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Requestor J. Lamb / 1034A Document Center (is requested to provide the following document)

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Document number KLI-15% Date of document 8/18/52

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Date submitted to ChemRisk/Shonka and DOE 4/23/96

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INTER-COMPANY CORRESPONDENCE

(INSERT NAME) COMPANY CARBIDE AND CARBON CHEMICALS COMPANY LOCATION Post Office Box P
OAK RIDGE, TENN.

D 36655

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TO Dr. Frank W. Hurd
LOCATION Building K-1004-A

DATE August 18, 1952

ANSWERING LETTER DATE

ATTENTION

COPY TO	Mr. J. C. Barton	Mr. D. M. Lang	SUBJECT Particle Size - Dust
	Mr. S. Cromer	Mr. J. A. Marshall	From Feed Plant.
	Mr. A. P. Huber	Mr. S. H. Smiley	D-55731
	Mr. W. B. Humes	Mr. B. H. Thompson	KLI-1598
	Dr. S. Katz	Mr. A. Varian	
	Mr. R. B. Koranmeyer	Laboratory Central Files (K-25RC)	



K11 1598 2 A*

Three samples of dust taken from the feed plant were submitted for particle size determinations. These samples were identified as follows:

Plant Sample Number	Laboratory Sample Number	Sample Description
556918 (1)	K1971	Dust from the main header.
556901 (2)	K1522	Dust from outlet gas stream after C tower.
556899 (3)	K2029	Dust from primary cooler.

Electron micrographs of a representative field of each of these samples are included along with the particle size data in table I. As shown in the table, 85-90% of the particles in each of these samples are 0.25 microns in diameter or less. Sample K2029 contains a high percentage of particles 0.01 to 0.02 microns in diameter, although most of the mass is in the particles in the 0.1 to 0.2 micron range since the mass $M = 4.2 r^3$ for a sphere.

With respect to standard screens, a 325 mesh US screen has a mesh diameter of 44 microns which is at least 200 times larger than the particles in these dusts. The particle size of many smokes is around 1 micron, for example. Another illustration is that over 50% of the particles in these samples are too small to be seen with an ordinary light microscope.

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[Signature]
Technical Information Office
Oak Ridge K-25 Site
Date 11/29/95

W. W. Harris
W. W. Harris
Date 1/9/95

Carbide and Carbon Chemicals
Company, Operating Contractor for
the U.S. Atomic Energy Commission.

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K25RC

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PLANT RECORDS K-1034

SECURITY INFORMATION

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TABLE I

Size Range (Microns)	Plant No. 556901		Plant No. 556916		Plant No. 556899	
	Laboratory No. A1522 Number of Particles	Percent of Total	Laboratory No. K1971 Number of Particles	Percent of Total	Laboratory No. K2029 Number of Particles	Percent of Total
0.0 - 0.125	62	24.03	53	17.57	71	11
0.125 - 0.250	160	62.02	222	75.25	14	3.73
0.250 - 0.375	16	6.20	11	3.73	18	2.37
0.375 - 0.500	17	6.58	7	2.57	1	—
0.500 - 0.625	2	0.78	—	—	5	—
0.625 - 0.750	—	—	—	—	2	—
0.750 - 0.875	—	—	—	—	5	—
0.875 - 1.000	—	—	—	—	0	—
1.000 - 1.125	1	0.39	1	0.34	2	0
1.125 - 1.250	—	—	1	0.34	0	—
1.250 - 1.375	—	—	—	—	2	2
1.375 - 1.500	—	—	—	—	1	0
1.500 - 1.625	—	—	—	—	0	0
1.625 - 1.750	—	—	—	—	0	0
1.750 - 1.875	—	—	—	—	0	0
1.875 - 2.000	—	—	—	—	0	0
2.000 - 2.125	—	—	—	—	0	0
2.125 - 2.250	—	—	—	—	1	—
Total	258	100.00	295	100.00	148	148

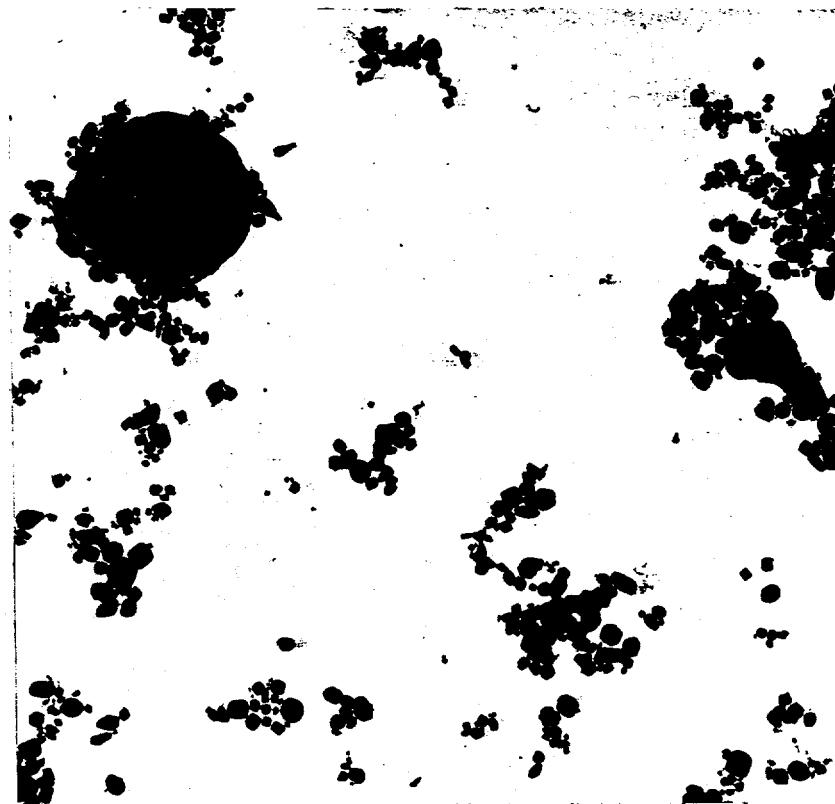
*A large percentage (75%) of the particles in this sample are 0.01 microns in size.

SECURITY INFORMATION

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EM 462-4

10,000 X

$\overline{1\mu}$

K-1971

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EM 463-2

28,000 X

1 μ

K-1971

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EM 460-4

10,000 X

1 μ

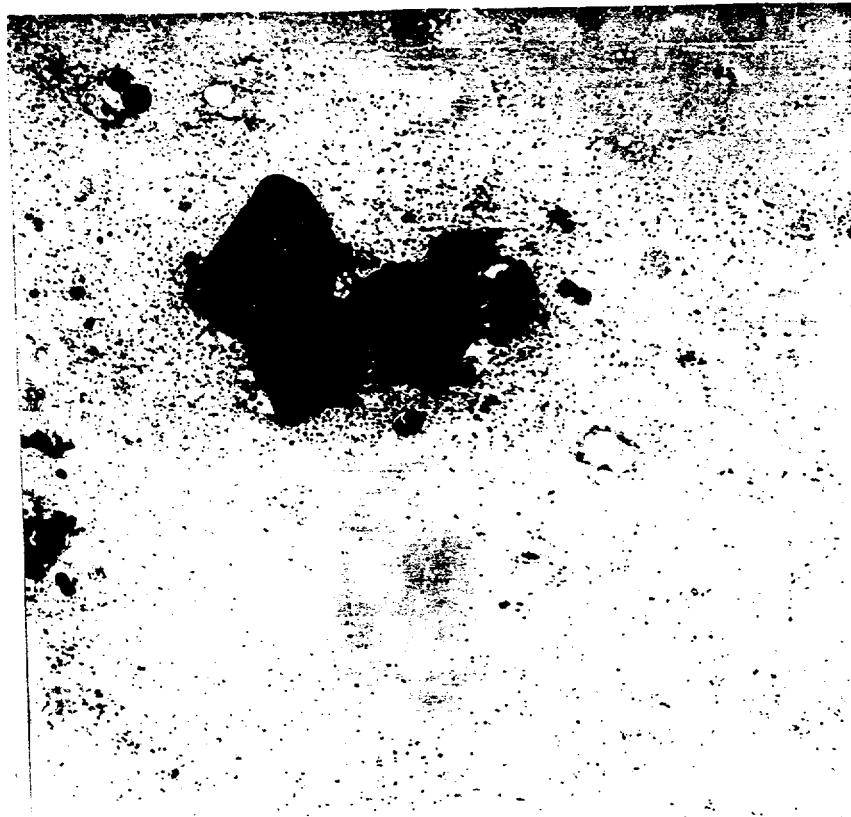
K-1522

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EM 457-2

10,000 X

1μ

K-2029

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