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GOVERNMENT OF WESTERN AUSTRALIA

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GOVERNMENT CHEMICAL LABORATORIES
TEL. No. 23 1927 ADELAIDE TERRACE
PERTH

OUR REF. 9/62
YOUR REF. DDL/PL.

19th September, 1962.

Commissioner of Public Health,
Public Health Department,
PERTH.

Attention: Dr. D. Letham
Physician, Occupational Health

Correspondents will
greatly facilitate the
transmission of their
business by
confining each letter
to one subject.
Writing on one side
only of the paper.

Report on Samples from Wittenoom received 17th July 1962.

The samples received consisted of the following:-

Lab. No. 6242/62, marked "A.B.A. Dust Sample, No. 1"

Lab. No. 6243/62, marked "A.B.A. Dust Sample, No. 2"

Lab. No. 6244/62, a filter pad from a respirator.

As discussed with Dr. D. Letham, no work has been carried
out on Lab. No. 6244/62.

Microscopic examination

Lab. No. 6242/62 "A.B.A. Dust Sample No. 1"

Sample consists of quartz, hematite (iron oxide), chalybite
(iron carbonate), dolomite (calcium magnesium carbonate) and magnetite
(magnetic iron oxide) with a little blue asbestos and organic matter.

The particles range in size up to 12μ in diameter.

The average particle size is of the order of 1μ .

The asbestos fibres range up to 10μ in length..

Lab. No. 6243/62 "A.B.A. Dust Sample No. 2"

Sample consists of magnetite, quartz, blue asbestos,
chalybite, dolomite and hematite.

The particles range in size up to 600μ in diameter.

The average particle size is of the order of $2-3\mu$.

The asbestos fibres are up to 600μ in length but would
average about 10μ .

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Sizing

The dusts were sized by air elutriation in a Roller Particle Size Analyzer with the following results:-

Fraction	Lab. No.	Lab. No.
	6242/62	6243/62
	<u>per cent</u>	
microns		
+50	-	16.2
-50 + 30	-	17.3
-30 +10	-	7.0
-10 +4	11.4	17.5
-4	88.6	42.0

Remarks

Lab. No. 6242/62 The +4 fraction was obtained by direct weighing and the -4 fraction by difference. Sample required washing with petroleum ether to remove a contaminating oil which prevented sizing by Roller machine due to formation of agglomerates. Microscopic examination of final products showed good separation into the two fractions.

Lab. No. 6243/62 Microscopic examination showed reasonable separation within the normal size ranges, except for a small amount of asbestos fibres with lengths 7 to 10 times the nominal particle diameters. Asbestos fibres were more evident in the coarser sizes with carbonates, quartz and magnetite being identified in each range.

Composition

The percentages of acid-soluble iron, carbon dioxide and acid-insoluble material have been determined chemically in these samples.

The percentage of magnetite has been estimated by magnetic separation, and by microscopic examination. The acid-insoluble material, which is essentially asbestos and quartz, has been divided semiquantitatively into its components.

By combining these techniques, a very approximate composition of the dusts is obtained as follows:-

	Lab. No.	Lab. No.
	6242/62	6243/62
	<u>per cent by weight</u>	
Magnetite	7	53
hematite	13	4
Chalcopyrite-Pyrolusite	14	12
quartz	41	22
asbestos	-	22