA inspection

- No violations noted

EPA study of Asbestos Contaminated Vermiculite

- As of November 29, 1999, DEQ/ENFD has not reviewed this document –check with J. Wardell-EPA

DSL conducts mine site inspection

- Observes above ground fuel tank not within containment
  - W. R. Grace submits Spill Response Plan

1988

Reclamation Bond increases from \$190,000 to \$472,000

- Bond release requested on 69.5 acres
  - Bond release published in Western News
  - Full bond release for 14.7 acres on Knoll #3
  - 60% bond release on 54.8 acres on Knoll #2
- August-Reclamation Bond reduced \$472,000 to \$467,242

Mary Anne House-Attorney requests Board minutes that involve W.R. Grace

- Minutes include 1962-Occupational Health Issue
- 1970-1974 Air Quality Variance Issues

DHES conducts Air Quality inspection

- No visible emissions and 0% opacity
- Mine not operating: All emission sources in compliance

1989

DSL conducts mine site inspection

1990

May 14<sup>th</sup>: EPA conducts Federal Air Inspection

- In compliance:
- Visible emission 0-5% from all stacks
- Roads watered to control dust

September 30<sup>th</sup>: W.R. Grace Ceases Operations

- All structures and equipment removed and dismantled
- Requests release of air permit from DHES

December: W.R. Grace begins demolition of mine buildings

DHES conducts RCRA inspection

- No violations noted

DSL conducts mine site inspection

- Receives notice of mine closure
- Receives report from US Forest Service of Rainy Creek road sampling
- Estimates cost to reclaim site
- December 10<sup>th</sup>: DSL and DHES Water Quality Bureau conduct site inspection

1991

Reclamation at mine site begins

- DSL and DHES WQB review water-monitoring plan
  - Impoundment closure plan
- Yearly inspections conducted '91-present
  - Final design for Rainy Creek channel reconstruction

- Surface Water samples collected (DSL)

- Requirements of Mining Bond

- Multiple constituents analyzed

DHES conducts RCRA inspection

- No violations noted following plant closure and proper disposal of all listed hazardous waste

1992

March 31<sup>st</sup>: as a result of citizen complaint asbestos demolition/renovation inspection conducted by DHES, Occupation Health Bureau

- Five buildings contain ACM (regulated asbestos containing material)

- W.R. Grace failed to notify of demolition activity

- Failed to conduct proper abatement project

- Buried ACM on site

- Solid and Hazardous Waste Bureau collect Soil Samples

- Concern using mine tailings for road construction

- non-issue: Regulates asbestos mine tailings not vermiculite mine tailings

- Five composite soil samples (Forest Service)

- Mine yard: 3% Tremolite

- Past the Gatehouse on road: 1% Tremolite

- Gate house road cut: 5% Tremolite

- County Road: < 1% Tremolite

- County Road Cut: ND

- Two composite soil samples collected

- Mill Yard: < 1% Tremolite

- Little League Field: N.D.

November 19<sup>th</sup>: NESHAPS Roadway Standards as applied to W.R. Grace-EPA to Montana Superfund

DHES - Superfund: Reviews reclamation plan

- Concern asbestos detected in road cut are above regulatory limits and that road will not be resurfaced following mine closure

DHES/S & HW receives citizen complaint

- Alleges fuel tanks are being buried during night shift
- Complaint referred to DSL -jurisdiction under Mine's clean up plan

June 17<sup>th</sup>: W.R. Grace obtains Abatement Project Permit for Demo/Renovation

November 20<sup>th</sup>: Montana Adopts Air Quality Rules including sections of NESHAP

W.R. Grace submits air sampling results collected outside facility

- Four selected areas for 8 weeks starting in June 1991

- Below OSHA threshold limit of 0.2 f/cc

DSL coordinates Closure Plan review process

- Surface water samples collected at and near the mine site

- Receives and reviews comments on Impoundment Closure Plan

- Montana Bureau of Mines

- Fish Wildlife and Parks

- Forest Service

- DNRC Dam Safety Section

- Schafer and Assoc. for W.R. Grace submit plan for flood routing alternative

- DSL sends draft Environmental Assessment and press release for public meeting in Libby on mine closure plan, receives and reviews comments

- Montana Bureau of Mines

- Fish Wildlife and Parks

- Forest Service

- Libby County-Ron Anderson

- September 25<sup>th</sup>: Approval of Final Closure Plan

- Amendment 005 approved for closure of impoundment

1993

Phelps Dunbar Law Offices

- Attorney Ashley Serice requests information from DHES Air Quality Bureau regarding asbestos violations at W. R. Grace

- Response: No asbestos violations to date and clarification vermiculite mine v. asbestos

United States (EPA) takes civil action against W.R. Grace

- Violations of NESHAP: Demolition of mill building containing regulated ACM

DSL conducts inspections mine site

- Inspections of site May, July and September
- Supplemental EA released on Final Design change in impoundment closure plan

## 1994

DSL reviews bond release request

- Press Release solicits public comment
- W.R. Grace submits report on cost of reclamation
- Conducts bond release inspection

- September 13<sup>th</sup>: Bond Release approved \$467,242 on 1185 acres to \$66,700 on 1025 acres

W.R. Grace signs Consent Degree for NESHAP violations

- Payment of civil penalty: \$510,000
- Engage in compliance program of 29 facilities around the United States

Montana adopts Water Quality standards

W.R. Grace sells mine site to Kootenai Development Company (KDC)

## 1995

DEQ/Environmental Management Bureau (EMB) reviews permits

- Operating permit and Replacement bond issued in both seller and purchasers names
- KDC discovers refuse disposal site

- DEQ approves Mine Refuse Site Reclamation Plan-revision 95-001

DEQ (DHES/Occupational Health conducts inspection)

- Follow up letter sent explaining authority at the mine site
- Complaint referred to Air Quality Division

- Due to road dust (asbestos or not)

## 1996



DEQ/EMB contacted by KDC

- Requests information to become a supplier of rip rap (syenite)

- Minor Permit Revision granted by KDC #96-001

- Requests bond release of the remaining permitted area of 1025 acres

Montana adopts ARM 17.8.706

- Hazardous air pollutants list effective 8/23/96 as described in the Federal Clean Air Act section 112 (b)

- Human health risk assessment emissions inventory listing of all pollutants on list and DEQ may impose additional requirements for permit

1997

EMB site activity

- EMB conducts site inspection
- KDC submits annual report
- Bond release inspection, public review and approval granted December 30<sup>th</sup>: Releases 900 acres, 125 acres remain bonded at \$66,700

1998

EMB site activity

- KDC submits annual report
- Conducts site inspection

1999

EMB site activity

- KDC submits annual report
- Conducts site inspection
- Collects surface water sample from toe drains on Rainy Creek relating to the impoundment ponds

- Analysis on file

- Well log information submitted by KDC

- Sends bond release notice sent to Western News, Daily Inter Lake and others
- Sends public meeting notice to all Montana major city newspapers

Gayla Benefield writes letter to Governor Racicot

- Concerning proposed legislation for time limitations on filing of claims for asbestos compensation

Citizen complaint to EPA-8-Mo

Citizen complaint to DEQ/Enforcement Division

- Determine regulatory authorities available to DEQ
- Validate citizen complaint
- Coordinate department response