11-1-85

125401
SHAUGHNESSEY NUMBER

COMPLETED: ~~November, 1984~~
Allen W. Vaughan
REVISED: November, 1985

EEB CHEMICAL PROFILE

Pesticide Name: Command (FMC 57020)

100 Fish and Wildlife Toxicology

100.1 Minimum Requirements

100.1.1 Avian Acute Oral LD_{50}

Species	Test Material	Results	Category	Reference
Bobwhite quail	Technical	LD_{50}>2510 mg/kg	Core	Beavers 1982
Mallard duck	Technical	LD_{50}>2510 mg/kg	Core	Beavers 1982

100.1.2 Avian 8-day Dietary LC_{50}

Species	Test Material	Results	Category	Reference
Bobwhite quail	Technical	LC_{50}>5620 ppm	Core	Beavers 1982
Mallard duck	Technical	LC_{50}>5620 ppm	Core	Beavers 1982

100.1.3 Fish Acute LC_{50}

Species	Test Material	Results	Category	Reference
Bluegill sunfish	Technical	LC_{50} = 34 mg/l	Core	Rhoderick 1982
Rainbow trout	Technical	LC_{50} = 19 mg/l	Core	Rhoderick 1982

100.1.4 Aquatic Invertebrate LC_{50}

Species	Test Material	Results	Category	Reference
Daphnia magna	Technical	LC_{50} = 5.2 mg/l	Core	Graney 1982

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100.2 Additional Terrestrial Laboratory Tests

None

100.3 Additional Aquatic Laboratory Tests

Species	Test Material	Results	Category	Reference
Rainbow trout	Technical	2.29 mg/l MATC 4.35 mg/l	Supp.	Springborn Bionomics, 1985

100.4 Field Tests

None

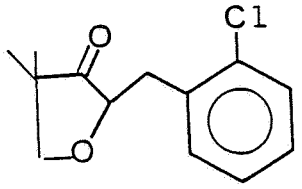
101 General Toxicology
(Extracted from Introduction to registrant's package)
Rat acute oral LD_{50} = 2077 mg/kg (males)
1369 mg/kg (females)
Dermal LD_{50} (rabbits) > 2000 mg/kg
Dermal irritation (rabbits) - minimally irritating
Eye irritation (rabbits) - practically non-irritating
Dermal sensitization (guinea pigs) - not a sensitizer
Acute inhalation (rats) - 4.8 mg/l.

102 Physical and Chemical Properties

102.1 Chemical Name

2-(2-chlorophenyl) methyl-4,4-dimethyl-3-isoxazolidinone

102.2 Structural Formula



102.3 Common name

FMC 57020; dimethazone (proposed)

102.4 Trade Name

Command

102.5 Molecular Weight

239.7

102.6 Physical State

Clear, colorless to pale yellow, viscous liquid above room temperature; white, crystalline solid when cooled.

102.7 Properties

102.7.1 Solubility

Water solubility - 1100 mg/l (ppm)
Solvent solubilities:

Solvent	Grams technical/100 ml solvent
[redacted]	
Isopar M	4.5-5.0
Refined soybean oil	equal to or greater than 90
Dimethyl formamide	infinite
Cyclohexanone	infinite

Completely soluble in: Chloroform, heptane, acetone, methanol, acetonitrile, dioxane, methylene chloride, xylene, hexane, toluene.

102.7.2 Octanol/Water Partition Coefficient

27.5 (or 350 ??) (Two different values given by registrant.)

102.7.3 Soil Adsorption Coefficient K_d

Relative soil binding potential (K_d) = 1.5-6.9

102.7.4 Vapor Pressure

1.92×10^{-2} Pa (1.44×10^{-4} mmHg) at 25°C.

103 Behavior in the Environment

103.1 Soil

FMC 57020 degrades in soils maintained under aerobic conditions in the laboratory. The half-life in sandy loam soil was less than 28 days. Degradation to CO_2 and soil binding appear to be the primary mechanisms for dissipation in the soil. Formation of CO_2 and binding to soil increased with time during the study.

The half-life in silt loam or clay loam soils is greater than 56 days. While the study was not conducted long enough to determine half-life, the pattern of degradation can be seen. CO_2 formation and soil binding increased with time during the study.

Soil TLC indicated that FMC 57020 has a low potential to leach in Cosad sandy loam, Dunkirk silty loam or Hagerstown clay loam soils and has moderate potential to leach in Leon fine sand soil. In Leon fine sand soil column leaching study with 20 inches water applied, 34.9% of the applied ^{14}C-methylene FMC 57020 was found in the leachate. The remaining ^{14}C (62.3%) had diffused through the 30 cm column.

FMC 57020 has a low potential for soil binding (conversely, has high potential for leaching). The average adsorption coefficient in four soils was K = 3.4 after 24 hour equilibration period and K = 3.6 after 48 hour equilibration period (From EFB Review December 3, 1982).

103.2 Water

FMC 57020 in stable to hydrolysis in acidic, neutral and basic solutions maintained at temperature of 25°C $\pm$ 0.5°C (From EFB Review December 3, 1982).

103.3 Plant

No data available as of November 8, 1984.

103.4 Animal

No data available as of November 8, 1984.

103.5 Estimated Environmental Concentrations

The registrant (FMC Corp.) developed a model for predicting residues of FMC 57020 in the aquatic environment following use of the herbicide on soybeans. However, the study was not submitted. EEB will request that the study be submitted for EAB review.

104 Uses and Special Concerns

No registered uses at this time; only proposed use is soybeans.