



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

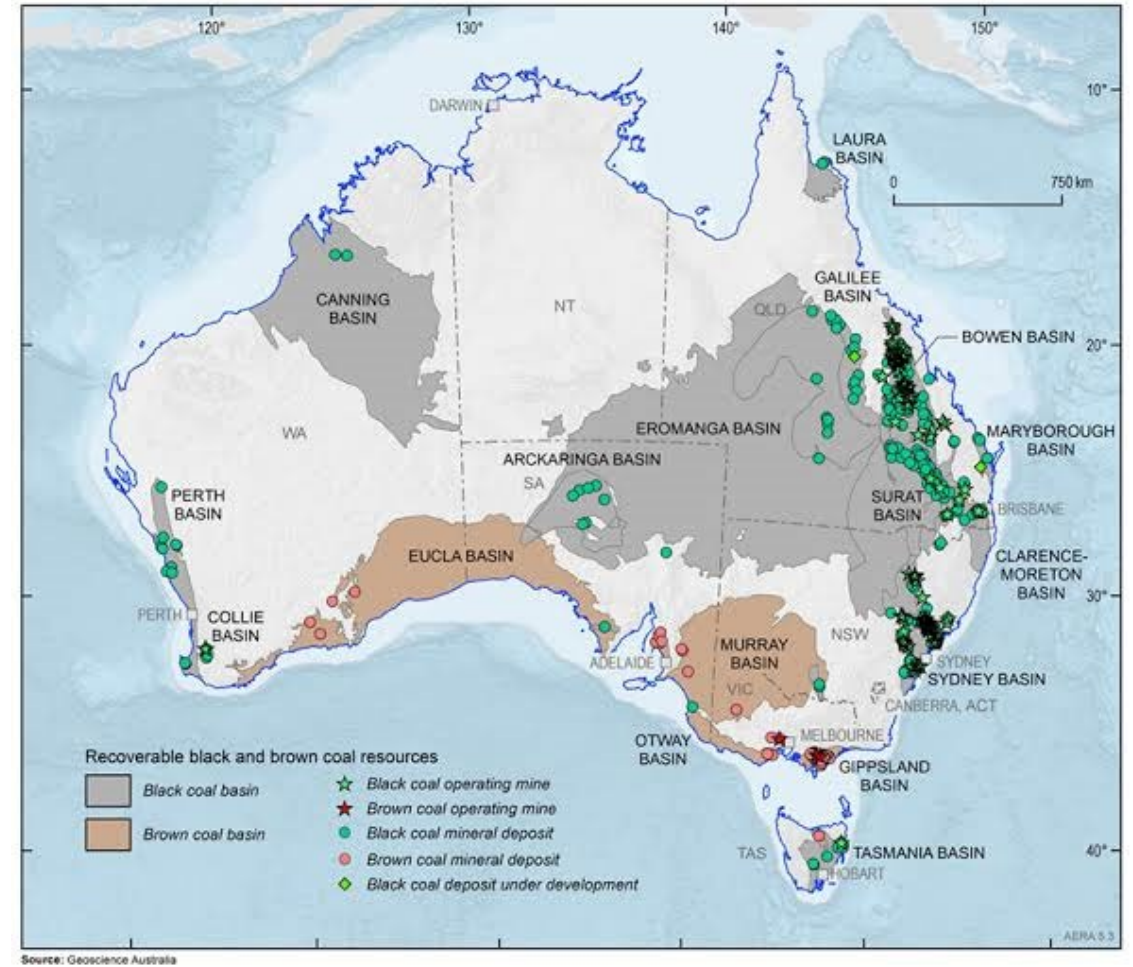
CREATE CHANGE

Characterization of Particulates in Australian Mines

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22 October 2020

Australian Mining



Australian Coalmines



Australian Health Surveillance & Exposure Monitoring

- Compulsory health surveillance scheme
- NSW order 43 now 3 years for UG coal, 6 years for other workers
- All workers monitored every 5 years in QLD
- Robust Workers Compensation scheme
- Medicare system
- Sampling the person, not the Designated Occupation

Difference in States

Queensland

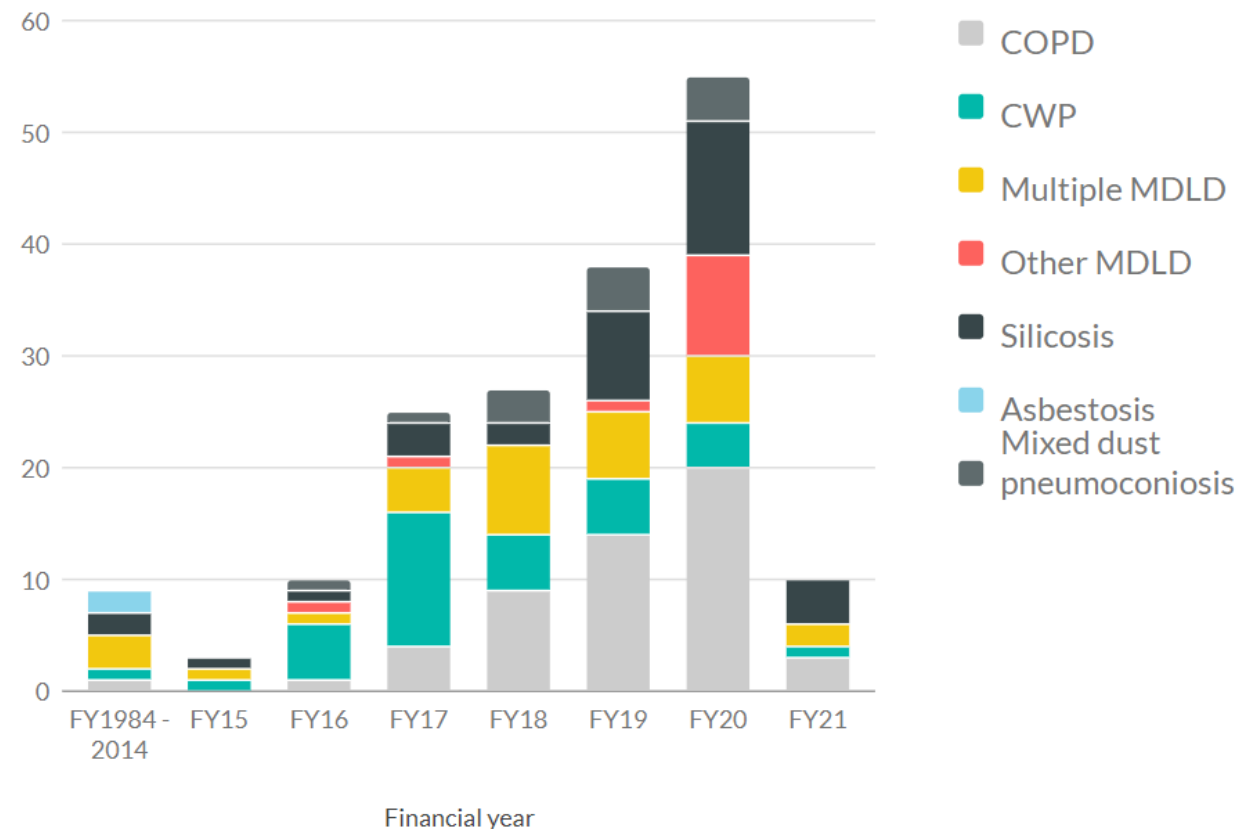
- 2015 exposure limit was 3.0mg/m³ with shift adjustment
- Sampling performed by hygiene consults
- Variety of sampling equipment used
- Portal to portal sampling

New South Wales

- 2015 WES was 2.5mg/m³ without shift adjustment
- Sampling performed by statutory body
- Sampling performed with Casella cyclones and Apex 2 pumps
- Crib room to crib room sampling (dinner hole)

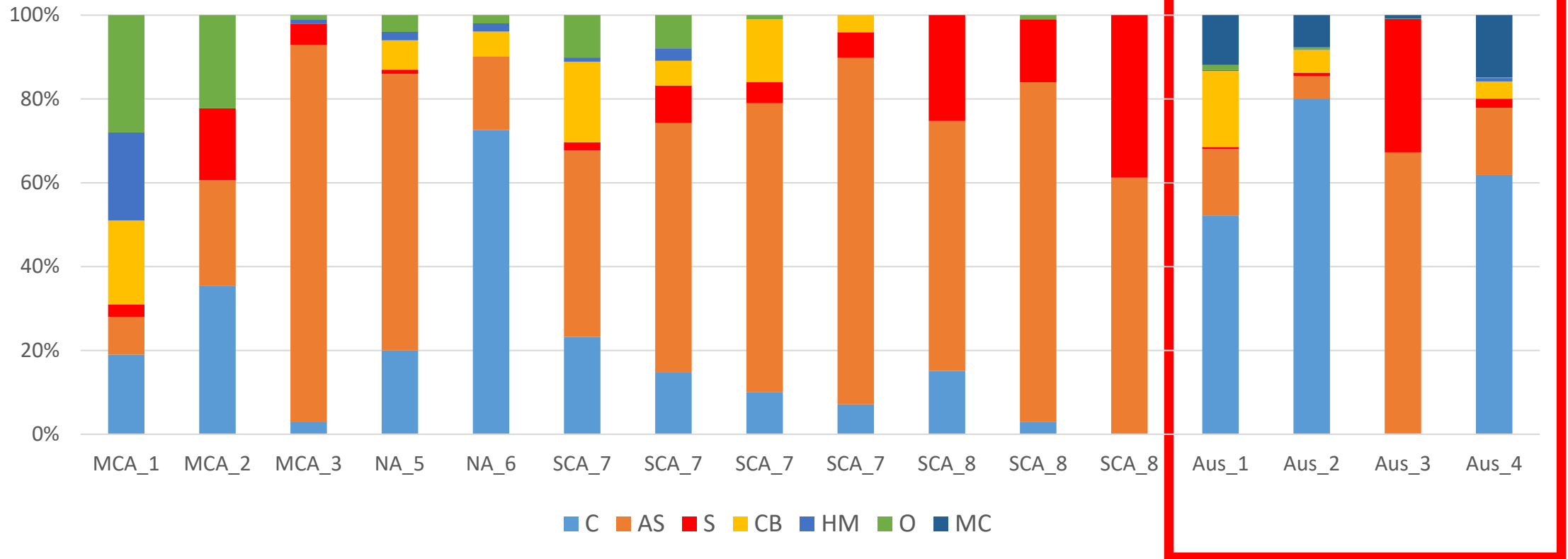
Queensland Mine Dust Lung Disease Cases

Figure 4 – Cases of MDLD reported to the department for all mining since 1984 by financial year (current as at 31 August 2020)



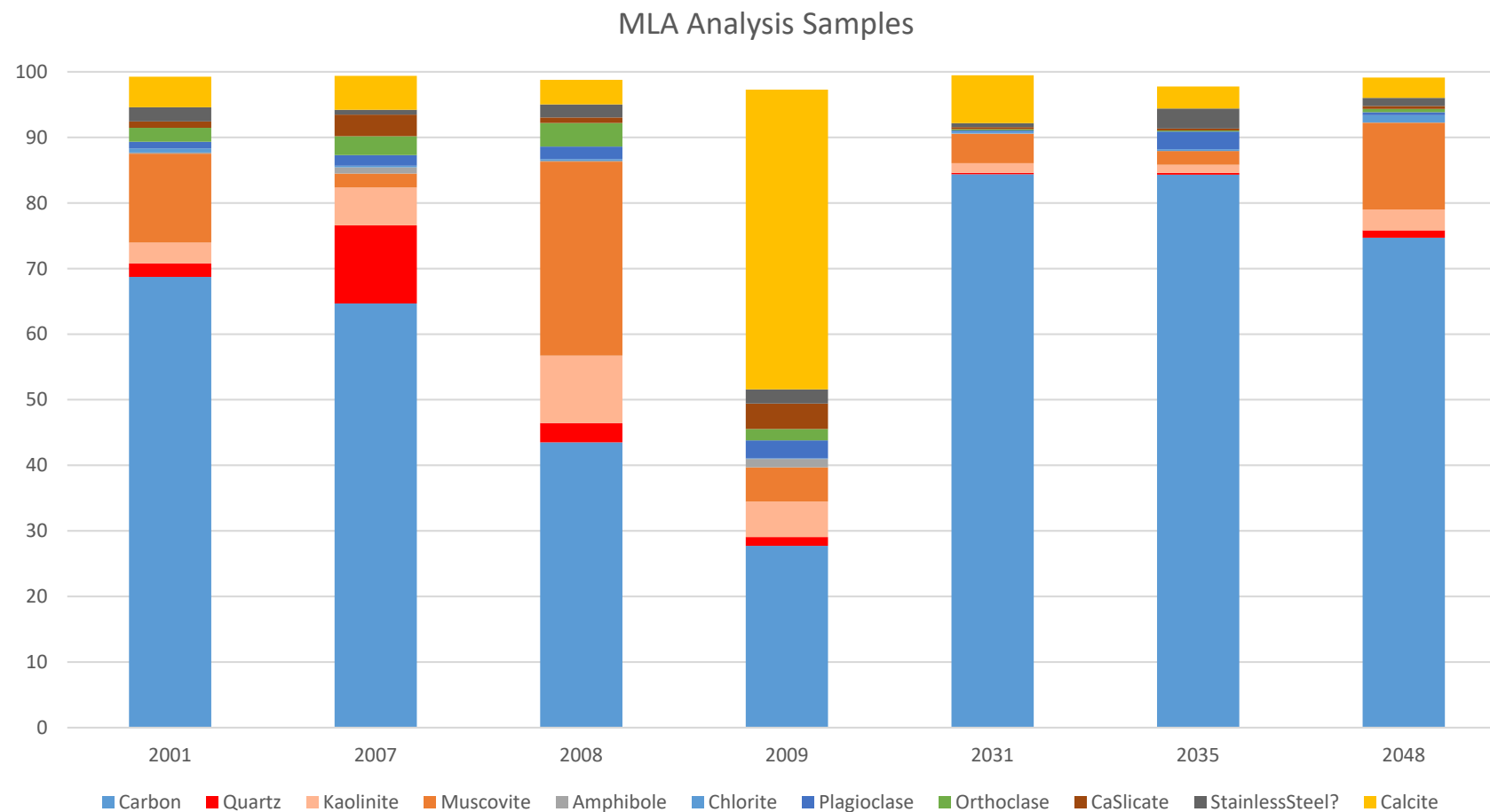
<https://www.business.qld.gov.au/industries/mining-energy-water/resources/safety-health/mining/accidents-incidents/mine-dust-lung-diseases>

US production samples compared to Australian CM samples

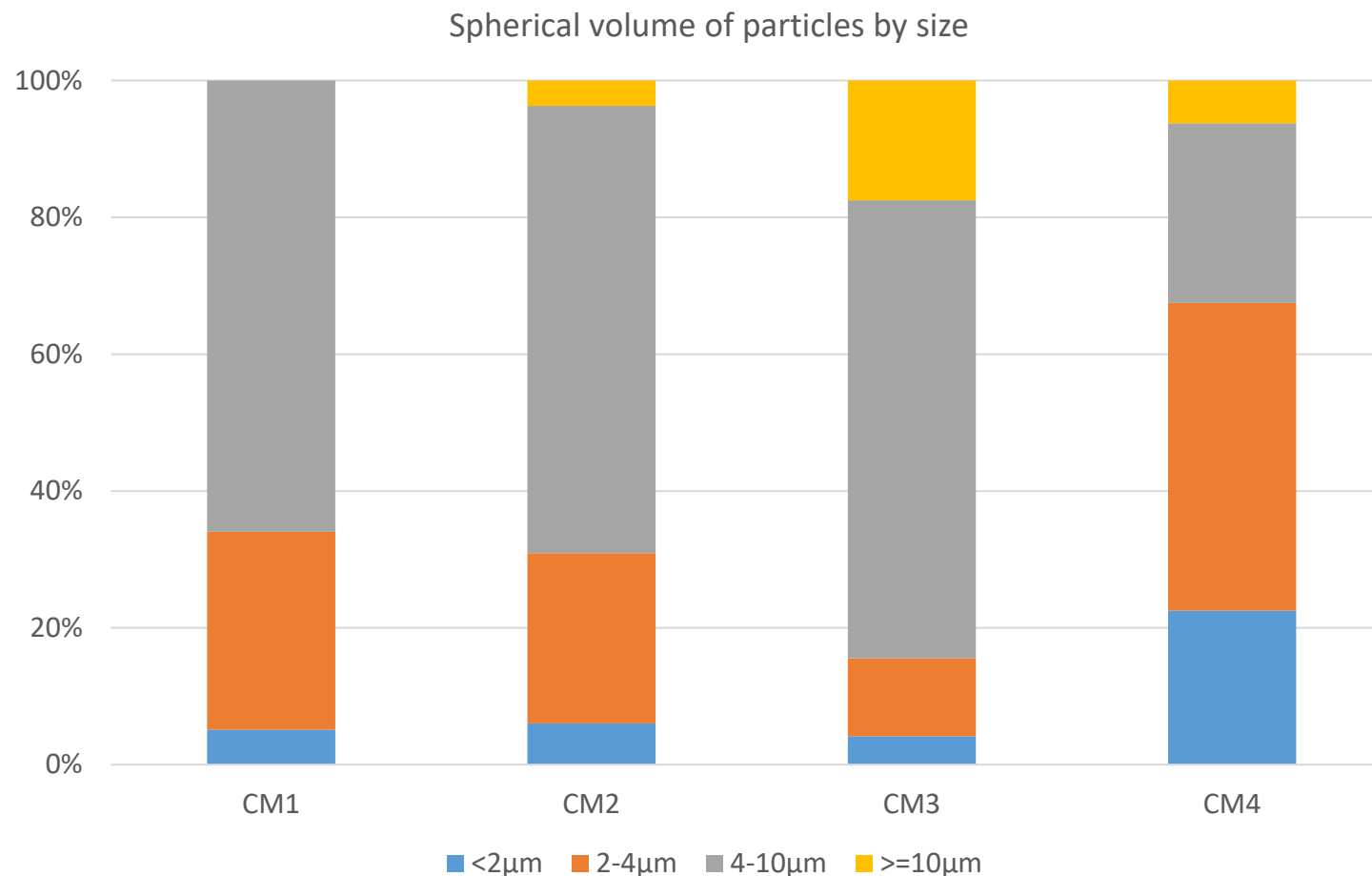
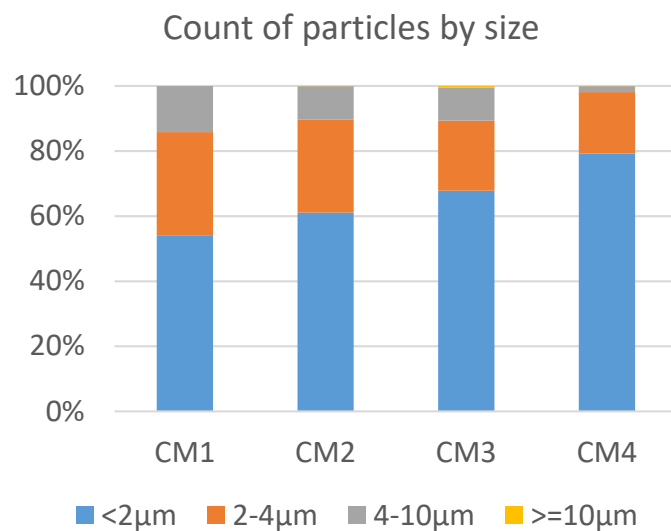


US data From Saver et al 2019 Data in Brief 25-
Sample analysis performed at Virginia Tech

Further Sampling of Australian Mines

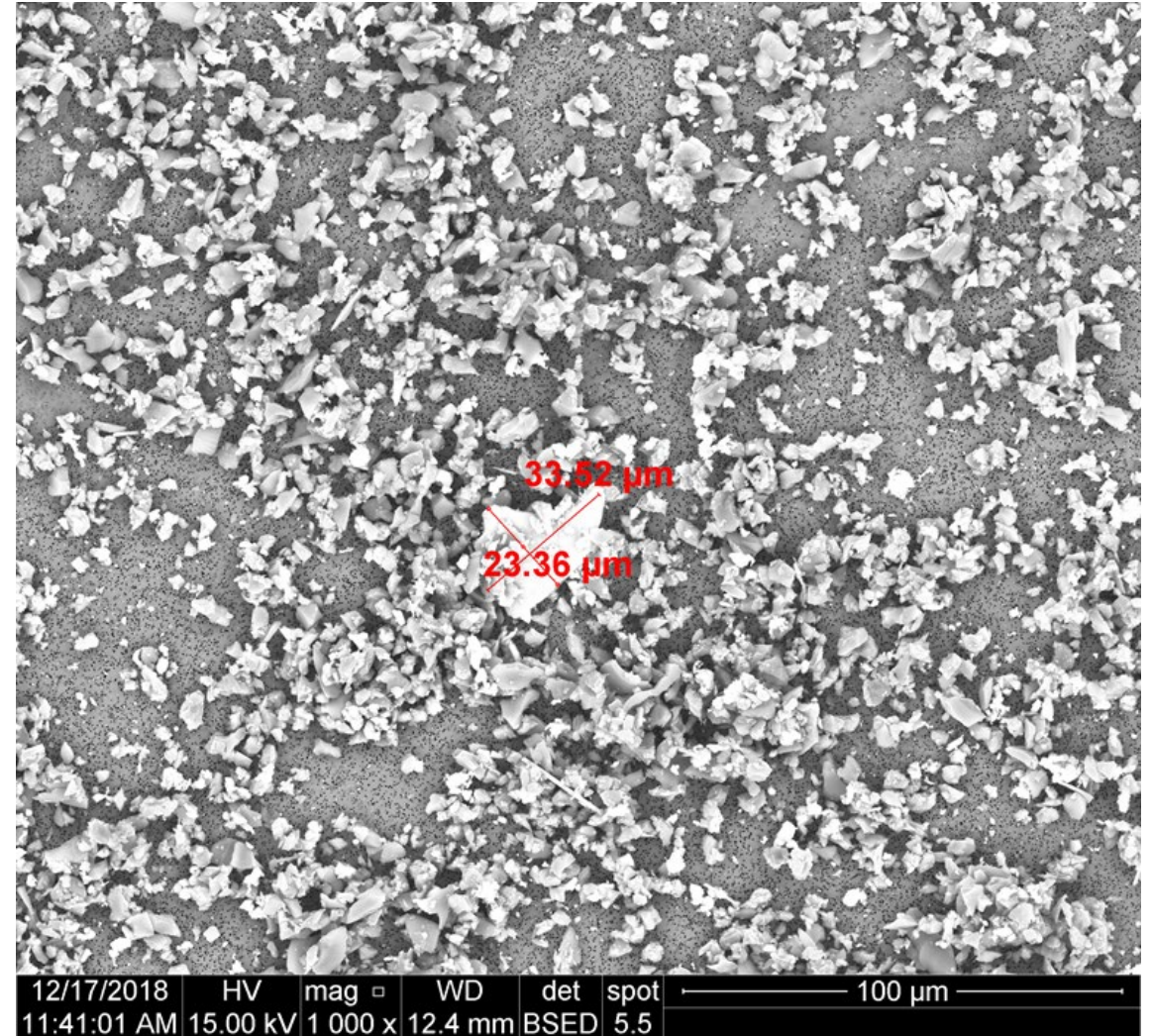


Particle Size and Volume

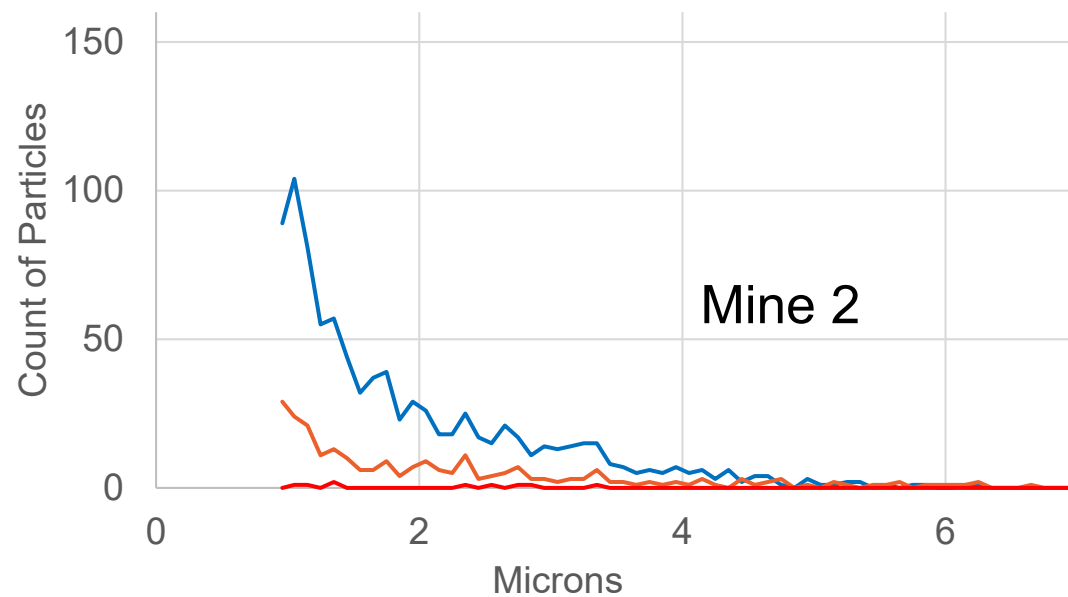
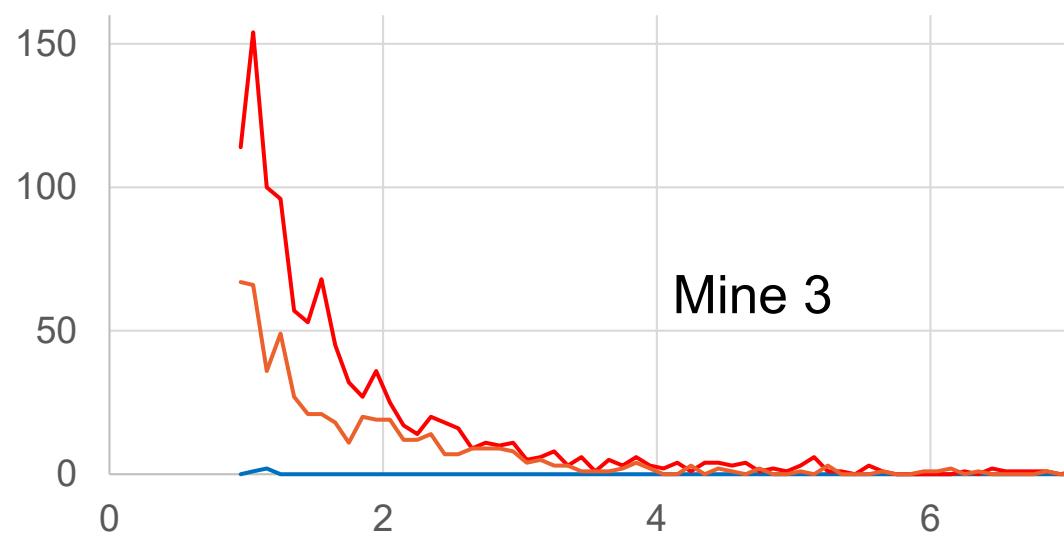


Large Particles

P-value	2001	2003	2004	2006	2007	2008	2009
P10	1.3	1.9	0.9	1.3	2.5	1.9	2.8
P20	1.7	2.4	1.1	1.7	3.5	2.5	3.9
P50	2.7	3.7	1.9	2.6	6.4	4.1	7.3
P80	4.0	5.3	2.8	3.7	10.9	6.5	11.1
P90	4.7	6.3	3.4	4.4	13.5	8.8	13.5

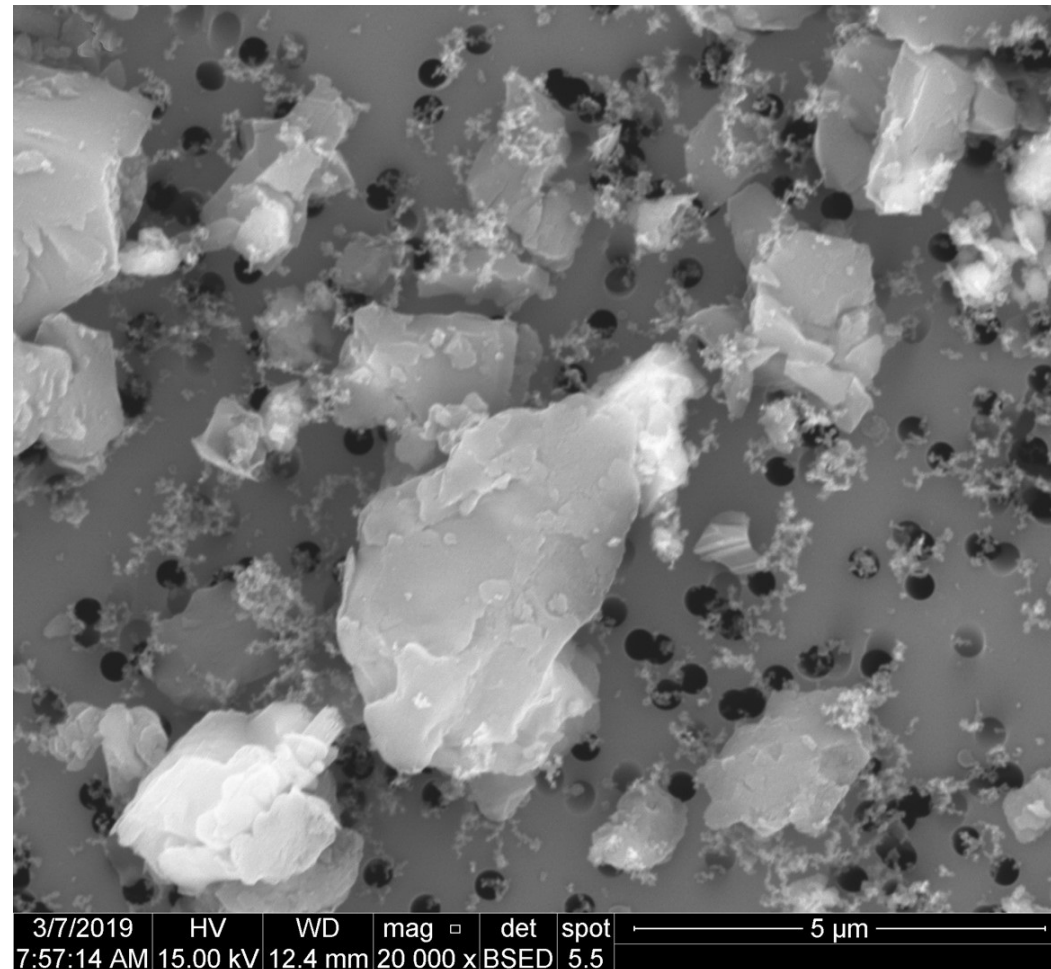


Particle size distribution by chemical composition



— Carbon — Aluminosilicate — Silica

DPM on filter





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Thank you!

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