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Project Report 44-50
4 Pages
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BAKELITE Phenoxy Resin PKHH

Range Finding Toxicity Studies

Sponsor: Union Carbide Corporation

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Summary

Peroral Intubation, rat - LD50 > 2.0 g/kg; 1 ml = 0.025 g in 0.25% agar plus 0.10% Tween 80.

Percutaneous, rabbit - LD50 = 4.00 g/kg; 1 ml = 0.25 g in mineral oil.

Uncovered Skin Irritation, rabbit - None from 25% in mineral oil.

Eye Injury, rabbit - Trace from solid; none from 25% in mineral oil.

Interpretation

BAKELITE Phenoxy Resin PKHH was no more than moderately toxic following single peroral intubation and was moderately toxic following single percutaneous application. Administration of a 25% suspension (poor) in mineral il resulted in no irritation to rabbit skin or eyes. Instillation of 40 mg per eye of the solid particulates resulted in trace corneal injury in 2 of 5 eyes.

Sample

Quantity: 1 lb Date Received: December 3, 1980 BRRC Sample No.: 43-379

Submitted By: R. A. Gregory Division: Coatings Materials Bound Brook, NJ

Description: coarse, sand-like solid

Charge No.: 07233

Peroral, Single Dose to Rats

LD50 2.0 g/kg; 1 ml = 0.025 g suspension in 0.25% agar plus 0.10% Tween 80.

Conditions - Standard. See attached page of standard test procedures. The suspension in agar and Tween 80 was the most suitable form to complete the dosing and 2.0 g/kg was the highest attainable dosage.

Dosage; g/kg	Dead/ Dosed	Days to Death	Weight Change, g	Signs
2.0	0/6	-	83 to 125 (mean=103)	Yellow-brown discharge from genital area at 40 min.

Gross Pathology - Nothing remarkable.

Conclusions - No more than moderately toxic following acute peroral intubation.

Percutaneous, Single Dose to Rabbits

LD50 - 4.00 (1.12 to 14.3) g/kg; 1 ml = 0.25 g suspension (poor) in mineral oil.

Conditions - Standard. Dosed under polyethylene sheeting.

Dosage; g/kg	Dead/ Dosed	Days to Death	Weight Change, g	Skin Irritation	Signs
4.0	2/4	1,1	-14 and 318 (mean=152)	-	-
2.0	0/4	-	-106 to 212 (mean=64)	-	-

Gross Pathology - In victims, lungs red; livers mottled red and light red. In survivors, nothing remarkable.

Conclusions - Moderately toxic following acute covered percutaneous application.

Skin Irritation, Rabbit, Uncovered

Conditions - Standard. Applied in mineral oil.

Results - No irritation on 5 rabbits from a 25% suspension (poor) in mineral oil.

Eye Irritation, Rabbit

Conditions - Standard. Instilled as a solid or in mineral oil.

Results - Trace corneal fluorescein staining (indicating epithelial denudation) in 2 of 5 eyes from 40 mg per eye of the solid particulates; no injury in 5 eyes from 0.5 ml per eye of a 25% suspension (poor) in mineral oil.

Reviewed and Approved by:

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Single Peroral Tests	Linda R. Barnhart Master Technologist
Percutaneous, Skin and Eye Irritation Tests	Naomi I. Condra, B.S. Scientist

Typed: WPC/1143-2

In all tests, the nonfasted animals are maintained on appropriate diets and water ad lib except during periods of manipulation r confinement. Dosage levels differ by a factor of 2 in a geometric series. LD50s or LC50s, along with the 95% confidence limits, are calculated by the moving average method based on a 14-day observation period. Weight changes for survivors were determined at 14 days following dosing.

Toxicity Terminology for Peroral and 24-Hr Dermal LD50s (A); Inhalation 4-Hr LC50 (B)

	A, gm/kg	B, ppm		A, gm/kg	B, ppm
Extremely low order	> 15	> 100M	Highly	0.05-0.5	100-1M
Slightly	5-15	10M-100M	Seriously	0.001-0.05	10-100
Moderately	0.5-5	1M-10M	Dangerously	< 0.001	< 10

Peroral. Compounds administered by stomach intubation to Wistar-derived male rats, 90-120 grams in weight and 3 to 4 weeks of age.

Percutaneous. Male New Zealand White rabbits, 3 to 5 months of age, are immobilized during the 24-hour contact period with the compound retained under impervious sheeting on the clipped, intact skin of the trunk. Thereafter, excess fluid is removed to prevent ingestion. Maximum dosage that can be retained is 16 ml/kg.

Inhalation. Procedure A. Substantially saturated vapor is generated in a gas washing bottle by passing dried air at 2.5 liters/min through a fritted glass disc immersed to a depth of at least 1.5 inches in the chemical. This air is delivered to rats in a 9-liter glass exposure chamber. Mean vapor concentration is calculated from the loss in weight of the liquid or estimated from the vapor pressure at th actual temperature of the chemical during aeration.

Procedure B. Substantially saturated vapor is prepared by spreading 100 gm or more of chemical over 200 cm^2 area on shallow tray placed near the top of a 120-liter plexiglas chamber which is then sealed for at least 16 hours while an intermittently operated fan agitates the internal chamber atmosphere. Rats are then introduced in a gasketed drawer-type cage designed and operated to minimize vapor loss.

Procedure C. Mist, vapor and any oxidation or decomposition products of the chemical held at 170°C are generated and delivered as in A.

Procedure D. Vapor at metered concentration, not verified analytically, is generated by feeding the liquid at a constant rate down the inside of a spirally corrugated surface of a minimally heated one-inch Pyrex tube, through which metered air is passed. Resultant vapor is delivered as in A.

Procedure E. Aerosols are produced when solutions or suspensions are atomized in a glass VAPONEFRIN nebulizer using dried compressed air at 9 liters/min (corrected) and 22 psi. The resultant aerosol of droplets averaging 2 microns in diameter is conducted directly into a 60-liter cubic glass chamber containing rats. Mean aerosol concentration is calculated from the amount of material atomized.

Procedure F. Dust clouds are generated by a baffled Wright Dust Feed through which air is passed at 14 liters/min (uncorrected) at 5 psi. The dust is delivered directly to a 120-liter plexiglas chamber containing rats. Airborne dust concentrations are measured gravimetrically every half hour.

Skin Irritation. The chemical is applied in 0.01 ml amounts to clipped, uncovered intact skin of 5 rabbit bellies either undiluted or in progressive dilutions of 10, 1, 0.1, or 0.01% in solvent. One of 10 grades is assigned based on appearance of moderate or marked capillary injection, erythema, edema or necrosis within 24 hours. No injury from undiluted = Grade 1.

Eye Irritation. Eyes not staining with 5% fluorescein in 20 seconds contact are accepted. Single instillation of 0.005, 0.02, 0.10 or 0.5 ml undiluted or of 0.5 ml of 40, 15, 5 or 1% dilutions are made into the conjunctival sac of 5 rabbits. The eyes are read immediately unstained and after fluorescein at 24 hours, with one of ten grades assigned. Trace or no injury fr m 0.5 ml undiluted = Grade 1.