CASE 002641 PM

CHEM Chlorsulfuron

BRANCH TB DISC TOPIC Acute Inhalation LC_{50} - Rat

FORMULATION Technical

FICHE/MASTER ID CONTENT CAT

LC_{50} - Inhalation Test For Pesticide Registration - Albino Rats, Haskell Laboratory Report No. 129-80, Ferenz, R.

SUBST. CLASS =

OTHER SUBJECT DESCRIPTORS

DIRECT RVW TIME = 2 hours START-DATE END DATE

REVIEWED BY: J. C. Summers
TITLE: Research Associate
ORG: E. I. du Pont deNemours & Co., Inc., Biochemicals Departme
LOC/TEL: Wilmington, Delaware / (302) 772-2367

SIGNATURE: J. C Summers DATE: November 11, 1

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

002641

Conclusion:

A. Core Minimum (only one dose level tested)
B. Category III
C. The LC_{50} is>5.9 mg/l (analytical concentration) of technical chlorsulfuron for four hours exposure to rats.
D. This study generally conforms to EPA Proposed Guidelines in section 163.81-3 Acute Inhalation Toxicity Study (43 Federal Register 37357, 8/22/78).

Method:

Ten male and ten female young, adult ChR-CD® rats were exposed to a dust atmosphere of chlorsulfuron for four hours in a 30.1 battery jar. Males were exposed in head only apparatus, females nose only because their smaller size would allow them to squeeze through the head-only restraint. Rats were observed during exposure. They were housed in pairs, in suspended stainless steel, wire mesh cages; were given Purina® Certified Rodent Chow No. 5002 and water ad libitum; and were weighed and observed daily for a seven-day pretest period, and a fourteen-day post-exposure period. Dust atmospheres were created by a three-stage generator (dust reservoir, cyclone generator, agitator). Flowmeters and a regulator were used to control the air to the chamber. Samples of chamber atmosphere were collected approximately every half hour on a Gelman glass fiber filter (Type AE, 47 mm). Atmospheric concentration was calculated from weight gain of the filter; results are expressed as a Time-Weighted Average (TWA) concentration (mg/l). Samples of chamber atmosphere were collected twice during the exposure (at one-hour and three-hours) on a Brink Cascade impactor. Particle size distribution was determined by weight gain of the impactor stages expressed as mass median diameter (μ) of particles. Chamber temperature and oxygen content were monitored. Upon completion of the exposure, rats were removed from the restraints, wiped free of excess dust, examined for clinical signs and returned to cages for a fourteen-day observation period. At fourteen days all rats were sacrificed; three per sex were subjected to complete gross necropsy. Nasal turbinates (four cross sections), trachea, lungs, liver, kidneys, testes, epididymides, ovaries, and uterine horns were examined mircroscopically. Lungs, liver, kidneys, and testes were weighed.

Results:

A group of ten male and ten female rats was exposed to an analytical concentration of 5.9 mg/l of chlorsulfuron dust for four hours. This concentration did not cause mortality, unusual clinical signs, or compound-induced pathological findings. Chambers concentrations ranged from 2.9 mg/l, to 12.0 mg/l with a Time Weighted Average of 5.9 mg/l. Mass median particle diameter was 6.0u (range 5.8 - 6.1μ). Pathological findings considered to be non-compound related included a mild focal squamous metaplasia of nasal turbinate mucosa and a unilateral focal atrophy of nasal gland acini with cystic dilation of ducts in the middle cross section of the nasal passage in one rat and a similar metaplastic change in a second rat. Other changes noted were believed to be spontaneous or the result of intercurrent disease.

Discussion:

The methods and materials, scientific principles, validity of conclusions, and adequacy of data for conclusions were adequate for the study. Some deviations from Proposed Guideline 163.81-3 such as incomplete disclosure of particle size distribution and only partial pathology were made, but they did not affect the overall validity of the study. For instance, details of particle size distribution were not given, but the mass median particle diameter of 6μ still indicated that material was respirable. Also no mortality resulted at a concentration above 5 mg/L, the highest test level necessary. Pathology was done on only three rats per sex rather than on all rats, but this sampling was still sufficient to indicate no major compound-induced pathological findings.