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HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Section 18: ID# 93AK0001. Public Health Exemption for the use of Capsaicin (Oleoresin of Capsicum) to Repel Bears and Moose in Alaska.

Tox. Chem. No.: 158
PC No.: 070701
Barcode No.: D191967
Submission No.: S442101

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I. CONCLUSIONS

Toxicology Branch I (TB-1) has no objection to the issuance of a Section 18 Public Health Exemption by the State of Alaska for the temporary use of capsaicin (oleoresin of capsicum) as a bear and moose repellent. Capsaicin is on the FDA Generally Recognized As Safe (GRAS) for food use list, and is listed under "spices and other natural seasonings and flavorings" and "essential oils,



flavorings" (21 CFR 182.10), and under "essential oils, oleoresins...and natural extractives..." (21 CFR 182.20). The available toxicity data indicates that it has low toxicity. Since capsaicin has been used on a variety of food products for many years, without any serious health effects, TB-1 believes that the use of capsaicin as a bear and moose repellent will not endanger public health

II. ACTION REQUESTED

In a letter dated May 28, 1993, the Alaska Department of Environmental Conservation requested a Public Health exemption under Section 18 for the use of capsaicin to repel bears and moose. The product(s) to be used contains 10% a.i. in a pressurized spray. If the entire contents of one canister are used in a given attack, this would represent a release of 1.5 oz. of a.i. over an approximate area of 30 square feet (2 ft. x 15 ft.). The product should be used only when personal safety is threatened.

Alaska has 500 or greater bear attacks on humans per year, and with a population of approximately 500,000, this represents a risk factor to the population of 1:1000. While bear attacks occur primarily in non-winter months, moose are active all year, and can become especially aggressive during the winter months when food sources are scarce. There has been an increase in bear and moose attacks on tourists who camp and backpack in the wilderness areas in Alaska, and the only defense besides pepper repellents are firearms.

III. TOXICOLOGY BRANCH I COMMENTS

The only toxicity studies available on capsaicin are the acute studies on an animal repellent that contains 0.6767% a.i. (see the toxicity profile for that repellent, below). All other studies have been waived on that repellent. The TB-1 has previously verified (HED Doc. # 007627) that capsaicin is on the FDA Generally Recognized As Safe (GRAS) for food use list, and that the acute toxicity tests indicates low toxicity (generally toxicity category IV). Since capsaicin has been used on food products for many years, without any serious health effects, TB-1 believes that the use of capsaicin as a bear and moose repellent will not endanger public health. The most serious problem would be contact with the eyes or mucous membranes (nose, mouth), which would be expected to be irritating. This can be remedied by washing the hands or flushing the eyes with water, and the effects are not long lasting. The use of protective eyewear or gloves by the applicator would be desirable, but the unpredictable use of this product makes taking these precautions unlikely.

IV. TOXICITY DATA BASE

Series, Study Type	Status	Significant Findings	Doc. #
81-1. Acute Oral, rat	M	LD50 > 5 g/kg. Tox. Category IV	007627
81-2. Acute Dermal, rabbit	S	LD 50 > 2 g/kg. Tox. Category III	007627
81-3. Acute inhalation, rat	S	LC50 > 4.21 mg/L. Tox. Category III	007627
81-4. Primary eye irritation, rabbit	G	Tox. Category IV	007627
81-5. Primary dermal, rabbit	A	Tox. Category IV	3967

M Minimum
 G Guideline
 A Acceptable
 S Study classified as "Core-supplementary"