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**Andrea V. Malinowski**  
Corporate Counsel



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DuPont Legal  
Wilmington Office Buildings  
1007 Market Street  
Wilmington, DE 19898  
302-774-6443 Tel 302-774-4812 Fax  
andrea.v.malinowski@usa.dupont.com E-mail

January 18, 2011

**VIA FEDERAL EXPRESS**

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**Re: 8EHQ-1106-16866A (November 8, 2006)  
DuPont HLR 473-84 (1-090)  
Supplemental Submission - Revised Public Copy**

Dear Section 8(e) Coordinator:

Please find enclosed a revised public copy of the above-identified report, which was previously submitted to EPA and assigned the 8EHQ number referenced above. Any information still claimed as confidential business information has been redacted and replaced by brackets.

Very truly yours,

  
Andrea V. Malinowski

Enclosure

- DuPont HLR 473-84 – 6 pages



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1-090

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E. I. du Pont de Nemours and Co., Inc.  
Haskell Laboratory for Toxicology and Industrial Medicine  
Elkton Road, P. O. Box 50,  
Newark, Delaware 19714

HASKELL LABORATORY REPORT NO. 473-84

MR NO. 7191-001

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<u>Material Tested</u>	<u>Haskell No.</u>
Paint, simulated spray, iminated acrylic amine/acrylic epoxy	15,333

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APPROXIMATE LETHAL CONCENTRATION BY INHALATION (ALC)  
OF IMINATED ACRYLIC PAINT

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SUMMARY

Groups of 6 male Cr1:CD®(SD)BR rats were exposed to aerosol atmospheres of iminated acrylic paint for single, 4-hour periods. Under the conditions of this test, the ALC for iminated acrylic paint was 0.33 mg/L of particulate. This material is considered highly toxic by inhalation.

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INTRODUCTION

The purpose of this study was to determine a 4-hour inhalation ALC for iminated acrylic paint in male rats. The ALC was defined as the lowest atmospheric concentration generated which caused death in one or more rats either on the day of exposure or within 14 days post exposure.

MATERIALS AND METHODS.

A. Animal Husbandry

Young adult male Cr1:CD®(SD)BR rats were received from Charles River Breeding Laboratories, Kingston, New York. Each rat was assigned a unique 6-digit identification number which corresponded to a numbered card affixed to the cage. Rats were quarantined for 1 week prior to testing and were weighed and observed twice during the quarantine period. During the test, rats were housed singly in 5" x 11" x 7" suspended,

steel-mesh cages in rooms maintained at 31-48% relative humidity and 23-26°C on a 12/12 hour light/dark cycle. Rats' tails and cage cards were color-coded with water-insoluble markers for identification after exposure. Except during exposure, Purina Certified Rodent Chow® #5002 and water were available ad libitum.

#### B. Exposure Protocol

Groups of 6 rats, 8 weeks old and weighing between 243-271 grams, were restrained in perforated, stainless steel cylinders with conical nose pieces. Each group was exposed nose-only for a single, 4-hour period to an aerosol atmosphere of iminated acrylic paint in air. Rats were weighed prior to exposure and observed during exposure. Surviving rats were weighed and observed daily for 14 days post exposure, weekends excluded except when deemed necessary by the rats' condition.

#### C. Test Material

Paint Composition:

E  
E  
E

Iminated acrylic amine clear  
L-3 Acrylic epoxy crosslinker  
thinner

(See Appendix I for the composition of each compound)

Synonyms:

- o Iminated acrylic paint
- o Simulated iminated acrylic amine/acrylic epoxy spray paint

Preparation:

The 3 paint components were mixed daily in the above proportions (pot life after mixing is about 12 hours).

Stability:

Each component of the test material was assumed to be stable throughout the exposure phase of the study.

Submitted By:

C. H. Denhartog  
Finishes and Fabricated Products Department  
Troy Laboratory

#### D. Generation

Liquid test material was siphoned into a Binks® #15 spray gun. Air introduced at the spray gun aerosolized the test material, and blew the aerosol stream into the exposure chamber. Additional dilution air was added to the aerosol stream during one exposure.

#### E. Analytical

Atmospheric concentrations of the paint were determined at approximately 30-minute intervals by drawing calibrated volumes of chamber atmosphere through pre-weighed, glass-fiber filters. Filters were dried overnight in a desiccator after sampling to remove any residual solvent.

Filters were weighed on a Cahn 26 Automatic Electrobalance®. Atmospheric concentration of particulate was calculated from the dry filter weight differential before and after sampling.

The atmospheric concentration of glycidyl methacrylate residual monomer in the L-3 component was monitored at approximately 60-minute intervals. Calibrated volumes of chamber atmosphere were drawn through tandem midget impingers containing acetone as the trapping solvent. Samples were analyzed with a Hewlett-Packard 5710A gas chromatograph equipped with a flame ionization detector. Samples were chromatographed isothermally at 120°C on a 3 ft. x 2 mm I.D. glass column packed with 10% FFAP on 80/100 mesh Chromosorb® W-HP. Concentrations were determined by comparing G.C. response with standard curves. Standards were prepared by quantitatively diluting pure glycidyl methacrylate in acetone.

Mass median diameter and percent of respirable particulate were determined with a Sierra® Cascade Impactor during each exposure. Chamber temperature was measured with a thermometer, relative humidity was measured with a Bendix® Model 566 Psychrometer, and chamber oxygen content was measured with a BioMarine® Model 225 Oxygen Analyzer.

#### F. Data Storage

All raw data and the final report will be stored in the archives of Haskell Laboratory for Toxicology and Industrial Medicine or in the DuPont Hall of Records, E. I. du Pont de Nemours and Co., Inc., Wilmington, DE.

### RESULTS

#### A. Exposure Conditions and Mortality

A mist was visible in the chamber during most exposures. Chamber temperatures ranged between 21-26°C, relative humidity ranged between 13-35%, and oxygen levels were maintained at 21%.

### Atmospheric Characterization of Iminated Acrylic Paint and Mortality

Particulate Concentration (mg/L) <sup>a</sup>			% Respirable <sup>b</sup>	Mass Median Diameter of Respirable Particulate (um) <sup>c</sup>	Mortality (# deaths/# exposed)
Mean	S.D.	Range			
0.25	0.14	0.04-0.40	68	4.9	0/6
0.33	0.080	0.24-0.44	79	4.0	1/6
0.75	0.098	0.64-0.91	69	5.0	6/6

<sup>a</sup> Represents the concentration of the solid paint components (34.1% by weight of the total mixture) assuming that all solvent components evaporated.

<sup>b</sup> Percent by weight of particles with aerodynamic diameter less than 10 um.

<sup>c</sup> Calculated for the respirable portion of the atmosphere only.

The analyzed glycidyl methacrylate (GMA) concentrations in the chamber were 0.053, 0.041 and 0.059 mg/L, respectively. Based on the acute toxicity of GMA (ALC = 1.5 mg/L; HL-352-77), these concentrations of GMA would not be expected to cause significant effects in the exposed rats.

#### B. Clinical Observations

During exposure, rats exposed to 0.33 and 0.75 mg/L had a diminished response when the chamber was tapped. At 0.25 mg/L, observations could not be made due to paint coating the chamber walls. When removed from the chamber, rats' faces were covered with opaque, gummy test material. One rat died during exposure to 0.33 mg/L, and all rats died during exposure to 0.75 mg/L. Surviving rats exposed to 0.25 and 0.33 mg/L were lethargic and limp, and had shallow, rapid breathing. Within 1 hour after exposure, most of the clinical signs had disappeared.

During the post-exposure period, surviving rats exposed to 0.25 and 0.33 mg/L exhibited slight to severe weight loss for one day post exposure, followed by normal weight gain. At 0.25 mg/L, 4 rats exhibited facial hair loss 3-5 days post exposure. At 0.33 mg/L, 2 rats had cloudy eyes for 6-8 post exposure days.

#### CONCLUSION

Under the conditions of this test, the Approximate Lethal Concentration for iminated acrylic paint was 0.33 mg/L of particulates. This material is considered highly toxic by inhalation (ALC between 0.08 and 0.8 mg/L).

<sup>1</sup> Calculation described in Sierra Instruments, Inc., Bulletin No. 7-79-210  
IM, Instruction Manual: Series 210 Ambient Cascade Impactors and Cyclone  
Preseparators, Division of Anderson Samplers, Inc., Atlanta, Georgia.

Acknowledgement: Bruce A. Burgess also participated in this study.

Work and Report By:

Arthur J. O'Neill  
Arthur J. O'Neill  
Technician

Study Director:

Laura A. Kinney  
Laura A. Kinney  
Chemist

Approved By:

Nancy C. Chromy  
Nancy C. Chromy, Ph.D.  
Section Supervisor,  
Acute Investigations Section

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Date Issued: November 26, 1984  
Study Initiated/Completed: 5/9/84-5/25/84  
Notebook: E-35876, pp. 1-78  
Haskell Laboratory Report No. 473-84  
Number of pages in this report: 6

APPENDIX I

PAINT COMPONENT COMPOSITIONS

I. Emulsified acrylic amine clear

Composition: [ ] [ ] [ ] [ ] by weight MMA/GMA/S/MAA  
[ ] [ ] [ ] [ ] and propyleneimine) in Toluene/  
[ ] [ ] [ ] [ ] isopropanol  
[ ] [ ] [ ] [ ] silicone solution)  
[ ] [ ] [ ] [ ] isopropanol

II. Acrylic epoxy crosslinker

Composition: [ ] [ ] [ ] n-BMA/GMA [ ] resin solid composition  
[ ] [ ] [ ] [ ] Toluene/Methyl Ethyl Ketone [ ] [ ]

III. Thinner

Composition: [ ] [ ] [ ] Xylene  
[ ] [ ] [ ] Butyl Cellosolve® acetate  
[ ] [ ] [ ] [ ] Dibasic esters [ ] [ ]

(Total solids - [ ] [ ])

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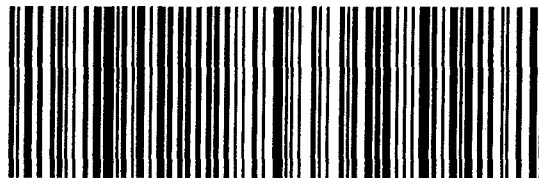
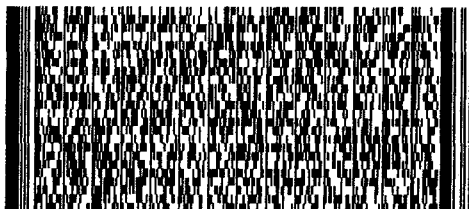
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