



Agriculture Canada

Food Production  
and Inspection Branch

Direction générale,  
Production et inspection des aliments

Plant Industry Directorate

Direction de l'industrie des produits végétaux

# Announcement

# A90-01

RE-EVALUATION  
OF  
PERSONAL  
INSECT REPELLENTS

**June 1, 1990**

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**Canada**

## RE-EVALUATION OF PERSONAL INSECT REPELLENTS

The purpose of this memorandum is to notify registrants, pesticide regulatory officials, and other interested parties that products containing the active ingredients listed below are now subject to re-evaluation under the authority of Section 19 of the Pest Control Product Regulations. The re-evaluation will address both human safety and efficacy.

### ACTIVE INGREDIENTS IN PERSONAL INSECT REPELLENTS

<u>Active Name</u>	<u>Directorate Code</u>
oil of citronella and related active compounds	CIT
dimethyl phthalate and related active compounds	DMP
N,N-diethyl-m-toluamide and related active compounds, "DEET"	DTU
ethylhexanediol and related active compounds	EHX
citronyl or 3-acetyl-2-(2,6-dimethyl-5-heptenyl) oxazolidine and related active compounds	JAC
oil of lavender and related active compounds	LAV
* di-n-propyl isocinchomeronate and related active compounds, (MGK repellent 326)	MGD
* n-octyl bicycloheptene dicarboximide and related active compounds (MGK synergist 264)	MGK

\*Only the uses of these active ingredients as personal insect repellents will be re-evaluated. Information specifically pertaining to structural pest control and other uses are not covered by this announcement.

## I RATIONALE

The decision to reevaluate personal insect repellents was effected by the following factors:

- a) Insect repellents have a potential for higher human exposure than other pesticides because they are used in frequent direct application to skin and clothing, and are readily absorbed into the body.
- b) Most existing labels need improvement to modern standards especially in regard to precautionary labelling and first aid.
- c) The safety data base for insect repellents is outdated and incomplete by present standards.
- d) There have been some reports of adverse effects of insect repellents on humans, especially children.
- e) There is some uncertainty that all registered products are efficacious for the pests, uses and protection times claimed.
- f) Personal insect repellents ranked first in the re-evaluation scheme proposed in Memorandum to Registrants R-1-226 (May 20, 1986)\*.

This cluster (Group 1-4) originally contained the eight compounds mentioned in this announcement, as well as lethane and 2-hydroxyethylnoctyl sulfide and 2,3,4, 5 bis(butylene)tetrahydro2furfural (Repellent R-11). Because these latter two compounds are not contained in personal insect repellents, they will not be re-evaluated at this time. The third compound was cancelled in April 1990.

## II DATA SUBMISSION

Data and information requirements described in this announcement have been determined in consultation with advisors at Health and Welfare Canada.

## A DATA REQUIREMENTS

### Organization of Data

All data submitted must be organized as per Agriculture Canada Trade Memorandum T-1-237 (October 1, 1983) for the technical active ingredient, major metabolic and transformation products, and as per Trade Memorandum T-1-239 (October I, 1983) for end-use products. Two copies of all studies, reports and other information will be required.

### Relevance of Studies

All studies should follow 'Good Laboratory Practice' and internationally recognized protocols such as the U.S. EPA Pesticide Assessment Guidelines and Standard Evaluation Procedures, and the OECD Guidelines for Testing of Chemicals. Except for efficacy data, only studies less than 15 years old (i.e., completed in 1975 or later) will be considered in the re-evaluation.

Current requirements for toxicology studies are listed in Agriculture Trade Memorandum T-1-245 (Guidelines for Developing a Pesticide Toxicology Database, September 19, 1984). Please note that Health and Welfare Canada now considers exposure studies necessary for the evaluation of risk to the user.

## I. Requirements for Re-evaluation of Technical Active Ingredients

### a) Index

Each basic manufacturer and/or data owner is asked to submit, within six months of the date of this announcement, an index to all studies pertaining to technical grade and/or manufacturing use products and their major metabolic and transformation products, organized as per Memorandum T-1-237.

The index should distinguish among studies which:

- (1) are being submitted in conjunction with the index for the first time;
- (2) have been submitted since 1980; or,
- (3) are being resubmitted.

b) Studies

Each basic manufacturer and/or data owner is asked to submit, within six months of the date of this announcement, all available relevant studies less than IS years old from date of completion, except those which have already been submitted since 1980. (see “Resubmission of Studies”, below).

c) Chemistry Specifications

Each basic manufacturer is asked to submit all required chemistry data as prescribed in Trade Memorandum T-1-238 (October 1, 1983), describing current production methods and analytical methodology for each technical active ingredient listed on page 1 of this document.

2. Requirements for Reevaluation of End-Use Products (Formulations)

- a) Each registrant and basic manufacturer is asked to submit, within six months of the date of this announcement, an index to all studies pertaining to personal insect repellent end-use products, organized as per T-1-239.

The index should distinguish among studies which;

- (1) are being submitted for the first time;
- (2) have been submitted since 1980; and,
- (3) are being resubmitted.

b) Studies

Each registrant is asked to submit, within six months of the date of this announcement, all available relevant data except those which have been submitted since 1980 (see “Resubmission of Studies”, below).

3. Re-submission of Studies

Data submitted prior to 1980 will not be considered unless re-submitted. Companies should resubmit older (but not older than IS years) data which they wish to have considered; companies may be asked to resubmit particular studies at a later point in the re-evaluation process. Re-submission of data received after 1980 and organized according to T-1-237 and T-1-239 will not be necessary unless specifically requested by Agriculture Canada or any of its advisor departments.

4. Incident Data

Incident records, or reports regarding poisonings, over-exposure or any other health hazard associated with any of the active ingredients covered by this memorandum, which have come to the attention of the registrant should be provided.

5. Worldwide Regulatory Status

Basic manufacturers and data owners are requested to provide a summary report of the regulatory status of the subject active ingredients in other countries and any regulatory actions which have been taken within the last 10 years in these countries.

6. Published Data

Published studies will also be reviewed. A bibliography of published studies pertaining to the subject active ingredients (technical, end-use products and major metabolic and transformation products), accompanied by a description of the data bases and other procedures used to search the published literature should be provided.

The bibliography should be annotated by inclusion of abstracts or summaries. The source of these annotations (original author or basic manufacturer) should be identified. The bibliography should be arranged according to the major Parts (eg. Parts 0,1,2,3,8) described in Trade Memorandum T-1-237 and cross-referenced so that no duplication exists. Industry may wish to consider a task force approach in order to share the cost of bibliography development. Sufficient copies should be provided for distribution to advisor agencies.

B. RE-EVALUATION PROCEDURES

Submitted data will be reviewed by Agriculture Canada and advisor agencies.

Data and information gaps will be identified and conveyed to registrants.

Registrants may be requested to provide new and/or replacement studies to fill identified data gaps or to replace studies found to be invalid.

Proprietary data submitted in the course of this reevaluation and found to be valid will be recognized according to Agriculture Canada's Product Specific Registration Policy.

All basic manufacturers of the technical active ingredients listed above and registrants of pertinent end-use products are responsible for development and provision of data packages in support of their registered product. Industry may wish to consider a task force approach in order to share the cost of data development.

As part of the consultative process, registrants, user and public interest groups, and other interested parties will be invited to comment on any proposed revisions to the regulatory status of products containing the technical ingredients listed above, before such changes are implemented.

C. USE PATTERN

Appended to this announcement is a summary of uses based on labels registered under the Pest Control Products Registrants are asked to review this summary and verify that it is a complete and accurate representation of their registered label instructions.

Any registrant who wishes to propose deletions/revisions to this summary of uses should forward comments to the Pesticides Directorate within six months of the date of this memorandum.

Please send data and any correspondence to:

Roy G. Lidstone  
Pest Management Regulatory Agency  
Health Canada, A.L. 6606D  
2250 Riverside Drive  
Ottawa, Ontario  
K1A 0K9

**SUMMARY OF REGISTERED LABELS AND  
USE PATTERNS FOR PERSONAL INSECT REPELLENTS**

Organization of this document:

A. The following active ingredients are considered:

<u>Active Ingredient</u>	<u>Directorate Code</u>
oil of citronella	CIT
dimethyl phthalate	DMP
N,N-diethyl-m-toluamide, DEET	DTU
ethylhexanediol	EHZ
citronyl	JAC
oil of lavender	LAV
di-n-propyl isocinchomeronate, (MGK repellent 326)	MGD
n-octyl bicycloheptene dicarboximide, (MGK synergist 264)	MGK

B. Emulsifiable concentrates, solutions and liquids were grouped under the same heading.

C. No separate sections were made for MGD and MGK because they are referred to in other use patterns.



**INDEX TO SUMMARY OF LABEL AND USE PATTERNS  
FOR PERSONAL INSECT REPELLENTS**

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I OIL OF CITRONELLA (CIT)

1. CIT EMULSIFIABLE CONCENTRATE

ACTIVE INGREDIENT: CIT 5% + DMP 20% + EHX 15%

CLAIMS: Repels black flies, mosquitoes, other flying insects.

DIRECTIONS: Squeeze a small amount onto hand. Rub hands together until oily.  
Apply externally on exposed skin surfaces.

PRECAUTIONS: Avoid contact with eyes and mouth. Do not store in extreme heat or cold.

DISPOSAL: Put empty container in garbage.

2. CIT LIQUID

ACTIVE INGREDIENT: CTT 100%

CLAIMS: Repels black flies, mosquitoes for 30 minutes.

DIRECTIONS: Smear on hands and back of neck.

PRECAUTIONS: Do not apply around eyes, nose or mouth. Keep out of reach of children. Do not take internally.

FIRST AID: If swallowed, do not induce vomiting. Get immediate medical attention.

3. CIT PASTE

ACTIVE INGREDIENT: CIT 15% + DMP 25%

CLAIMS: Repels black flies, flying insects, mosquitoes.

DIRECTIONS: Apply externally on exposed skin surfaces .

PRECAUTIONS: Avoid contact with eyes and mouth. Do not store in extreme heat or cold. Keep out of reach of children.

4. CIT PRESSURIZED PRODUCT

ACTIVE INGREDIENT: CIT 6.0%

CLAIMS: Repels black flies, mosquitoes for 1 hour.

DIRECTIONS: Shake well before using. Point valve towards surface to be sprayed. Hold can upright about 25 cm from surface. Apply sufficient spray to all exposed skin to provide a thin continuous film. To apply to face, spray on hand, then spread on face, avoiding eyes and mouth. Repeat if necessary.

PRECAUTIONS: Do not use on rayon or dynel. Spray may irritate eyes. Do not spray on face. Do not puncture. Exposure to heat or prolonged exposure of can to sun may cause bulging. Do not throw into fire or incinerator. Keep out of children's reach. Keep from freezing.

FIRST AID: If eyes or lips are contacted, flush with water.

DISPOSAL: Dispose of empty container in household garbage.

5. CIT SOLUTION

ACTIVE INGREDIENT: CIT 20%

CLAIMS: Repels mosquitoes for 1 hour.

DIRECTIONS: Apply to exposed skin areas with roller [or] at about 150 mm distance using spray. Can be used on children or adults.

PRECAUTIONS: Avoid eyes and mouth.

FIRST AID: Non-irritating. If irritation develops, wash well with water.

DISPOSAL: Put empty container in garbage.

6. CIT SOLUTION

ACTIVE INGREDIENT: CIT 36% + DTU 36%

CLAIMS: Repels black flies, mosquitoes.

DIRECTIONS: Shake bottle before using. Apply to all exposed skin. Do not apply near eyes or mouth. Reapply as needed.

PRECAUTIONS: Keep out of reach of children. Do not take internally. May damage some painted or lacquered surfaces, plastics and synthetic fibres such as acetates, rayon or dynel. Do not contaminate food or utensils. Do not contaminate any body of water.

FIRST AID: If eyes or lips are contacted, flush with water.

DISPOSAL: Dispose of empty container in household garbage.

7. CIT SOLUTION

ACTIVE INGREDIENT: CIT 5% + DMP 208 + EHX 15Ço

CLAIMS: Repels black flies, mosquitoes, other flying insects.

DIRECTIONS: Spray over exposed skin surfaces. To apply to face, spread on hands and rub on.

PRECAUTIONS: Avoid eyes and mouth. Do not inhale spray mist. If irritation appears, stop use. Do not apply to infants or toddlers.

DISPOSAL: Put empty container in garbage.

## II DIMETHYL PHTHALATE (DMP)

### 1. DMP EMULSIFIABLE CONCENTRATE

See CIT - EMULSIFIABLE CONCENTRATE (CIT+DMP+EHX)

### 2. DMP EMULSIFIABLE CONCENTRATE

ACTIVE INGREDIENT: DMP 10.% + DTU 15.%

CLAIMS: Repels black flies, fleas, gnats, mosquitoes, sand fleas.

DIRECTIONS: Apply liberally to exposed areas. Repeat application after swimming and as required.

PRECAUTIONS: Keep out of eyes and mouth. Keep out of reach of children. Do not use near rayon and dynel fabrics, car and furniture surfaces, plastics and nail polish.

FIRST AID: If swallowed, do not induce vomiting and get medical attention. If in the eyes, flush with plenty of water.

### 3. DMP EMULSIFIABLE CONCENTRATE

ACTIVE INGREDIENT: DMP 13% + DTU 35% + MGD 1.0% + MGK 1.0%

CLAIMS: Repels black flies, fleas, gnats, mosquitoes, ticks.

DIRECTIONS: Use only a small amount. Rub in well. To apply to face, place a few drops on hands and spread evenly on face and neck. Apply this product only as specified on this label.

PRECAUTIONS: Keep out of reach of children. For external use only. Avoid contact with eyes, eyebrows and lips. Do not use on synthetic fabrics. Will damage some plastics, furniture finishes and painted surfaces. May cause skin reactions in rare cases. Harmful if swallowed.

FIRST AID: In case of contact with eyes flush with water. If irritation persists get medical attention.

DISPOSAL: Do not reuse container. Wrap and put in trash.

4. DMP PASTE

See CIT - PASTE (CIT+DMP)

5. DMP PRESSURIZED PRODUCT

ACTIVE INGREDIENT: DMP 12% + DTU 18% + MGD 1.0% + MGK 1.0%

CLAIMS: Repels black flies, fleas, gnats, mosquitoes, ticks.

DIRECTIONS: Hold unit 15 to 20 cm from skin or clothing while spraying, keeping nozzle up and pointed away from face. Slightly moisten skin or clothing with slow, sweeping motion. Saturation is unnecessary. Apply on face by first spraying small amount in hand and spreading on face and neck. Keep away from eyes, lips, eyebrows. Prevent children from rubbing eyes if hands are treated with spray. To repel ticks and fleas, apply to socks and around all openings in clothing. Will not damage nylon, cotton and wool. Apply the product only as specified on this label.

PRECAUTIONS: Flammable Mixture. Do not use near fire or flame or expose treated skin or clothes to these elements. For external use only. Do not spray on face as may cause smarting of eyes and lips. Do not apply to synthetic fabrics other than nylon. May damage finishes, plastics, painted and varnished surfaces. May cause skin reactions in rare cases.

FIRST AID: If accidentally sprayed in eyes, flush with water. If irritation persists get medical attention.

DISPOSAL: Do not reuse container, discard when empty. Wrap container and put in trash.

6. DMP SOLUTION (CIT+OMP+EHX)

See CIT - SOLUTION (CIT+DMP+EHX)

7. DMP SOLUTION

ACTIVE INGREDIENT: DMP 33% + EHX 67%

CLAIMS:           Keep flies from biting.

DIRECTIONS:    Apply between palms and cover all exposed skin every two hours as needed.

PRECAUTIONS:  May be harmful if swallowed. Keep out of reach of small children. Keep out of mouth and eyes to avoid smarting. May soften some paints and varnishes.

## III N,N-DIETHYL-m-TOLUAMIDE (I:)TU)

1. DTU EMULSIFIABLE CONCENTRATE

See DMP - EMULSIFIABLE CONCENTRATE (DMP+DTU)

2. DTU EMULSIFIABLE CONCENTRATE

See DMP - EMULSIFIABLE CONCENTRATE (DMP+DTU+MGD+MGK)

3. DTU EMULSIFIABLE CONCENTRATE

ACTIVE INGREDIENT: DTU 30%

CLAIMS: Repels blackflies, fleas, mosquitoes, sand flies, stable flies, ticks.

DIRECTIONS: Shake well, dispense a small amount onto hand. Rub in well. For face dispense on palm of hand and spread on face and neck.

PRECAUTIONS: Avoid contact with eyes and lips. Keep out of reach of children. For external use only. harmful if swallowed. Keep away from mucous membranes.

FIRST AID: In case of contact with eyes, lips, flush with plenty of water.

DISPOSAL: Do not reuse empty container. Rinse, wrap and put in trash collection.

4. DTU EMULSIFIABLE CONCENTRATE

ACTIVE INGREDIENT: DTU 19.25% + MGD 1.92 + MGK 3.85

CLAIMS: Repels black flies and mosquitoes.

DIRECTIONS: Repeat application after exercise or excessive perspiration. wipe or wash palms after applying.

PRECAUTIONS: Keep out of reach of children. Do not take internally Avoid contact with eyes and lips. If signs of irritation or rash appear wash with soap and water and discontinue use. May damage furniture finishes, some plastics, painted surfaces, synthetic fabrics.



**FIRST AID:** If in contact with eyes wash with cold water. If irritation persists. Call physician. If ingested, obtain medical attention.

**DISPOSAL:** Put empty tube in garbage.

5. DTU IMPREGNATED FABRIC

**ACTIVE INGREDIENT:** Jackets/Pants: DTU 100% Towelettes: DTU 11.86-15.44%

**CLAIMS:** Jackets/Pants: Repels biting flies, insects, mosquitoes. The ready-to-use jacket can be effective up to 32 hours.

Towelettes: Repels biting flies, black flies, fleas, gnats, mosquitoes, ticks. Can last for hours.

**DIRECTIONS:** Jackets/Pants: General: Jacket fits comfortably over regular clothing, will not stain if used as suggested. Always store jacket in zip lock bag when not in use. Reusable year after year. When effectiveness wears off, recharge jacket.

Can be used by boaters, campers, farmers, fishermen, gardeners, golfers, hunters, linemen, lumberjacks, outdoor workers, photographers, roughnecks, surveyors.

Jacket

1. Jacket is impregnated with bug repel lent and is ready to use.

Instructions for Recharging Jacket

Place jacket in storage bag and squirt recharging solution into jacket. Use 10 mL (2 teaspoons) for youth size, 20 mL (4 teaspoons) for S,M,L and 25 mL (5 teaspoons) for XL. Sea 1 bag. Jacket may be used after 4 hours.

2. To repel insects this jacket must be impregnated by you as directed using 1/2 bottle of Bug Buster repellent.

Directions for Impregnating Jacket

- a) Open the bag and squirt the solution over an entire side of the visible fabric using approximately 1/4 of one 50 mL bottle of Bug Buster repellent solution.

- b) Turn storage bag over.
- c) Squirt the solution over the other side of the visible fabric with another 1/4 of that bottle of repellent.
- d) Be sure to use 1/2 bottle of the repellent.
- e) Close storage bag as shown (extra bottle of Bug Buster repellent solution may also be stored in this bag).
- f) Leave jacket in the closed storage bag for at least 6-12 hours.

To renew effectiveness of jacket after numerous wearings, place jacket in bag and squirt 10 mL of Bug Buster on jacket. Seal bag. In approximately 4 hours repellent is absorbed and the jacket is 100% effective once more. Do not put in excess repellent. It will not improve jacket's performance and may stain outer clothing.

3. To repel insects charge jacket/pants as follows:

- a) Place jacket/pants in storage bag and lay flat.
- b) Squirt 1/2 total recommended amount of repellent into one side of fabric.
- c) Turn bag over and squirt the same amount of repellent on other side of the fabric.
- d) Seal bag.
- e) After 4 hours jacket/pants are ready for use.
- f) Always return jacket/pants to bag and seal when not in use.
- g) Throw empty repellent container in garbage.

Recommended Amount of Repellent

Youth Size: 5 mL one side, 5 mL other side = 10 mL total.

Small, Medium sizes: 10 mL one side, 10 mL other side = 20 mL total.

Large, X-Large sizes: 13 mL one side, 13 mL other side - 26 mL total.

Re-treating: When effectiveness of repellent has been reduced by exposure to air over a period of time, simply follow the steps shown above (charging jacket/pants). Jacket/pants may be retreated as many times as required. Recharge only with the Skeeto-Ban bug repellent. Hand wash in lukewarm soapy water, hang to dry.

Towelettes: Unscrew outer cap. Remove orange inner cover from top of container using small tab. Locate first towelette in the centre of the roll. Push the corner of the towelette through the hole in the inner cover. Replace the inner cover onto the container. Remove towelette from container by pulling the exposed area of the towelette through the hole. To tear off one towelette pull at right angles to the side of the container until it snaps off. Another towelette will pop up. After use replace outer cap.

Wipe towelette evenly over all exposed skin. Each towelette will cover an adult face and arms, or an equivalent area. Repeat as necessary using a fresh towelette.

**PRECAUTIONS:** Jackets: Flammable. This jacket is extremely flammable and should never be worn near open flame or fire or while smoking. May cause skin reactions in rare cases. May damage synthetic fabrics, plastics, painted furniture surfaces, linoleum. Remove garment before sitting on vinyl or plastic seats.

Towelettes: Wipe towelette over skin except eyes, lips and mouth. Do not re-use dispenser. Keep out of reach of children. Do not use on babies. May damage furniture finishes, plastics, painted surfaces. Do not use on acetates, rayon, dyneel. Flammable. Keep away from open flame or spark.

FIRST AID: Towelettes: In case of eye contact, flush with water.

DISPOSAL: Towelettes: Dispose of used towellettes and dispenser in trash container. Use once and discard. Jackets: Discard empty containers in garbage.

6. DTU LIQUID

ACTIVE INGREDIENT: DTU 100%

CLAIMS: Long lasting protection (17.6%) up to 8 hours (17.6%)  
 Biting flies - 11.7%  
 Black flies - 82.3%  
 Chiggers - 35.3%  
 Deer flies - 5.8%  
 Fleas - 23.5%  
 Gnats - 35.3%  
 Midges - 23.5%  
 Mosquitoes - 88.2%  
 Sand flies - 11.7%  
 Stable flies - 7%  
 Ticks - 52.9%  
 used with jacket - 5.8%

NOTE: the percentages reflected are in relation to the sample of registration numbers used.

Directions were grouped and sugunarized into equivalences. Some were kept as unique.

DIRECTIONS: For maximum protection apply a small quantity or a few drops to hands and apply to all exposed skin. Apply all over exposed skin. Apply liberally over all exposed skin.

Clothing: For ticks and chiggers apply to socks and cuffs. Apply to clothing (socks, cuffs). For mosquitoes and black flies apply liberally to shoe tops, socks and around openings.

Spraying: Spray onto all exposed skin except head area. Hold a sprayer upright when applying. For head area spray onto palm and apply.

Washing: Wash or wipe palms after applying. Wash or thoroughly wipe after use.

Rubbing: Rub a few drops over all exposed skin. Rub in well. Apply to hands then rub on face. Re-application as necessary. Apply as lotion. Apply evenly.

Jacket Directions: Product used as insect repellent and jacket recharging solution

- 1) Place jacket in storage bag and squirt re-charging solution onto jacket.  
Use 10 mL for youth size  
20 mL for S M L and  
25 mL for XL  
Seal bag. Jacket may be used after 4 hours.
- 2) See directions for use with jacket.

**PRECAUTIONS:** Keep out of reach of children. Do not use on infants, or toddlers. Do not take internally. Avoid contact with eyes, lips, and mouth. May cause skin reaction in rare cases, may damage or "will" damage some furniture finishes, plastics, painted or lacquered surfaces, synthetic fabrics or fibers, rayon, dynel, acetate, linoleum. Do not apply near fire or flame, or sparks. Flammable. For external use only. Do not contaminate food or utensils. Do not contaminate any body of water.

Jacket Precautions: Hazardous to smoke when wearing jacket. Jacket is flammable.

- FIRST AID:**
- 1) If in contact with eyes, wash with cold water. If irritation persists call physician immediately.
  - 2) If ingested, call physician immediately. If accidentally swallowed, do not induce vomiting
  - 3) In case of accident call a physician immediately.
  - 4) If in contact with skin may cause a skin irritation (rare). If irritation persists call physician.

**DISPOSAL:** Dispose of empty container in garbage.

## 7. DTU PRESSURIZED PRODUCT

See DMP - PRESSURIZED PRODUCT (DTU+DP4P+MGD+MGK)

8. DTU PRESSURIZED PRODUCT

ACTIVE INGREDIENT: DTU 14.25% + 75%

CLAIMS: Repels black flies, chiggers, deer flies, fleas, flying insects, gnats, mosquitoes, sand flies, shad flies, stable flies, ticks.

DIRECTIONS: Shake well before using. Spray on all exposed skin areas except face. Hold can 15-30 cm. away. Apply a thin uniform film. Spray directly on light clothing, (except rayon, acetate and dynel) tops of shoes, socks, and around neck, wrist, and ankle openings. To apply to face, spray on hands first and spread on face. Repeat as necessary.

PRECAUTIONS: For external use only. Do not apply to infants or toddlers. Keep out of eyes and mouth. Do not spray face as it is a mild eye and lip irritant. Do not spray on plants. May damage furniture finishes, plastics and painted surfaces. Flammable mixture under pressure. Do not place in hot water or near radiators, stoves, or other sources of heat.

Keep away from open flame or spark. Do not puncture or incinerate container, even when empty. Do not store at temperatures over 50EC. Use only as directed. Intentional misuse by deliberately concentrating or inhaling the contents can be harmful or fatal. Keep out of reach of children. Do not allow children to handle container.

FIRST AID: If swallowed obtain medical attention. If in eyes, rinse with water for 15 minutes. See a physician if irritation persists.

DISPOSAL: Replace cap and discard container in garbage.

9. DTU PRESSURIZED PRODUCT

ACTIVE INGREDIENT: EHX 25% + DTU 4.75%

CLAIMS: Keeps blackflies and mosquitoes from biting.

DIRECTIONS: Shake well before using. Point valve toward surface to be sprayed. Hold can upright about 25 cm from surface. Apply sufficient spray to all exposed skin to provide a thin continuous film. To apply to face, spray on hands, then spread on face, avoiding eyes and mouth. Spray on screens to discourage entrance of mosquitoes and black flies. May be applied to clothing.

**PRECAUTIONS:** Pressurized spray. Spray may cause eye injury. Do not spray on face. Do not puncture or incinerate container or store at temperatures over 50EC. Do not use in presence of open flame or spark. Keep out of reach of children. Keep from freezing. Avoid contact with food.

10. DTU PRESSURIZED PRODUCT (spray)

**ACTIVE INGREDIENT:** DTU 10.96% + MGD 1.16-5.00% + MGK 2.3-3.9%

**CLAIMS:** Repels black flies, chiggers, fleas, gnats for hours, mosquitoes, ticks.

**DIRECTIONS:** Hold container upright and spray clothing and exposed skin except face. To apply to face, spray palm of hand and spread evenly on face and neck except near eyes or mouth.

**PRECAUTIONS:** Keep out of reach of children. Do not spray towards eyes or mouth. Do not use on infants or toddlers. Avoid contact with synthetic fabrics.

May damage furniture finishes, plastics, painted surfaces.

Contents under pressure.

Do not place in hot water or near radiators, stoves or other sources of heat. Do not puncture or store at room temperatures over 50EC.

Keep away from open flame or spark. Extremely flammable.

**FIRST AID:** If sprayed in eyes wash with cold water. If irritation persists contact physician.

**DISPOSAL:** Do not incinerate. Dispose of empty container in garbage.

11. DTU SOLID

**ACTIVE INGREDIENT:** DTU 32 - 35%

**CLAIMS:** Provides hours of protection against mosquitoes. Up to 4 hrs.

**DIRECTIONS:** Stick goes on smooth without mess. Rub evenly on all exposed skin.

**PRECAUTIONS:** Avoid eyes, mouth and broken skin. Avoid contact with plastics, rayon, dnyel. Keep out of reach of children. Do not apply on infants or toddlers.

**FIRST AID:** May cause skin irritation. If in eyes, rinse with cold water. If irritation persists, or if ingested, obtain medical assistance.

**DISPOSAL:** Dispose of empty container in household garbage.

12. DTU SOLID

**ACTIVE INGREDIENT:** EHX 56% + DTU 9%

**CLAIMS:** Keeps black flies and mosquitoes from biting.

**DIRECTIONS:** Push up stick 1/2 inch. Apply a thin continuous film to all exposed skin and stockings . Keep away from eyes to avoid smarting.

**PRECAUTIONS:** May be harmful if swallowed. Keep stick out of reach of infants and small children. May stain some fine fabrics. May damage some paints and varnishes.

13. DTU SOLUTION

See CIT - SOLUTION (CIT+DTU)

14. DTU SOLUTION

**ACTIVE INGREDIENT:** DTU 15 - 75%

**CLAIMS:** Repels biting flies, black flies, chiggers, fleas, gnats, insects, midges, mosquitoes, sand flies, stable flies, ticks. Keeps them away for hours.

**DIRECTIONS:** Squeeze bottles: For use on skin and clothing. Shake irlto hands, or squeeze few drops (8-10) onto hands and rub thoroughly over hands, arms, legs, neck, face. Apply lightly to exposed skin.

For external use only. Re-apply as needed. For chiggers and ticks apply on top of shoes and socks and along opening of clothing.



Pump Spray: Hold container upright and spray clothing and exposed skin except face, to provide a thin uniform film. To apply to face, spray palm of hand and spread evenly on face and neck. Re-apply as necessary.

**PRECAUTIONS:** Avoid areas around eyes, mouth and lips. Do not apply near eyes or mouth of humans or pets. May cause eye injury. Do not spray on plants. May damage painted lacquered, or varnished surfaces, plastics, synthetic fabrics, synthetic fibres, such as nylon, rayon, acetate, or dynel. Avoid smearing on goggles, watch crystals, helmets, glasses, eyeglasses, furniture finishes. Do not take internally. Keep out of reach of children. Do not use on infants. Use under well ventilated conditions. Flammable. Keep away from open flame or spark.

Do not contaminate food or utensils. Do not contaminate any body of water. Poison if taken internally.

**FIRST AID:** If swallowed do not induce vomiting. Call a doctor. If splashed in eyes, flush with water. If in contact with lips or eyes flush immediately with plenty of water. For eyes get medical attention.

**DISPOSAL:** Dispose of empty container in garbage.

#### 15. DTU SOLUTION

**ACTIVE INGREDIENTS:** EHX 80% + DTU 10%

**CLAIMS:** Keeps black flies and mosquitoes from biting.

**PRECAUTIONS:** Avoid contact with food. May damage some painted and varnished surfaces, rayon and dynel. Do not take internally. Keep container out of children's reach.

#### 16. DTU SOLUTION (manufacturing, formulating use only)

**ACTIVE INGREDIENT:** DTU 76.92% + MGD 7.7% + MGK 15.38%

**CLAIMS:** Insects

**DIRECTIONS:** Used in the manufacture of insecticides registered under the Pest Control Products Act. This product is to be used at the rate of 32.50% (wt) with appropriate solvents/propellents to manufacture a

liquid or pressurized insect repellent spray. Read technical bulletin for formulation details.

- PRECAUTIONS:** Harmful if swallowed. Causes eye irritation. Avoid contact with skin and eyes. Avoid contact with clothing. Wash thoroughly after handling. Avoid contamination of food stuffs.
- TOXICITY:** This product is toxic to fish and other aquatic animals. Do not contaminate water by cleaning equipment or disposal of wastes.
- FIRST AID:** If swallowed, do not induce vomiting. Call a physician. In case of contact with eyes or skin, flush with plenty of water. See a physician if irritation persists. For eyes get medical attention.
- DISPOSAL:** Rinse the empty container thoroughly and add the rinsings to the formulation tank. Follow provincial instructions for any required additional cleaning of the container prior to reuse or disposal. If required, make the container unsuitable for further use and dispose of in accordance with provincial requirements. For information on the disposal of unused, unwanted product and the cleanup of spills, contact the regional office of Conservation and Protection, Environment Canada.
- STORAGE:** Keep container closed. Mix well in drum before sampling and each use. Store in a cool place. Do not store, pour or spill near heat or open flame.

## IV ETHYLHEXANEDIOL (EHZ)

1. EHX -EMULSIFIABLE CONCENTRATE

See CIT EMULSIFIABLE CONCENTRATE (CIT-DMP-EHX)

2. EHX PRESSURIZED PRODUCT

See DTU - PRESSURIZED PRODUCT (DTU+EHX)

3. EHX PRESSURIZED PRODUCT

ACTIVE INGREDIENT: EHX 20 - 29%

CLAIMS: Repels biting flies, black flies, chiggers, fleas, gnats, mosquitoes, sand flies, ticks.

DIRECTIONS: Spray on exposed skin and clothing where insects are biting through. Spray from a distance of 15-18 cm or more, making sure to spray cuffs, trousers, socks and other openings in clothing. Apply a thin, uniform film. To apply to face: spray palm of hand and spread evenly over face and neck except near eyes and mouth .

PRECAUTIONS: Contents under pressure. Do not puncture or expose to heat in excess of 49EC. Do not use near fire or flame. Keep at room temperatures away from direct sunlight. Keep out of reach of children. Do not spray on rayon or dynel. Do not spray on plants, painted or varnished surfaces. Do not spray on feed or foodstuffs.

DISPOSAL: Never throw container into fire or incinerator; dispose of empty container in garbage.

4. EHX SOLID

See DTU - SOLID (DTU + EHX)

5. EHX SOLUTION

See DTU - SOLUTION (DTU+EHX)

6. EHX SOLUTION

See CIT - SOLUTION (CIT+DMP+EHX)

7. EHX SOLUTION

See DMP - SOLUTION (DMP+EHX)

V CITRONYL (JAC)

1. JAC IMPREGNATED FABRIC

ACTIVE INGREDIENT: JAC 23%

CLAIMS: For protection against biting flies (black flies, deer flies) and mosquitoes. The jacket is lightweight, loose fitting for comfort and has been treated with citronyl, insect repellent. The jackets have no greasy feel and will not stain clothing.

DIRECTIONS: Reusable with storage bag, jacket worn over other garments. The repellent slowly evaporates from the jacket fibre surface, thus providing a low but effective level of repellent around the jacket fibres. Store the jacket in the resealable bag between uses to prolong the repellent life.

PRECAUTIONS: Fabric is flammable. Keep away from open flame or spark. Jacket may damage painted surfaces, plastics and furniture finishes . Store jacket in bag between uses.

2. JAC SOLUTION

ACTIVE INGREDIENT: JAC 50%

CLAIMS: Insect repellent.

DIRECTIONS: For jacket re-treatment only. Dry clean jacket and treat in accordance with instruction sheet in attached resealable bag.

PRECAUTIONS: Not for skin application. Do not use on rayon or dynel. May damage furniture finishes, plastics, and painted surfaces. Avoid contact with eyes. Keep away from open flame or spark. Keep out of reach of children. Harmful if swallowed.

FIRST AID: In case of eye contact, flush with water. If swallowed, contact a physician.

VI OIL OF LAVENDER (LAV)

1. LAV SOLUTION

ACTIVE INGREDIENT: LAV 6%

CLAIMS: Protection against mosquitoes for periods up to 1/2 hour. Repellent  
Pleasant odour.

DIRECTIONS: Use indoors or outdoors. Reapply as necessary for protection. Apply  
a few drops in the palm of the hand and rub on face, neck, arms and all  
exposed parts of the body. Easily washed off with warm soapy water.

PRECAUTIONS: Keep out of reach of children. Harmless to skin and clothing when  
used as directed.