

M501: MEASUREMENT OF HAZARDOUS SUBSTANCES INCLUDING RISK ASSESSMENT

ANSWERS TO CASE STUDY 4 QUESTIONS

1. Very unlikely as not all personnel have been monitored for all contaminants under all operational conditions. Given the small workforce and the limited number of minerals involved, a monitoring programme could be designed to assess any health risk.
2. Respirable Silica – Sampling using miniature cyclone and subsequent analysis by infra red or XRD.

Inhalable Dust – Sampling with IOM head (or equivalent) with subsequent analysis for manganese by AAS or ICP.

3.

Location	Respirable Dust (mg/m ³)	Inhalable Dust (mg/m ³)	Mn (mg/m ³)	SiO ₂ (mg/m ³)
Mr D Jones	2.7	-	-	0.13
Mr G Evan	-	14.6	7.4	-
Mr P Quinn	4.4	-	-	0.19
Mr J Crosi	-	23.9	11.9	-
Mr Z Witt	2.2	-	-	0.11
Mr A Smith	-	12.1	6.1	-
Adjacent to Hopper	0.8	-	-	0.05
Bagging Area	-	7.1	3.6	-

Comparison to the exposure standards of 0.1 mg/m³ for silica (SiO₂) and 1 mg/m³ for manganese (Mn), all persons sampled were over-exposed. The stationary samples cannot be compared to exposure standards (refer to Section 4 of the Student Manual).

4. All exposures need to be controlled. Several measures could be introduced to control employee exposure. Dry sweeping of floors should be discontinued and the mechanical sweeper repaired. The cleaning of filters with compressed air should be discontinued. Appropriate maintenance on extraction systems should be initiated, especially around the bagging machine. Similarly, all leaks should be repaired and any build-up of material within the building removed.