Shaughnessy #: 035506

Due Date: 09/30/85

Init: HSR

SEP 30 1985

To: I. Sunzenauer
Product Manager #78
Registration Division (TS-767C)

From: Joseph C. Reinert, Ph.D, Chief
Special Review Section
Exposure Assessment Branch
Hazard Evaluation Division (TS-769C)

Dispatched for JCR

Attached please find the EAB review of...

Reg./File No.: _____

Chemical: Linuron

Type Product: Herbicide

Product Name: Lorox

Company Name: DuPont

Submission Purpose: Glove Permeability

ACTION CODE: 827

Date In: 7/01/85

EAB # 5738

Date Completed: 9/30/85

TAIS (level II) Days

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Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

REVIEW OF LINURON GLOVE PERMEATION STUDY

I. OBJECTIVE

To test glove materials for permeation resistances to linuron (Lorox®L).

II. TEST METHOD

ASTM 739-81, Standard Test Method for Resistance of Protective Clothing Materials to Permeation by Hazardous Liquid Chemicals.

III. MATERIALS

Three glove types were tested (butyl rubber, nitrile, and neoprene).

IV. TEST PROCEDURE

Triplicate tests were conducted with commerically available glove samples by the Radian Corporation in Austin, Texas for E.I. DuPont De Nemours and Co. (Inc.) The liquid collection medium was distilled water as specified by ASTM. Aliquots were removed at selected time intervals and analyzed by high pressure liquid chromatography (HPLC) using a mobile phase consisting of 75:25 acetonitrile/water. The limit of detection was 0.02 ppm. The permeation test was run for 8 hours.

V. RESULTS

All three glove materials did not allow breakthrough of Lorox®L for the length of the test.

VI. REVIEWERS COMMENTS

The test was very well conducted and meets the requirements of this Agency.

As the authors discussed in their report, ASTM 739-81 does recommend the collection medium be a liquid or gas in which the hazardous liquid chemical is freely soluble to a saturation concentration greater than 0.5 weight% or volume%. While

linuron solubility is 75 ppm in water or much less than the 0.5% required by the ASTM test method, we agree with the authors that this does not alter the conclusions of the data. Based on the limit of detection for linuron in the analysis and the general concept that if the carrier solvent (propylene glycol) had broken through, linuron would have been detected in the sampling chamber, we accept the results.

The glove materials selected were appropriate in regard to type of material, thickness, and should be readily available to consumers for purchase since they are manufactured by two of the larger glove companies in the U.S. (Siebe North and Edmont). These reviewers would have liked to have seen results on a single use disposable glove type such as polyethylene, since inside glove contamination by pesticide handlers is a real world problem. Disposable polythylene could eliminate or reduce the problem for mixer/loaders that only use them for one work cycle and their cost is very inexpensive. It is realized, however, that disposable gloves, usually lack in strength properties, which could make them unacceptable to some pesticide users.

Questions we have in regard to the results are:

1. Eventhough there was no breakthrough of linuron, were there any significant visual changes to the outsides of the gloves (degradation, etc.)?

2. In this test, what part of the gloves were used in the ASTM cells, e.g. palms?

3. Does the submitter of these results, know of a practical way to use this data to benefit the pesticide user, e.g. more specific labeling other than chemical resistant gloves?

4. Also, it is recognized that these results are Confidential Business Information, but we would like the authors to make this information releasable and therefore usable for consumers, either with or without revealing the product's inert ingredients. Data bases on permeation and chemical resistance are being persued by NIOSH, EPA, U.S. Coast Guard, ASTM and others (see attached draft format for data submission). Very little permeation data is currently available to users and these results are a good beginning if they can be put to use.

VI. SUMMARY

We commend E.I. DuPont de Nemours & Co. (Inc.) as well as the Radian Corp. for a well done study and find it acceptable for our requirements. We would like written responses to the questions raised above and will be happy to discuss or meet with appropriate representatives of the registrant on these questions if desired.

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10-10-84 DRAFT

CHEMICAL PROTECTIVE CLOTHING
PRODUCT EVALUATION REQUIREMENTS
FOR A DATA BASE

I. DESCRIPTION OF PRODUCT EVALUATED.

A. TYPE : glove, apron, sheet stock
B. MATERIAL GENERIC NAME : neoprene, nitrile, PVC
C. CONDITION BEFORE TEST : new, laundered, after 2 weeks use
D. SUPPLIER : name + reference number for separate table which will have Supplier, address, phone & garments/materials
E. CATALOG NUMBER : supplier's product number
F. LOT OR MANUFACTURER DATE : try to define production batch
G. NOMINAL THICKNESS : in millimeters
H. DESCRIPTION : basis weight; supported- material/weave/weight/ coating nominal thickness;

II. TEST METHOD (ASTM F739-81 or EQUIVALENT)

A. DATE TESTED :
B. TESTING LABORATORY : Name, Supervisor, address, phone
C. ANALYTICAL METHOD : FID/GC, etc
D. ANALYTICAL SENSITIVITY : expressed in micrograms/square centimeter/minute (steady state units)
E. TEMPERATURE : in degrees centigrade
F. COLLECTION MEDIA : water, nitrogen, air, water/benzene, etc.
SYSTEM : one pass, recirculating/aliquot replacement
G. OTHER TEST CONDITIONS : humidity, etc.
F. DEVIATIONS FROM ASTM F739-81 METHOD : other test cell 6 cm dia sample
G. COMMENTS : type F curve

III. CHALLENGE CHEMICAL

A. CHEMICAL SOURCE : Fisher XYZ, manufacturing process
B. CAS NUMBER(s) : 88888 : 6988858699 :
VOLUME % CONC. : 2% : 90% :

IV TEST RESULTS

A. NUMBER OF SAMPLES TESTED :
B. BREAKTHROUGH TIME : mean and standard deviation in minutes
C. STEADY STATE PERMEATION RATE : mean and standard deviation in in micrograms/square centimeter/minute
D. SAMPLE THICKNESS : mean and standard deviation in millimeters
E. OTHER OBSERVATIONS : changes (including visual) in samples, type of permeation curve, etc.

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R117094

Chemical: Linuron

PC Code:
035506
HED File Code: 12100 Other Exposure Documents
Memo Date: 9/30/1985
File ID:
Accession #: 412-06-0008

HED Records Reference Center
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