UNITED STATES ARMY
ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MD 21010

TOPOCAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENTS A13-37134a AND A13-37139a
U.S. DEPARTMENT OF AGRICULTURE PROPRIETARY COMPOUNDS
STUDY NUMBERS 75-51-0086-79 AND 75-51-0090-79

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| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) | Preliminary hazard evaluations of AI3-37134a and AI3-37139a were performed by means of laboratory animal studies using New Zealand White rabbits. The technical grade compounds produced mild primary irritation of the skin of rabbits, and moderate injury to the cornea and conjunctiva of all rabbits tested. |

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**Abstract**

Preliminary hazard evaluations of AI3-37134a and AI3-37139a were performed by means of laboratory animal studies using New Zealand White rabbits. The technical grade compounds produced mild primary irritation of the skin of rabbits, and moderate injury to the cornea and conjunctiva of all rabbits tested.
SUBJECT: Topical Hazard Evaluation Program of Candidate Insect Repellents
AI3-37134a and AI3-37139a, US Department of Agriculture Proprietary
Compounds, Study Nos. 75-51-0086-79 and 75-51-0090-79, February
1978 - June 1979

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

Preliminary hazard evaluations of AI3-37134a and AI3-37139a were performed
by means of laboratory animal studies using New Zealand White rabbits. The
technical grade compounds produced mild primary irritation of the skin of
rabbits, and moderate injury to the cornea and conjunctiva of all rabbits
tested. It was recommended that AI3-37134a and AI3-37139a not be approved
for further testing as candidate insect repellents. If, however, these
compounds show a significant improvement in pest repellent properties over
currently available compounds, it is suggested that they be purified if
possible and resubmitted or considered only as clothing impregnants.

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TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENTS
A13-37134a AND A13-37139a
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FEBRUARY 1978 - JUNE 1979

1. AUTHORITY.

   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.


3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of the candidate insect repellents A13-37134a and A13-37139a.

4. SUMMARY OF FINDINGS. Hazard evaluations of the candidate repellents A13-37134a and A13-37139a, USDA proprietary compounds, were conducted by this Agency using New Zealand White rabbits for skin and eye studies. A tabular presentation of animal toxicity data developed in this Agency follows:*

† The experiments reported herein were performed in animal facilities fully accredited by the American Association for the Accreditation of Laboratory Animal Care.

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### TABULAR PRESENTATION OF DATA

<table>
<thead>
<tr>
<th>Test</th>
<th>Results</th>
<th>Interpretation</th>
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<tr>
<td><strong>SKIN IRRITATION STUDIES</strong></td>
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<tr>
<td><strong>Rabbits</strong></td>
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<tr>
<td>Single 24-hour application to intact and abraded skin of New Zealand White rabbits.</td>
<td>Compounds AI3-37134a and AI3-37139a produced mild primary irritation of the intact skin and the skin surrounding an abrasion.</td>
<td>USAEHA Category II (ref Appendix)</td>
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<td>0.5 mL technical grade compound applied to each of six rabbits.</td>
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<tr>
<td><strong>EYE IRRITATION STUDIES</strong></td>
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<tr>
<td><strong>Rabbits</strong></td>
<td></td>
<td></td>
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<tr>
<td>Single 24-hour application of 0.1 ml technical grade compound to one eye of each of six New Zealand White rabbits.</td>
<td>Compounds AI3-37134a and AI3-37139a produced moderate irritation to the cornea and conjunctiva of all six rabbits. There were no detectable lesions after 7 days.</td>
<td>USAEHA Category E (ref Appendix)</td>
</tr>
</tbody>
</table>

5. **CONCLUSION.** Technical grade compounds AI3-37134a and AI3-37139a produced mild primary irritation of the intact and abraded skin of rabbits, and moderate corneal and conjunctival irritation of all rabbits tested. As such, these compounds do not qualify as nonhazardous insect repellents.

6. **RECOMMENDATIONS.** Under the provisions of the Memorandum of Understanding (paragraph 1b), it is recommended that AI3-37134a and AI3-37139a, USDA proprietary compounds, not be approved for further testing as candidate
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insect repellents. If, however, these compounds show a significant improvement in pest repellent properties over existing repellents, it is suggested that they be purified through activated charcoal and resubmitted, or, if this is not feasible, that they be considered only for use as clothing impregnants.

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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.