

TSCA NON-CONFIDENTIAL BUSINESS INFORMATION

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DuPont Haskell Global Centers
for Health and Environmental Sciences
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October 28, 2009

Via Federal Express

Document Processing Center (Mail Code 7407M)
Room 6428
Attention: 8(e) Coordinator
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency, ICC Building
1201 Constitution Ave., NW
Washington, DC 20004



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Dear 8(e) Coordinator:

Acrylic Acid
79-10-7

This letter is to inform you of the results of several pre-1977 (1958) toxicity studies which we recently became aware of with the test substance referenced above.

Acute Oral Approximate Lethal Dose (ALD):

The test substance, glacial acrylic acid was administered by gavage in single graded doses ranging from 1500 to 5000 mg/kg of body weight to adult male albino rats. Survival time varied from 12 minutes at the highest dose (5000 mg/kg) to 8 days at 1500 mg/kg. Clinical signs observed were pallor, discomfort, labored breathing, salivation, hematuria, weight loss and prostration. The dose of 5000 mg/kg produced convulsions and death due to shock. Pathology changes included gastritis with some nephrosis and visceral congestion, apparently from seepage of the acid to the viscera adjacent to the digestive tract. The ALD was less than 1500 mg/kg.

The ALD of a 50% aqueous solution of acrylic acid was found to be 1500 mg/kg when administered in single graded doses ranging from 670 to 5000 mg/kg. At 2250 mg/kg and above, produced pallor, discomfort, labored breathing, hematuria, prostration and death in 19 hours. At 1500 mg/kg observed pallor, discomfort, salivation and hematuria with continued weight loss and death 23 days after dosing. Autopsy revealed perforated gastric ulcer. At 1000 mg/kg observed pallor, discomfort, hematuria, weight loss until 14 days after dosing. Rat was sacrificed on day 15 and the autopsy showed evidence of gastritis but healed. A dose of 670 mg/kg caused pallor, discomfort and temporary weight loss but no stomach injury.

The ALD of a 10% aqueous solution of acrylic acid was found to be 3400 mg/kg when administered in single graded doses ranging from 200 to 3400 mg/kg. The dose of 3400 mg/kg produced pallor, labored breathing, hematuria, prostration and death within 4 hours of dosing. Pathology revealed gastritis, tracheitis and necrosis of the liver. Doses of 2250 and 1500 mg/kg showed discomfort pallor and temporary weight loss. Pathology indicated gastritis at 2250 mg/kg but not at lower doses.

Eye Irritation Test:

The test was carried out with 1, 5, or 10% aqueous solutions of the test substance. One tenth ml was instilled into each eye of a rabbit, and one eye was washed with water 20 seconds after instillation. The test results indicated that 1) a 10% or 5% solution produced severe long lasting corneal damage whether or not the test solution is washed from the eye; 2) a 1% solution of the test substance can cause temporary corneal damage.

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Skin Irritation and Sensitization Study:

Acrylic acid undiluted and in various aqueous solutions (50%, 25%, 10%, 5%, or 1%) was applied to the intact skin of male albino guinea pigs. The skin reactions when unwashed were as follows: undiluted test substance produced severe and rapid necrosis; the 50%, and 25% solutions resulted in occasional necrosis with some edema; the 10% solution resulted in occasional severe, but usually moderate or mild irritation; the 5% produced mild irritation and the 1% resulted in no irritation. When the treated skin was washed (30 seconds - undiluted, 1 minute - 50% and 25% or 5-8 minutes - 10% and 5%) the following reactions were observed: severe irritation and marked edema, severe to mild irritation with occasional edema, occasional mild irritation, mild or occasional mild irritation, respectively. When the test substance was applied to abraded skin of young guinea pigs, a 1% solution did not produce irritation, a 5% solution produced mild irritation and a 10% solution produced moderate to mild irritation. No appreciable difference in irritation was observed between young or older guinea pigs when a 5% solution was applied to intact or abraded skin. Acrylic acid did not produce an allergic contact dermatitis in guinea pigs. Acrylic acid was somewhat more irritating to guinea pig skin than acetic acid which was used as a comparison control.

Acute Inhalation Approximate Lethal Concentration (ALC) Study:

Adult male albino rats were exposed to vapors of glacial acrylic acid for 4 hours at nominal concentrations of 7330, 7250, 5400, 5080, or 4130 ppm and resulted in the following mortalities, 1/2, 1/2, 0/4, 0/4, 0/4, respectively. All animals were wet and uncomfortable during the exposures with faces red, skin irritation, eyes closed and labored breathing. Rats became prostrate at 7330, 7250 and 5400 ppm after the exposure. In surviving rats, clinical signs subsided and weight losses were recovered during the 9-10 day observation period. Pathological exam of rats that died revealed pulmonary congestion and edema and possible nephritis. Eye damage was evident clinically after exposure at all levels, decreasing in severity with decreasing concentration and visible grossly for 1-3 days after exposure. It was characterized by corneal opacity and redness of the conjunctiva. The ALC was 7250 ppm.

Inhalation Subacute Study:

Two groups of six male albino rats were exposed to either 0 or 1560 ppm of acrylic acid vapors for four hours per day for a total of ten exposures over a two week period. Three test and three control rats were sacrificed after the tenth exposure and the remaining animals were sacrificed ten days later.

There were no deaths during the study. The rats showed chromodacryorrhea during the first four exposures. Transient pitting of the cornea was observed grossly in four animals. There was evidence of nasal injury in all rats exposed to the test substance, after the fourth exposure. Erosion and inflammation of the external nares were most severe after the fifth exposure but lessened from then on during the treatment period. All six rats failed to gain weight or lost weight during the treatment period, but weight gain was resumed after treatment was discontinued during the 10 day recovery period. Microscopic examination of the tissues revealed no pathological changes that were attributable to the treatment.

This information is submitted in accordance with current guidance issued by EPA indicating EPA's interpretation of Section 8(e) of the Toxic Substances Control Act or, where it is not clear that reporting criteria have been met, it is submitted as a precautionary measure and because it is information in which EPA may have an interest.

Sincerely,



A. Michael Kaplan, Ph.D.
Director - Regulatory Affairs

AMK: clp
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