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RD Risk Assessment - Spider Guard (SG)
EPA File Symbol 73745-R

Background Information

1) This assessment addresses worker exposure since the Agency has identified workers handling the SG tube as the primary risk concern.

2) The product is for use with the Onboard Refueling Vapor Recovery System used by Nissan motor vehicles.

3) Worker handling Activities involve:

   a) Removing SG tube from packing

   b) Inserting it into mist separator

   c) Packing and shipping SG tube/Mist separator to Nissan

4) The exposure assessment addressed both dermal and inhalation exposure from assembly of the SG Tube -Mist separator.

5) There are no Agency guidance documents or SOP's for estimating exposure to this type of article. Screening-level assessment using conservative assumptions were used.

6) The root of this assessment is the amount of permethrin available for worker exposure. The release study submitted provides this information. It evaluated loss of permethrin under ambient and accelerated conditions.

7) The release rate study showed that at 37° C (ambient) the initial permethrin loss is 10%/yr. Extrapolated to a daily amount the permethrin loss is 0.027%.

8) Refer to company's occupational exposure and risk assessment document MRID 452842-04 for dermal/inhalation exposure assumptions and calculations (pages 6 though 10) RD accepts the applicants estimates from worker exposure activities.

9) The risk assessment MOE values are for acute, intermediate and chronic exposure. The exposure value aggregates both dermal and inhalation exposure.

10) RD used relevant toxicology endpoints as of 4/24/94, i.e.

Short Term NOEL - 25 mg/kg/day - acute neurotoxicity study in the rat/rabbit

Intermediate Term NOEL - 15.45 mg/kg/day - subchronic neurotoxicity study in the rat.

Chronic NOEL - 5 mg/kg/day - chronic rat and mouse feeding studies

MOE = NOEL / Exposure

The MOE for short term exposure is:

$$\frac{25 \text{ mg/kg/day}}{2.06 \times 10^{-3} \text{ mg/kg/day}} = 12{,}135$$

The MOE for intermediate exposure is

$$\frac{15.45 \text{ mg/kg/day}}{2.06 \times 10^{-3} \text{ mg/kg/day}} = 7{,}500$$

The MOE for chronic exposure is

$$\frac{5.0 \text{ mg/kg/day}}{2.06 \times 10^{-3} \text{ mg/kg/day}} = 2{,}427$$

Cancer Risk

Risk = Q* x estimated Lifetime Average Daily Exposure

$1.84 \times 10^{-2} \times 2.06 \times 10^{-3} = 3.7 \times 10^{-5}$

The MOEs are orders of magnitude above the Agency's level of concern (100). Although the estimate of cancer risk is above the traditional 10-6, it is within the acceptable range 10^{-6} - 10^{-4} for non dietary occupational exposure. Other considerations include the conservative assumptions used:

A) Release Rate is based on study conducted at 37°C or 98.6° F. The temperature in factories is expected to be significantly lower than 98°F

B) The risk assessment assumed 100% absorption of permethrin. Traditionally we have used 50%.