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Biochemical Research Laboratory

The Dow Chemical Company

RESULTS OF RANGE FINDING TOXICOLOGICAL TESTS
ON 1,2,3,4-TETRACHLOROBENZENE

File
K No.
Chg.
Rept. By K. J. Olson

Signed Ken Olson Checked Wm. C. Cellister
Date April 2, 1958 Date April 3, 1958

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PROBLEM

A sample of the subject material has been submitted for toxicological evaluation and definition of industrial handling hazards. It is also desired that this material be compared with 1,2,4,5-tetrachlorobenzene.

CONCLUSIONS

1,2,3,4-Tetrachlorobenzene has a low acute oral toxicity. However, it is suspected to have a high repeated oral toxicity and will require precautions to avoid swallowing even the small amounts which might be encountered repeatedly incidental to industrial use or general handling.

The undiluted material and the 10% suspension in propylene glycol are only slightly irritating to the eye. The slight conjunctivitis which might result from direct contact should last no longer than an hour or two. Minimal eye protection should be worn where the likelihood of gross contamination exists, simply to avoid any discomfort which might result.

The undiluted subject material is moderately irritating to intact and abraded skin. Contact with the skin for an hour or less would probably

(Continued)

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CONCLUSIONS (CONTINUED)

cause no serious skin irritation; however if confined to the skin for a working day, a moderate burn would most likely occur. Precaution should be taken to prevent prolonged skin contact with the subject material. The 10% solution in Dowanol 50B is only slightly irritating to the skin. Ordinary care and cleanliness should provide adequate safety measure for the routine handling of solutions (10% or less).

Results of range finding acute oral toxicity tests on 1,2,3,4-tetrachlorobenzene and 1,2,4,5,-tetrachlorobenzene indicated the material to be of the same order of magnitude. Skin irritation tests indicate that the undiluted 1,2,4,5-isomer and the solution in Dowanol 50B are essentially non-irritating to the skin. The same can be said for the 1,2,3,4,-tetrachlorobenzene (10%) in Dowanol 50B. Both materials are only slightly irritating to the conjunctiva of the eye. A short-term dietary feeding study is being completed which will provide basis for comparing the repeated oral toxicity of the two isomers of tetrachlorobenzene.

These conclusions are based upon range finding toxicological tests and are limited to precautions for industrial handling of the material. Development of specific uses will require consideration of the health problems presented and of the need for further toxicological studies.

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<p>EYE CONTACT</p>	<p><input checked="" type="checkbox"/> If the eyes are contaminated, they should be flushed immediately with copious amounts of flowing water for at least 15 minutes.</p> <p><input checked="" type="checkbox"/> Medical attention should be obtained if irritation persists or develops after washing of the eyes.</p> <p><input type="checkbox"/> Medical attention should be obtained.</p> <p><input type="checkbox"/> MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY.</p>
<p>SKIN CONTACT</p>	<p><input checked="" type="checkbox"/> Any injuries or irritations which may develop should receive medical attention.</p> <p><input type="checkbox"/> Contaminated clothing and shoes should be removed and not re-used until thoroughly cleaned.</p> <p><input type="checkbox"/> Wash contaminated skin with soap and plenty of water.</p> <p><input checked="" type="checkbox"/> Contaminated clothing, including shoes, should be removed and the affected skin area should be washed thoroughly with soap and plenty of water.</p> <p><input type="checkbox"/> Medical attention should then be obtained.</p> <p><input checked="" type="checkbox"/> Contaminated clothing and shoes should not be re-used until thoroughly cleaned.</p> <p><input type="checkbox"/> All contaminated clothing, including shoes, <u>must</u> be removed immediately and the affected skin area flushed thoroughly with water from a safety shower, or other suitable device and cleansed with soap and plenty of water.</p> <p><input type="checkbox"/> MEDICAL ATTENTION MUST THEN BE OBTAINED AS RAPIDLY AS POSSIBLE.</p> <p><input type="checkbox"/> Contaminated clothing including shoes, must not be re-used until thoroughly cleaned or must be discarded.</p>
<p>INHALATION</p>	<p><input checked="" type="checkbox"/> If a person should experience any noticeable ill effects from breathing the vapor or fumes of this material, medical attention should be obtained promptly.</p> <p><input type="checkbox"/> If a person should be overcome from breathing this material, he should be removed to fresh air at once, be made to rest, kept warm, and MEDICAL ATTENTION SHOULD BE OBTAINED IMMEDIATELY. If breathing stops, artificial respiration should be administered.</p>
<p>INGESTION</p>	<p><input type="checkbox"/> If appreciable amounts of material are swallowed, vomiting should be induced by tickling the back of the tongue with the finger or by giving an emetic such as 2 tablespoonfuls of table salt in a glass of warm water. Medical attention should then be obtained.</p> <p><input type="checkbox"/> If the material is swallowed, vomiting must be induced by tickling the back of the tongue with the finger or by giving an emetic such as 2 tablespoonfuls of table salt in a glass of warm water. MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY</p>

COMMENTS:

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SAMPLE INFORMATION

C. R. I. Name: 1,2,3,4-Tetrachlorobenzene

Source:

Melting Point: 46.5°C

K Number:

Date Request Received: 7-5-57

Date Sample Received: 7-5-57

Physical State: Solid

Molecular Formula: $C_6H_2Cl_4$

Structural Formula:



SUMMARY OF RANGE FINDING TOXICOLOGICAL DATA

Acute Oral Toxicity

<u>Animal</u>	<u>Preparation Fed</u>	<u>Dose (g./kg.)</u>	<u>No. Died No. Fed</u>	<u>Response-Remarks</u>
Rat	10% solution in corn oil	0.5	0/2	Liver and kidney damage observed at autopsy.
Rat	10% solution in corn oil	1.0	1/2	Extensive liver damage and moderate kidney damage observed at autopsy.
Rat	10% solution in corn oil	2.0	2/2	Animals died in three days.

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Eye Contact - Rabbit

<u>Material</u>	<u>Treatment</u>	<u>Response-Remarks</u>
Undiluted	Washed and unwashed	Slight pain, immediately followed contact, otherwise, essentially non-irritating.
10% suspension in propylene glycol	Washed and unwashed	Slight pain and conjunctivitis, subsided in 24 hours.

Skin Contact - Rabbit

<u>Material</u>	<u>Condition of Skin</u>	<u>No. of Appl.</u>	<u>Site</u>	<u>Response-Remarks</u>
Undiluted	Intact	1	Belly	Moderate hyperemia and necrosis with slight edema followed 1st application. Healing normal in 11 days.
Undiluted	Abraded	1	Belly	Essentially the same as above.
10% solution in Dowanol 50B	Intact	9	Ear	Slight exfoliation followed 6th application.
10% solution in Dowanol 50B	Intact	9	Belly	Slight exfoliation during all applications.
10% solution in Dowanol 50B	Abraded	2	Belly	Moderate hyperemia, necrosis and slight edema followed 2nd application. Healing normal in 5 days.
Undiluted	Intact-Patch	1 for 7 hrs.	Belly	Slight hyperemia, slight edema; healed with some scaliness in 4 days.

Skin Absorption

There is no indication, from the skin irritation tests conducted, that this material is absorbed through the skin in toxic amounts.