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000048207L

67-870004104
INSTITUTE OF INDUSTRIAL RESEARCH

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SPECIAL REPORT Number copies made 16 by NRC

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AUG 3 RECD

Acute Oral Toxicity, Dust Inhalation, and Irritation

Tests on Competitive Seed Disinfectants

Tables of Protocols Attached

Carbide and Carbon Chemicals Corporation Industrial Fellowship No. 274-11

Summary

These compounds are listed below in the order of their decreasing severity based upon the composite results of acute oral and inhalation toxicity for

CONTAINS NO CBI

"Arasan" 50% Tetramethyl thiuram disulfide - DuPont

Samples

J. B. Harry of Boyce-Thompson, furnished the following 4-ounce samples which were received 5-11-48:

"Arasan", 50% tetramethyl thiuram disulfide - DuPont

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o.

Single Oral Doses

Each of these dusts was fed to male albino rats, 90-120 grams in weight, by stomach tube as a suspension in 0.25% agar. Symptoms of note are indicated on the protocols appended to this report. The R.F. LD₅₀'s calculated by the method of Thompson are given as grams of sample, as received, per kilogram of body weight.

<u>Product</u>	<u>R.F. LD₅₀</u>	<u>Range (mg./kg.)</u>
"Arasan"	1.30	(0.80 to 2.10)

Dust Inhalation

A fritted glass disc was mounted in the base of a 1-inch glass tube about 12 inches long. The dry dust was added directly upon the frit to a depth of not less than 2 inches. Air at 6 liters/minute was forced through the frit to produce a dust cloud in an inverted 9-liter desiccator, containing 4 mature male albino rats. The outlet port was covered with filter paper to allow escape of air while the dust was retained. The inlet and outlet ports were cut in "Transite" which served as a base on which the inverted desiccator rested.

A 4-hour exposure was used as a means of comparing toxicity by inhalation. Absence of injury, as a result of this single exposure in no wise implies that the dust in question is not harmful by inhalation. A simple screening test such as described here merely points out the compounds which are highly toxic by inhalation in single exposure.

The apparatus, described above, was tested with a heavy dust namely, barium sulfate. A visible cloud was formed and it was therefore assumed that respectable amounts of the samples in question would likewise be lifted into the air. All of the samples were brushed through a standard 180 mesh laboratory screen to remove large particles before use.

The results of a 4-hour exposure to an indeterminate concentration of dust which produced a visible cloud are as follows:

"Arasan" did not cause any deaths. Marked weight losses (average 107 grams) occurred during the 14-day observation period after exposure to the , while in the same interval the "Arasan" exposed rats lost an average of 17 grams each.

Irritation

These compounds were applied as a 1 + 1 suspension in water to the clipped skin of the rabbit belly. Five rabbits were used for each material and the results read after 24 hours. The mean score for this test in which the maximum is 20 points is given below along with the grade for the 4-hour rabbit belly irritation test. In the latter test, a given spot on screened, react^{ed} 2, rabbits was treated with a 1 + 1 suspension in water, every half-hour for 4 hours. The area was then blotted, washed with 70% alcohol, and the reaction read 24 hours later.

<u>Compound</u>	<u>H₂O Suspension</u>	<u>Vesicant Test</u>	<u>4-Hour Irritation Grade</u>
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"Arasan"	1 + 1	0.6 (3-mild injection)	A (mild injection)
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The dust as sold and also a 1 + 1 suspension in water was applied in excess to the cornea of the rabbit eye. The numerical score represents the intensity of the reaction produced, 20 indicating maximum damage.

<u>Dry Dust</u>	<u>Score</u>	<u>1 + 1 H₂O Suspension</u>	<u>Score</u>
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"Arasan"	5.2	L-640	6.0
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The only compound which causes minor eye injury when applied as a dry powder is
All of the others produce considerable corneal necrosis as do the
1 + 1 suspensions.

Charles P. Carpenter

Charles P. Carpenter
SENIOR INDUSTRIAL FELLOW

Typed: October 13, 1948-mek

Table 11-260

Table 11-261

Table 11-263

Table 11-264

Table 11-265

Table 11-266

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