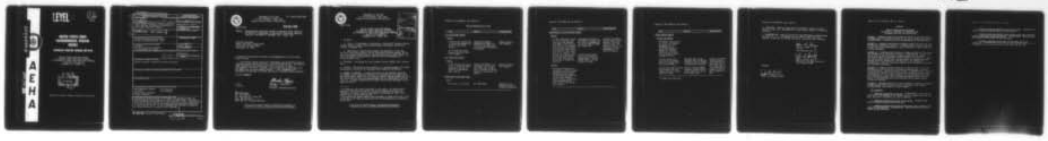
AD-A063 285 ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GR--ETC F/G 6/20
TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT--ETC(U)
AUG 78 A W SINGER, J G HARVEY

UNCLASSIFIED USAEHA-75-51-0003-79 NL

1 OF 1
AD
A063285



END
DATE FILMED
3-79
DDC

AEHA

LEVEL II

(12)
NW

# UNITED STATES ARMY ENVIRONMENTAL HYGIENE AGENCY

## ABERDEEN PROVING GROUND, MD 21010

TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT A13-35905-a
US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND
STUDY NO. 75-51-0003-79
SEPTEMBER 1976 - AUGUST 1978



Approved for public release; distribution unlimited.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

| USAEHA-REPORT DOCUMENTATION PAGE | READ INSTRUCTIONS BEFORE COMPLETING FORM |
|---|---|
| 1. REPORT NUMBER: 75-51-0003-79 | 2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER: (1) rept. |
| 4. TITLE (and Subtitle): Topical Hazard Evaluation Program of Candidate Insect Repellent AI3-35905-a, US Department of Agriculture Proprietary Compound | 5. TYPE OF REPORT & PERIOD COVERED: Final, Sep 76— Aug 78 |
| | 6. PERFORMING ORG. REPORT NUMBER: 75-51-0003-79 |
| 7. AUTHOR(s): ALLEN W. SINGER JOHN G. HARVEY, JR | 8. CONTRACT OR GRANT NUMBER(s) |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS: US Army Environmental Hygiene Agency, Aberdeen Proving Ground, MD 21010 | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS |
| 11. CONTROLLING OFFICE NAME AND ADDRESS: Commander, US Army Health Services Command, Fort Sam Houston, TX 78234 | 12. REPORT DATE: Sep 76 - Aug 78 |
| | 13. NUMBER OF PAGES: 7 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): (12) 19p. | 15. SECURITY CLASS. (of this report): Unclassified |
| | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

USDA Proprietary Compound
AI3-35905-a
Topical Hazard Evaluation
candidate repellent
skin irritation
eye irritation

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

A preliminary hazard evaluation of AI3-35905-a was performed by means of laboratory animal studies using rats, rabbits and guinea pigs. The technical grade compound did not produce eye or skin irritation, or cause a photochemical irritation in rabbits, did not sensitize guinea pigs and did not demonstrate an acute ingestion hazard. It was recommended that AI3-35905-a be approved for further testing as a candidate insect repellent.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

P38150

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

CPT Singer/jg/584-3980

HSE-LT-T WP

29 DEC 1978

SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellent A13-35905-a, US Department of Agriculture Proprietary Compound, Study No. 75-51-0003-79, September 1976 - August 1978

Executive Secretary
Armed Forces Pest Control Board
Forest Glen Section, WRAMC
Washington, DC 20012

A summary of the pertinent findings and recommendations of the inclosed report follows:

A preliminary hazard evaluation of A13-35905-a was performed by means of laboratory animal studies using rats, rabbits and guinea pigs. The technical grade compound did not produce eye or skin irritation, or cause a photochemical irritation in rabbits, did not sensitize guinea pigs and did not demonstrate an acute ingestion hazard. It was recommended that A13-35905-a be approved for further testing as a candidate insect repellent.

FOR THE COMMANDER:

BRENDAN E. JOYCE, Ph.D.
LTC, MSC
Director, Laboratory Services

1 Incl
as (4 cy)

CF:
HQDA (DASG-PSP)
Cdr, HSC (HSPA-P)
Dir, Advisory Ctr on TOX, NRC
Supt, AHS (HSA-IHE)
USDA, ARS (Dr. Terrence McGovern)

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010



HSE-LT-TP WP

# TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT A13-35905-a US DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUND STUDY NO. 75-51-0003-79 SEPTEMBER 1976 - AUGUST 1978

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research Service, Southern Region, Insects Affecting Man-Research Laboratory, Gainesville, Florida, 4 November 1977.

b. Memorandum of Understanding between the Department of the Army, Office of The Surgeon General, the US Army Health Services Command; the US Army Environmental Hygiene Agency; the Armed Forces Pest Control Board; and the US Department of Agriculture, effective 1970 with Amendment No. 1 effective August 1974.

2. REFERENCE. Toxicology Division Procedural Guide, USAEHA, 1972, revised 1976.

3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of the candidate insect repellent A13-35905-a.

4. SUMMARY OF FINDINGS. A hazard evaluation of the candidate repellent A13-35905-a, USDA Proprietary Compound, was conducted by this Agency using New Zealand White rabbits for skin and eye studies, Hartley guinea pigs for a skin sensitization study and Sprague-Dawley rats for determination of oral toxicity. A tabular presentation of animal toxicity data developed in this Agency follows:*†

---

* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education and Welfare Publication No. (NIH) 74-23, revised 1972 - second printing 1974.
† The experiments reported herein were performed in animal facilities, fully accredited by the American Association for the Accreditation of Laboratory Animal Care.

Study No. 75-51-0003-79, Sep 76-Aug 78

TABULAR PRESENTATION OF DATA

| Test | Results | Interpretation |
|---|---|---|
| SKIN IRRITATION STUDIES | | |
| Rabbits | | |
| Single 24-hour application to intact and abraded skin of New Zealand White rabbits.<br><br>0.5 ml technical grade compound applied to each of six rabbits. | Compound A13-35905-a produced no primary irritation of the intact skin or to the skin surrounding an abrasion. | USAEHA Category I (ref Appendix). |
| EYE IRRITATION STUDIES | | |
| Rabbits | | |
| Single 24-hour application of 0.1 ml technical grade compound to one eye of each of six New Zealand White rabbits. | Compound A13-35905-a did not produce any injury to the cornea, and, in addition, no injury to the conjunctiva in six out of six rabbits. | USAEHA Category A (ref Appendix). |
| APPROXIMATE LETHAL DOSE (ALD) | | |
| Oral | | |
| Rats (male) - no diluent | ALD >3300 mg/kg | Presents little lethal hazard from accidental ingestion. |

Study No. 75-51-0003-79, Sep 76-Aug 78

| Test | Results | Interpretation |
|---|---|---|
| PHOTOCHEMICAL SKIN IRRITATION STUDIES | | |
| Rabbits | | |
| A single application (0.05 ml) of a 25 percent (w/v) solution of the compound (A13-35905-a) and a 10 percent (w/v) oil of Bergamot solution (positive control) in 95 percent ethyl alcohol were applied to the intact skin of six rabbits. Five minutes after application, the rabbits were exposed to UV light (365 nm) for 30 minutes at distance of 10-15 cm. | A 25 percent solution of A13-35905-a in ethanol did not cause a photochemical irritation reaction under test conditions.<br><br>Positive control application and irradiation caused greater irritant effects than in unirradiated skin areas. | Compound A13-35905-a did not cause a photochemical irritation reaction under test conditions and is not expected to cause a photochemical irritation in humans. |
| Control. | | |
| Following UV exposures of the rabbits, 0.05 ml of test compound, positive control and diluent were applied to additional skin areas to serve as unirradiated control sites. Application areas were checked for skin irritation at 24, 48 and 72 hours. | | |

Study No. 75-51-0003-79, Sep 76-Aug 78

| Test | Results | Interpretation |
|---|---|---|
| SENSITIZATION STUDIES | | |
| Guinea Pigs (Male) | | |
| Intradermal injections of 0.1 ml of a 0.1 percent suspension (w/v) of A13-35905-a or of dinitrochlorobenzene (DNCB * in a mixture containing 1 volume of propylene glycol and 29 volumes of saline. | | |
| Ten test guinea pigs received and challenged with a 0.1 percent solution of A13-35905-a. | Challenge dose of test compound (last intradermal injection) did not produce a sensitization reaction. | Compound A13-35905-a did not produce a sensitization reaction under these test conditions and is not expected to produce a sensitization reaction in man. |
| Ten positive control guinea pigs received and challenged with a 0.1 percent solution of DNCB. | Positive controls (DNCB) produced a marked sensitization reaction in 10 out of 10 guinea pigs. | |

* A known skin sensitizer.

5. CONCLUSION. Technical grade compound A13-35905-a presents no acute hazard from eye, skin, photochemical or sensitization contact or from acute ingestion.

6. RECOMMENDATION. Under the provision of the Memorandum of Understanding (paragraph 1b), it is recommended that A13-35905-a, USDA Proprietary Compound, be approved for further testing as a candidate insect repellent.

ALLEN W. SINGER
CPT, VC
Toxicology Division

JOHN G. HARVEY, JR.
Biological Laboratory Technician
Toxicology Division

APPROVED:

ARTHUR H. McCREESH, Ph.D.
Chief, Toxicology Division

APPENDIX

TOPICAL HAZARD EVALUATION PROGRAM
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals. prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds noninjurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.