

ERM Program Management Company

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Document Control Office
Office of Pollution Prevention and Toxics (TS-790)
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460



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(A)

Reference: FYI Report under TSCA (8) on Comparative Dermal Toxicity of Nitrocresols in Styrene

Dear Sir:



PMC Specialty Group, a client of ERM, commissioned a comparative study of the acute dermal toxicity of several nitrocresols in rabbits to be conducted by Hazleton Wisconsin Laboratories. They have asked me to submit the results under the FYI provisions of TSCA section 8.

The dermal toxicity literature available from previous studies of the pure chemicals indicated that:

Attribute	Dinitro-p-cresol	Dinitro-o-cresol	Dinitrobutyl-phenol (Dinoseb)	Styrene
CAS Number	609-93-8	534-52-1	88-85-7	100-42-5
LD50 Rat Oral	95 mg/kg	10 mg/kg	25 mg/kg	5000 mg/kg
LD50 Rat Skin		200 mg/kg	80 mg/kg	
LD50 Rabbit Skin	> 10,000 mg/kg	1000 mg/kg	80 mg/kg	
Documented Skin Absorption		Yes	Yes	

These new studies were performed using approximately 23 percent of the nitrocresol in styrene monomer to reflect the concentrations in commercial products. There were no historical data of dermal toxicity of styrene. Therefore a screening test at 2000 mg/kg in five male and five female rabbits was performed. No animals died indicating that the acute dermal LD₅₀ of styrene monomer is greater than 2000 mg/kg.

Acute dermal toxicity tests were also conducted on the three nitro cresols. Several dose levels were used for each study. The experimentally derived rabbit dermal LD₅₀'s were as follows:

<u>Chemical</u>	<u>Dermal LD50</u>
2,6-dinitro-p-cresol	1732 mg/kg (1495-2007 mg/kg)
4,6-dinitro-o-cresol	1671 mg/kg (1440-1939 mg/kg)
2-sec-butyl-4,6-dinitrophenol	1846 mg/kg (1530-2228 mg/kg)

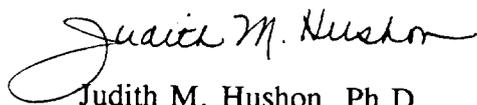
The numbers in parentheses to the right are the 95% confidence limits. As can be seen from examining the dermal LD₅₀ data and the 95% CLs, the acute dermal toxicities of the three compounds overlap. The LD₅₀'s of the three compounds are not statistically different at the 95% confidence level.

In comparing the historical dermal acute toxicity literature with the values obtained in this study, it appears that the presence of styrene does influence the transport of the test material across the dermal barrier. Styrene appears to increase the toxicity of dinitro-p-cresol and decrease the toxicity of dinitrobutyl-phenol. Therefore, the vehicle appears to play an important role in the toxicity of the nitro cresols.

Based on these toxicity findings, it is possible to establish DOT poison classifications for the three styrene-nitro cresol solutions. All of the materials tested fall outside of the requirements for Packing Group III, Hazard Zone D of the DOT regulations 49 CFR part 173.133. The highest minimum toxicity for which hazard is assigned is an LD₅₀ of less than 1000 mg/kg via the dermal route.

Copies of the test results can be provided, if required.

Sincerely,



Judith M. Hushon, Ph.D.
Principal

cc: Bill Matulewicz, PMC Specialties
Nick Abramovich, PMC Specialties