



cerexagri

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October 21, 2002

VIA: United Parcel Service

National Organic Standards Board
c/o Toni Strother, Agricultural Marketing Specialist
USDA/AMS/TM/NOP
Room 4008-S, Ag Stop 0268
1400 Independence Ave., SW
Washington, D.C. 20250-0268

**RE: PETITION FOR THE LISTING OF CRYOLITE ON THE USDA NATIONAL LIST OF
ALLOWED AND PROHIBITED SUBSTANCES**

Dear Ms. Strother:

The Organic Foods Production Act of 1990, as amended, established a National List of Allowed and Prohibited Substances (National List) which identifies the synthetic substances that may be used, and the nonsynthetic substances that cannot be used, in organic production and handling operations. The Act also provides a mechanism to petition the National Organic Standards Board to evaluate a substance for inclusion on or removal from the National List. With this petition, Cerexagri, Inc. requests review of the mineral cryolite for consideration and, if appropriate, listing on the National List of Organic substances for inclusion in the category of:

- (1) Synthetic substances allowed for use in organic crop production

Cryolite (brand name Kryocide®) is a naturally occurring mineral composed of sodium, aluminum, and fluorine. Cryolite has many industrial uses including the manufacture and reprocessing of aluminum and other metals. It is also used as an insecticide in agricultural crop production. In the past, cryolite was mined from deposits located primarily at Ivigtut, Greenland. As these deposits have been depleted, the majority of cryolite is now synthetically produced.

Cryolite was first registered with EPA as a pesticide in the U.S. in 1957. It is currently registered for use as an insecticide on many fruits, vegetables and ornamental crops to protect against leaf eating pests. Cryolite has an ideal fit in organic agriculture. As a mineral, the only residues remaining are basic elements found in nature and it provides long residual control of insect pests. Cryolite acts internally after ingestion and only controls insects that chew on crop foliage. Thus, since it has no contact activity, it does not harm beneficial insects that do not feed on fruit and foliage. Extensive risk assessments have been conducted on cryolite. U.S. EPA published a Reregistration Eligibility Decision document on cryolite in August 1996.

Cerexagri appreciates the time and effort the Department of Agriculture, Agricultural Marketing Services, invests in the review of petitions for organic status. Please contact me at my telephone number or e-mail address listed below if you have any questions about this petition.

Sincerely,

Timothy M. Formella
Manager, Product Registration
Cerexagri, Inc.
Phone: 610-491-2813
Fax: 610-491-2810
E-mail: tim.formella@cerexagri.com

Petition for the Inclusion of Cryolite on the National List of Allowed and Prohibited Substances for Organic Foods Production

With this petition, Cerexagri, Inc. is requesting the evaluation of cryolite for inclusion on the list of:

- (1) Synthetic substances allowed for use in organic crop production

The following information addresses the Department of Agriculture, Agricultural Marketing Services Notice of Guidelines and Call for National List Petitions as described in the July 13, 2000 Federal Register Notification (Volume 65, Number 135, pages 43259 – 43261).

Cryolite for Insect Pest Management

1. The common name for the substance:

Cryolite is a naturally occurring mineral that can be synthetically produced and is composed of the elements sodium, aluminum, and fluorine.

Common name: cryolite

Chemical name: sodium aluminofluoride or sodium aluminum fluoride or sodium hexafluoroaluminate

Chemical family: inorganic fluorine compound

Chemical formula: Na_3AlF_6

CAS number: 15096-52-3

Trade name: Kryocide[®]

2. The manufacturer's name, address, and telephone number.

Cryolite is manufactured and packaged in Japan for Cerexagri, Inc. The product is shipped to the United States under the Cerexagri brand name, Kryocide, and is packaged with the U.S. EPA approved label for agricultural uses.

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Cerexagri, Inc. is a wholly-owned subsidiary of ATOFINA Chemicals, Inc.

Contact: Timothy Formella

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3. The intended or current use of the substance.

Cryolite is a fluorine insecticide used on many fruits, vegetables, and ornamental crops to protect against leaf eating pests. It is EPA registered (Kryocide, EPA Reg. No. 4581-116) for use on Terrestrial Food Crops, Terrestrial Food and Feed Crops, and Terrestrial Non-food Crops and is predominantly used by commercial growers. Cryolite is a naturally occurring mineral that is also synthetically produced.

4. A list of the crops for which the substance will be used as well as the rate and method of application.

Cryolite is EPA registered for use on:

Terrestrial Food Crops – cucurbits (cucumber, melons, all types of squash), fruiting vegetables (eggplant, pepper, broccoli, Brussels sprouts, cabbage, cauliflower, collards, head and leaf lettuce, kohlrabi), and kiwi (in California only)

Terrestrial Food and Feed Crops – grapefruit, lemon, lime, orange, tangelo, tangerines, tomatoes, potatoes, and grapes

Terrestrial Non-food Crops – ornamentals and shade trees

The targeted pests for use of cryolite are: cabbage looper, cutworms, corn earworm, cucumber beetles, diamondback moth caterpillar, diabrotica beetles, flea beetles, imported cabbageworm, yellow-striped armyworm, melonworm, pickleworm, citrus cutworm, fruit-tree leafroller, Fuller rose beetle, garden tortrix, halcocera, katydids, orange tortrix, orangedog, variegated cutworm, blue-green citrus root weevil, climbing cutworms, omnivorous leafroller, grape leafroller, Western grapeleaf skeletonizer, grape berry moth, armyworm, tobacco budworm, hornworms, pepper weevil, Colorado potato beetle, Colorado potato beetle larvae, blister beetles, fruitworms, tomato pinworm, codling moth, gypsy moth, caterpillars, and plum curculio.

Cryolite may be applied as a spray or dust using air or ground application techniques. Application rates range from 8 to 24 pounds of product per acre depending on crop and insect pest. When used as a spray, cryolite is applied in a minimum of 5 gallons of water by air and in a minimum of 10 gallons of water by ground or in sufficient spray volume

to obtain thorough coverage. When used as a dust, cryolite may be applied alone, with dusting sulfur, or other dust products.

Tolerances are established by U.S. EPA for combined residues of the insecticidal fluorine compounds cryolite and synthetic cryolite on many crops including minor and specialty crops. These tolerances are listed at 40 CFR §180.145.

5. The source of the substance and a detailed description of its manufacturing or processing procedures from the basic component(s) to the final product.

Cryolite is a naturally occurring mineral, usually colorless to white or, rarely, brown. It contains approximately 50% fluoride by weight. The only naturally occurring cryolite deposit of commercial size was located at Ivigtut, Greenland but this source has been depleted by mining for industrial use. Current supplies of cryolite (Kryocide) are synthetically produced in Japan from the following starting materials:

NaAlO ₂	sodium aluminate
NH ₄ F	ammonium fluoride
NaOH	sodium hydroxide

Cryolite is formed by allowing a solution of ammonium fluoride to react with a solution of sodium aluminate:



The solutions are combined in a closed Hastelloy reactor at 50 °C for 4 to 5 hours and the precipitated cryolite is separated by filtration. The product is dried in a stainless steel dryer and milled to size. Cryolite technical and the end-use product Kryocide are identical as no additional dispersants, carriers, or inert ingredients are added. The product is shipped, stored, and sold in polyethylene-lined bags that protect it from outside contamination. As an inorganic mineral, which occurs in nature as a mineral deposit, the product is indefinitely stable.

6. A summary of available previous reviews of the petitioned substance by State or private certification programs or other organizations.

Cryolite was petitioned for inclusion under California Assembly Bill No. 2012 as an organic substance in 1992. The California Department of Food and Agriculture Organic Food Advisory Board came to the conclusion that cryolite could not be categorized as an acceptable material. CDFA stated this decision was based on an internal decision that cryolite, as manufactured, was “synthetically compounded” as defined by California law (see CDFA letter dated July 17, 1992 in Attachment 1). Although CDFA determined

cryolite to be “synthetic” based on California law, the molecular structure of the product (Na_3AlF_6) is no different from the mined natural mineral.

7. Information regarding EPA, FDA, and State regulatory authority registrations, including registration numbers.

Cryolite and the end-use product Kryocide are identical as no additional dispersants, carriers, or inert ingredients are added. Cryolite was first registered as a pesticide in the U.S. in 1957. The **EPA Registration Number for Kryocide is 4581-116.**

EPA issued a 1983 Guidance Document and a superseding 1988 Registration Standard requiring environmental, toxicological, and residue data needed to determine the reregistration eligibility of cryolite. A 1990 Data Call-In required additional product-specific data. Cerexagri, Inc. developed and submitted the required data on cryolite and the end-use product Kryocide. EPA subsequently issued a Reregistration Eligibility Decision (RED) document on cryolite in August 1996.

Cryolite (Kryocide) is currently registered for use in all States in the U.S.

8. The Chemical Abstract Service (CAS) Number and labels of products that contain the petitioned substance.

The CAS number for cryolite is 15096-52-3

The EPA registered label for Kryocide, the cryolite end-use product, can be found in Attachment 2.

9. The substance’s physical properties and chemical mode-of-action including:

(a) Chemical interactions with other substances, especially substances used in organic production;

Kryocide may be used in combination with other commonly used pesticides and approved adjuvants. Kryocide may be applied with dusting sulfur, or other dust products.

Kryocide cannot be used in combination with lime or compounds containing free lime due to a chemical incompatibility that can lead to phytotoxicity. In the presence of lime ($\text{Ca}(\text{OH})_2$), cryolite reacts to form calcium fluoride (CaF_2) which can result in plant injury.

(b) Toxicity and environmental persistence;

EPA, as part of its reregistration eligibility assessment evaluated the potential effects of cryolite on the environment and came to the following conclusion. Acute risk is not expected to birds, mammals, aquatic organisms or beneficial insects from exposure to cryolite. Chronic ecological risk also is not expected

because, in the presence of sufficient water, cryolite is quickly converted to near natural background levels of simple inorganic compounds containing its constituent elements (sodium, aluminum, and fluorine). Once cryolite dissolves and penetrates to shallow depths in soil or is transported to natural waters, any minor chemical imbalances caused by its insecticidal application are offset by the mineral buffering capacity of the environment and/or self-correcting agricultural practices (such as calcium applications and pH adjustments to the soil). The Agency also concluded that use of cryolite should have negligible impacts on ground and surface water quality and there should be no difference in the accumulation of aluminum or fluorine moieties in plants or animals.

In addition, a study was conducted in 1997 to determine the potential toxicity of cryolite (Kryocide) to honey bees (*Apis mellifera*) following a 48-hour contact exposure and a 48-hour oral exposure, conducted individually. The results of the study showed the 48-hour LD50 values for both the contact and oral exposures were greater than 23 µg a.i./bee, the highest concentration tested. The No-Observed-Effect Concentration (NOEC) was determined to be 23 µg a.i./bee.

(c) Environmental impacts from its use or manufacture;

The cryolite product Kryocide is manufactured and packaged in Japan following all regional and federal government environmental regulations.

Cryolite's low potential for environmental impact, due to its natural occurring mineral nature, is discussed further in Section 9(b) of this petition under the heading Toxicity and Environmental Persistence.

(d) Effects on human health;

In studies using laboratory animals, cryolite has been shown to be slightly to practically non-toxic on an acute basis. The acute dermal LD50 in rats is 2.1 g/kg, placing cryolite in EPA Toxicity Category III (the second lowest of four categories) for this effect. Cryolite is considered a moderate irritant based on eye irritation studies and is classified in Toxicity Category IV for acute oral exposure, acute inhalation, and skin irritation. Cryolite is classified as a non-sensitizer based on dermal sensitization tests conducted with Guinea pigs.

Cryolite has been classified as a Group "D" chemical, "not classifiable as to human carcinogenicity." It has been the subject of a comprehensive review by the National Research Council (National Academy of Sciences Subcommittee of Health Effects of Ingested Fluoride) who concluded that "...the available data are insufficient to demonstrate a carcinogenic effect of fluoride in animals." and that "...the weight-of-evidence from more than 50 epidemiological studies does not support the hypothesis of an association between fluoride exposure and increased cancer risk in humans." EPA has stated "the Agency is in agreement with the conclusion reached by the National Academy of Sciences."

In the August 1996 RED document EPA assessed the dietary risk posed by cryolite. A qualitative dietary risk assessment was performed to include the daily intake of fluoride from other sources, i.e. fluorinated public water sources. The

Agency concluded that levels of fluoride in/on food from agricultural uses of cryolite plus fluoride levels in U.S. drinking water supplies result in a high-end daily intake of fluoride of approximately 0.085 mg/kg/day. This is less than the Agency's determined Maximum Concentration Limit Goal (MCLG) of 4.0 mg/L [0.114 mg/kg/day], a level which provides no known or anticipated adverse health effects. The MCLG has been reviewed and is supported by the Surgeon General.

(e) Effects on soil organisms, crops, or livestock;

A study was conducted by Cerexagri, Inc. in 1998 to determine the acute toxicity (LC50) of cryolite (Kryocide) to the earthworm (*Eisenia foetida*) in soil medium during a 14-day exposure period. Since no concentration tested resulted in $\geq 50\%$ mortality, the 14-day LC50 value for cryolite and earthworms was empirically estimated to be > 1000 mg a.i./kg, the highest concentration tested. The No-Observed-Effect Concentration (NOEC) for this study was determined to be 1000 mg a.i./kg.

Cryolite (Kryocide) has been evaluated for efficacy and potential for phytotoxicity on the crops listed on the EPA registered label. In all cases, cryolite has been found to be nontoxic to plant species.

Cryolite has low mammalian toxicity and is safe to livestock. EPA in its reregistration assessments concluded there is no reasonable expectation of finite fluoride residues in ruminant or poultry tissues as a result of livestock ingestion of cryolite. Therefore, tolerances for cryolite residues in meat, milk, poultry, and eggs are not required.

10. Safety information about the substance.

A Material Safety Data Sheet (MSDS) is attached in Attachment 3. A substance report from the National Institute of Environmental Health Studies is not available.

11. Research information about the substance that includes comprehensive substance research reviews and research bibliographies, including reviews and bibliographies that present contrasting positions to those presented by the petitioner in supporting the substance's inclusion on or removal from the National List.

Cerexagri, Inc. has conducted and provided EPA many individual cryolite studies in support of the registration of this insecticidal product. These data include studies on product chemistry, toxicity, residue chemistry, and environmental fate. All of the submitted studies are discussed in the Agency's Reregistration Eligibility Decision document published in August 1996 and referenced below.

1. United States Environmental Protection Agency (1996), Reregistration Eligibility Decision (RED) – Cryolite, EPA-738-R-96-016, August 1996

2. United States Department of Health and Human Services, National Institute of Health (1990). Technical Report Series No. 393. Toxicology and Carcinogenesis Studies of Sodium Fluoride (CAS No. 7681-49-4) in F344/N Rats and B6C3F1 Mice (Drinking Water Studies). National Toxicology Program, Research Triangle Park, NC, NIH Publication No. 91-2848.

12. A “Petition Justification Statement” which provides justification for the inclusion of cryolite on the National List.

Cryolite (brand name Kryocide) has an ideal fit in organic agriculture. As a mineral, the only residues remaining are natural elements found in nature. It is a stomach poison and acts internally to control only those insects that chew on crop foliage and ingest the cryolite. Thus, since it has no contact activity, it does not harm beneficial insects that do not feed on fruit and foliage. In addition, it provides long residual control of insect pests and has little or no chance of resistance development (evidenced by the fact that cryolite has been used as a commercial insecticide since 1932).

Other insecticides approved for use in organic agriculture are pyrethrum, quassia, rotenone, ryania, sabadilla, Bt's, and pheromones. Pyrethrum, quassia, rotenone, ryania, and sabadilla are botanical extracts and are much less selective than cryolite. Timing of application is important for preservation of beneficial insects. These materials are very sensitive to ultra-violet light and break down quickly in sunlight. Thus, residual control is not long lasting and repeat applications are required. Cryolite can provide longer control with fewer applications and is less toxic to beneficial insects as well as applicators.

Bt's are synthetically fermented bacteria that are effective insect pathogens but like the botanicals are subject to ultra-violet degradation and thus, have short residual control. Evidence is mounting that Bt's are susceptible to resistance development in insect pests. Having cryolite available as an alternative and for use in rotation will greatly reduce the potential for development of resistance. In addition, Bt strains control either worms (lepidoptera) or beetles (coleoptera) but not both. Cryolite has activity on both worms and beetles yet is as safe on beneficial insects as the Bt's. This additional spectrum can be very beneficial to organic growers.

Pheromones are synthetically manufactured sex attractant molecules derived from natural molecules produced by insects. Although effectively utilized in many crops, there are few or none available for use on certain insect pests and some crops such as vegetables.

The use of cryolite is not being proposed so much as an alternative to these approved products but as an adjunct to them. The greater residual control of cryolite can extend intervals of application for these other materials. Cryolite can help limit impacts of contact activity on beneficials from botanicals. Cryolite use in combination or rotation with these materials can enhance the sustainability of the system by greatly reducing the potential for the development of resistance to any of these other materials.

As a mineral consisting of natural elements, the environmental and human risks from cryolite are as benign as the botanicals or Bt's. The elements remaining from the degradation of cryolite simply combine as new salts and minerals in the soil to be utilized by the flora and fauna as part of the natural ecosystem.

ATTACHMENT 1

STATE OF CALIFORNIA

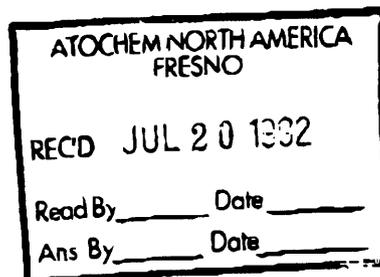
PETE WILSON, Governor

DEPARTMENT OF FOOD AND AGRICULTURE



1220 N Street
P.O. Box 942871
Sacramento, CA 94271-0001

July 17, 1992



Dr. Roy S. Whitson, Ph.D.
Southwest Field Development Rep
Atochem North America, Inc.
516 W. Shaw Avenue, Suite 107
Fresno, CA 93704

Dear Dr. Whitson:

In your letter of June 5, 1992, you asked me to overrule the Organic Food Advisory Board's decision to prohibit the use of your manufactured CRYOLITE in organic agriculture.

After consultation with numerous members of my staff who reviewed your product and the existing organic law, we believe that in the manufacturing of your product it was "synthetically compounded" as defined in current law.

In your product the original components of the active ingredient (sodium, aluminum, fluorine) were "chemically changed" as part of the manufacturing process to create the compound sodium fluoaluminate. Therefore, based upon the criteria established in Section 26569.21(p)(3)(t) of the Health and Safety Code (enclosed), synthetically produced sodium fluoaluminate would not be categorized as an acceptable material.

In conclusion, it appears that it would take a legislative amendment to the present law to permit the use of your product in organic agriculture.

Thank you for your interest in the State's organic agriculture industry.

Sincerely,

Henry J. Voss
Director
(916) 654-0433

Enclosure

ATTACHMENT 2



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KRYOCIDE[®]

INSECTICIDE

ACTIVE INGREDIENT:

Cryolite: sodium aluminofluoride (Fluorine—not less than 50%) 96.0%

OTHER INGREDIENTS: 4.0%

TOTAL 100.0%

KEEP OUT OF REACH OF CHILDREN

CAUTION

HARMFUL IF SWALLOWED, ABSORBED THROUGH SKIN OR INHALED. CAUSES MODERATE EYE IRRITATION.

FIRST AID:

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

For additional Precautionary Statements, Directions for Use refer to inside panel.

EPA Registration No. 4581-116

EPA Establishment No. 33770-JP-01

Net Weight _____

Cerexagri, Inc.

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PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)

CAUTION

HARMFUL IF SWALLOWED, ABSORBED THROUGH SKIN, OR INHALED. CAUSES MODERATE EYE IRRITATION. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist.

Personal Protective Equipment:

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations:

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

GENERAL INFORMATION

KRYOCIDE is a fine powder suitable for spray or dust application by ground equipment or air. A thorough application should be made, covering the underside of the leaves, if possible, as well as the top surfaces. Some processors may have additional use restrictions. Check with your processor. This product is compatible with Integrated Pest Management (IPM) Programs.

KRYOCIDE is recommended for control of the insects on the crops listed. KRYOCIDE may be used in combination with other commonly used pesticides and approved adjuvants.

NOTE: Do not use KRYOCIDE in combination with lime or compounds containing free lime.

Remove visible residues on edible portions of fruit and vegetables by washing, brushing, field trimming, or other effective means.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

DIRECTIONS FOR USE ON VEGETABLE AND FRUIT CROPS

When used as a spray: Apply in a minimum of 5 gallons of water by air and in a minimum of 10 gallons of water by ground or in sufficient spray volume to obtain thorough coverage.

When used as a dust: May be applied alone, with dusting sulfur, or other dust products. When applied in combination with sulfur or other dusting products, the label directions, and restrictions appearing on the other products labels must be adhered to such that the most restrictive of label limitations and restrictions is followed.

When used as a spray or dust: Apply when insects are small (early instar). Use the higher rates for severe insect infestations.

Spray Drift Labeling

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses, or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed $\frac{1}{4}$ the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the airstream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed. The applicator should be familiar with and take into account the information covered in the [Aerial Drift Reduction Advisory Information](#).

Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

Controlling Droplet Size

Volume: Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

Pressure: Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

Number of Nozzles: Use the minimum number of nozzles that provide uniform coverage.

Nozzle Orientation: Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.

Nozzle Type: Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length

For some use patterns, reducing the effective boom length to less than ¾ of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height

Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a cross-wind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind

Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from sensitive areas).

CROP	INSECTS	SPRAY or DUST RATE LBS/A	REMARKS
Collards	Cabbage Looper Cutworms Corn Earworm Diabrotica Beetles Diamondback Moth Caterpillar Flea Beetles Imported Cabbageworm Yellowstriped Armyworm	8-16	Apply as needed with a minimum of 10 days between applications. Do not exceed 96 lbs. per acre per season. Do not apply within 14 days of harvest.
Citrus	Citrus Cutworm Fruitree Leafroller Fuller Rose Beetle Garden Tortrix Halcocera Katydids Orange Tortrix Orangedog Variegated Cutworm Blue Green Citrus Root Weevil†	8-20	Apply as needed with a minimum of 30 days between applications. Do not exceed 90 lbs. per acre per season. Do not apply within 15 days of harvest.
Grapes	Flea Beetles Climbing Cutworms	4-10	Apply as needed with a minimum of 21 days between applications. When needed to control later broods, make additional applications after the fruit is ¼" or larger in diameter. Do not apply more than 20 lbs. per acre for preharvest use per crop year. Do not apply within 30 days of harvest. For application to grapes grown for table use after the fruit is ¼" or larger in diameter, use of concentrate sprays will reduce visible spots which may result from the use of dilute applications at that stage. If used on wine grapes or grapes that may be sold to a winery for export, please observe their restrictions on post-bloom applications of KRYOCIDE.
	Omnivorous Leafroller Yellowstriped Armyworm	6-10	
	Grape Leafroller Orange Tortrix Western Grapeleaf Skeletonizer Grape Berry Moth†	5-8	
Grapevines (after harvest)	Cutworms Grape Leafroller Omnivorous Leafroller Orange Tortrix Western Grapeleaf Skeletonizer Grape Berry Moth†	5-8	For control of leaf feeding insects after all harvestable fruit or raisins have been removed from the vineyard. Apply before leaf drop while insects are actively feeding. Do not exceed 8 lbs. per acre per season for post harvest use.
Kiwi FOR USE IN CALIFORNIA ONLY	Omnivorous Leafroller	10	Apply with ground equipment only. When used as a spray, use sufficient water to obtain thorough coverage, up to 200 gallons spray per acre. Apply as needed with a minimum of 15 days between applications. Do not exceed 40 lbs. per acre per season. Do not apply within 30 days of harvest.
Lettuce (leaf and head varieties)	Armyworm Cabbage Looper Corn Earworm Tobacco Budworm	8-20	Apply as needed with a minimum of 7 days between applications. Do not exceed 160 lbs. per acre per season. Do not apply within 14 days of harvest.
Peppers	Hornworms Pepper Weevil Omnivorous Leafroller	8-12	Apply as needed with a minimum of 7 days between applications. Do not exceed 24 lbs. per acre per crop. Do not apply within 14 days of harvest.
Potatoes†	Colorado Potato Beetle	10-12	For spray applications: Apply by air in 5-15 gallons of water per acre or by ground in 15-100 gallons of water. Apply with a minimum of 7 days between applications. Do not apply more than 96 lbs. per acre per season. Application to exposed tubers may result in excess residues.
Tomatoes, Eggplant†	Colorado Potato Beetle Larvae† Blister Beetles Cabbage Looper Flea Beetles Fruitworms Hornworms Tomato Pinworm	8-16	Apply as needed with a minimum of 7 days between applications. Do not exceed 64 lbs. per acre per season. Do not apply within 14 days of harvest.

† Not registered for this use in California.

CROP	INSECTS	SPRAY or DUST RATE LBS/A	REMARKS
Broccoli, Cabbage, Cauliflower, Brussels sprouts†, Kohlrabi†	Cabbage Looper Cutworms Corn Earworm Diabrotica Beetles Diamondback Moth Caterpillar Flea Beetles Imported Cabbageworm Yellowstriped Armyworm	8-16	Apply as needed with a minimum of 14 days between applications. Do not exceed 96 lbs. per acre per season. Do not apply within 14 days of harvest.
Cucumber	Cabbage Looper Diabrotica Beetles Cucumber Beetles Flea Beetles Melonworm Pickworm	8-12	Apply as needed with a minimum of 10 days between applications. Do not exceed 48 lbs. per acre per season. Do not apply within 14 days of harvest.
Squash, Melons	Cabbage Looper Diabrotica Beetles Cucumber Beetles Flea Beetles Melonworm Pickworm	8-16	Apply as needed with a minimum of 7 days between applications. Do not exceed 64 lbs. per acre per season. Do not apply within 14 days of harvest.

† Not registered for this use in California.

DIRECTIONS FOR USE ON ORNAMENTALS

CROP	INSECTS	SPRAY or DUST RATE LBS/A	REMARKS
Ornamentals, Shade Trees	Codling Moth Flea Beetles Fuller Rose Beetle Gypsy Moth Caterpillars Katydids Plum Curculio Leafrollers	8-24	For Spray Applications: Apply in a minimum of 5 gallons of water by air and in a minimum of 10 gallons of water by ground. Use sufficient water volume to obtain thorough coverage of the plants. For Spray or Dust Applications: Use the higher rate for severe insect infestations.

**DIRECTIONS FOR USE THROUGH CHEMIGATION SYSTEMS
NOT FOR THIS USE IN CALIFORNIA**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Observe all applicable precautions and limitations on the Federal label. The label must be in the possession of the user at the time of pesticide application.

GENERAL INSTRUCTIONS

Apply this product only through sprinkler irrigation systems including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have any questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts.

A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Do not connect chemigation system to any public water system. Public water system means a system for the provision of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

SYSTEM REQUIREMENTS

Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

APPLICATION INSTRUCTIONS

Observe the requirements in the System Requirements section above.

Apply KRYOCIDE only through systems containing anti-syphon and check valves designed to prevent water source contamination or overflow of the mix tank and containing interlocking controls between the metering device and the water pump to insure simultaneous shutoff.

Maintain a gentle continuous agitation in mix tank during mixing and application to assure a uniform suspension.

Greater accuracy in calibration and distribution will be achieved by injecting a larger volume of a more dilute suspension per unit time.

Application of more than recommended quantities of irrigation water per acre may result in decreased product performance.

Do not apply when wind speed favors drift, when system connections or fittings leak, when nozzles do not provide uniform distribution or when lines containing the product cannot be flushed and must be dismantled and drained. In a center pivot system, block the nozzle set nearest the well/pivot/injection unit to prevent spray being applied to this area.

Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water.

SPRAY PREPARATION

Remove scale, pesticide residues, and other foreign matter from the chemical tank and entire injector system. Flush with clean water. Prepare a suspension of KRYOCIDE in a mix tank. Fill the tank with 1/2 or 3/4 the desired amount of water. Start mechanical or hydraulic agitation. Slowly add the required amount of KRYOCIDE and then the remaining volume of water.

Sprinkler Irrigation - Notes

Observe all System Requirements and Application Instructions above.

Set sprinkler system to deliver 0.1 to 1.25 inches of water per acre. Volumes of water higher than this may reduce efficacy. Start sprinkler and then uniformly inject the suspension of KRYOCIDE into the irrigation water line so as to deliver the desired rate per acre. The suspension of KRYOCIDE should be injected with a positive displacement pump into the main line ahead of a right angle turn to insure adequate mixing. When treatment with KRYOCIDE has been completed, do not irrigate the treated area for 24 to 48 hours to prevent washing the chemical off the crop.

Do not apply when wind speed favors drift beyond the area intended for treatment.

Where sprinkler distributed patterns do not overlap sufficiently, unacceptable pest control may result.

Check local restrictions and requirements regarding sprinkler irrigation applications, as they may vary from state to state.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Storage Instructions: Store in the original container in a dry area. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. If spilled during storage or handling sweep up spillage and dispose of in accordance with the Pesticide Disposal Instructions listed below.

Pesticide Disposal Instructions: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal Instructions: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

EMERGENCY TELEPHONE NUMBERS:
CHEMTREC: (800) 424-9300 • MEDICAL: (303) 623-5716
Rocky Mountain Poison Control Center

WARRANTY AND DISCLAIMER

Cerexagri, Inc. warrants that this material conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the Directions for Use, subject to the risks referred to therein. CEREXAGRI MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY. IN NO CASE SHALL CEREXAGRI OR SELLER BE LIABLE FOR CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, BUSINESS REPUTATION, OR CUSTOMERS; LABOR COST; OR OTHER EXPENSES INCURRED IN PLANTING OR HARVESTING.

Cerexagri and seller offer this product and the buyer and user accept it subject to the foregoing conditions of sale and warranty which may be varied only by agreement in writing signed by a duly authorized representative of Cerexagri.

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ATTACHMENT 3



cerexagri

KRYOCIDE Insecticide

Material Safety Data Sheet

Cerexagri, Inc.

1 PRODUCT AND COMPANY IDENTIFICATION

Agrichemicals Group

Cerexagri, Inc.
630 Freedom Business Center, Suite 402
King of Prussia, PA 19406

EMERGENCY PHONE NUMBERS:

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(303) 623-5716 (24Hrs)

Information Telephone Numbers	Phone Number	Available Hrs
R&D Technical Service	610-878-6100	8:00am to 5:00pm EST
Customer Service	1-800-438-6071	8:00am - 5:00 pm EST

Product Name KRYOCIDE Insecticide
Product Synonym(s)

Chemical Family Inorganic Fluoride
Chemical Formula Na₃(AlF₆)
Chemical Name Trisodium hexafluoroaluminate
EPA Reg Num 4581-116
Product Use Controls insects on crops

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical Wt. %	OSHA
Sodium fluoroaluminate	15096-52-3	>94	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Communication Standard (29 CFR 1910.1200)

The components of this product are all on the TSCA inventory list.

3 HAZARDS IDENTIFICATION

Emergency Overview

Odorless white to off-white or tan crystalline powder.

CAUTION!

KEEP OUT OF REACH OF CHILDREN.

HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.

CAUSES KIDNEY AND BONE DAMAGE

CAUSES EYE IRRITATION.

Avoid contact with eyes, skin and clothing.

Avoid breathing mist. Avoid breathing spray mist or dust.

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on single exposure animal tests, it is considered to be practically non-toxic if swallowed, no more than slightly toxic if absorbed through skin, slightly toxic if inhaled, non-irritating to skin and moderately irritating to eyes. Severe or repeated exposure may cause kidney damage and bone effects including joint pain, tooth erosion and discoloration. Medical conditions aggravated by exposure to this material include kidney disease.



KRYOCIDE Insecticide

Material Safety Data Sheet

Cerexagri, Inc.

4 FIRST AID MEASURES

IF IN EYES,

- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- Call a poison control center or doctor for treatment advice.

IF ON SKIN, immediately wash with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

IF SWALLOWED,

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

IF INHALED,

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties

Auto-Ignition Temperature	N/A	
Flash Point	N/A	Flash Point Method
Flammable Limits- Upper	N/A	
Lower	N/A	

Extinguishing Media

Use water spray, carbon dioxide, foam or dry chemical.

Fire Fighting Instructions

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

None known.



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6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Contain spill. Sweep or scoop up and remove to suitable container. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7 HANDLING AND STORAGE

Handling

Do not breathe dust.

Wash thoroughly after handling. Do not get in eyes, on skin or on clothing. Keep container closed.

Empty container may contain hazardous residues.

KEEP OUT OF REACH OF CHILDREN.

Storage

This material is not hazardous under normal storage conditions; however, material should be stored in closed containers, in a secure area to prevent container damage and subsequent spillage. Store in a cool, dry place. Do not store in a manner where cross-contamination with pesticides, fertilizers, food or feed could occur.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to minimize exposures. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Eye / Face Protection

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

Skin Protection

Minimize skin contamination by following good industrial hygiene practice. Wearing rubber gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

Respiratory Protection

Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Airborne Exposure Guidelines for Ingredients

Exposure Limit		Value
Sodium fluoroaluminate		
ACGIH TWA	-Fluoride, as F	2.5 mg/m ³
ACGIH TWA	-Soluble aluminum salt, as Al	2 mg/m ³
OSHA TWA PEL	-Fluoride, as F	2.5 mg/m ³
OSHA TWA PEL	-as Al total dust	15 mg/m ³



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Sodium fluoroaluminate

OSHA TWA PEL -as Al total dust respirable 5 mg/m3

- Only those components with exposure limits are printed in this section.
- Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.
- ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.
- WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Odorless white to off-white or tan crystalline powder.
pH	Neutral
Specific Gravity	0.790 g/ml
Vapor Pressure	N/A
Vapor Density	N/A
Melting Point	>960 C
Freezing Point	N/A
Boiling Point	N/A
Solubility In Water	0.42 g/L
Evaporation Rate	N/A
Percent Volatile	N/A

10 STABILITY AND REACTIVITY

Stability

This material is chemically stable under normal and anticipated storage and handling conditions.

Hazardous Polymerization

Does not occur.

Incompatibility

N/A

Hazardous Decomposition Products

N/A

11 TOXICOLOGICAL INFORMATION

Toxicological Information

Data on this material and/or its components are summarized below. Fluorides
The estimated lethal dose by ingestion in humans is 50 mg/kg (as F). Long-term overexposure to fluorides results from excessive deposition in bone which is the primary target organ. Dental fluorosis typically results in staining and pitting of teeth in humans with fluoride concentrations in the drinking water greater than 2 ppm. At higher fluoride levels in the drinking water (greater than 10 ppm), skeletal fluorosis and osteosclerosis have been observed. Epidemiology studies of human populations exposed to fluoride in the drinking water have not



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11 TOXICOLOGICAL INFORMATION

shown any evidence for an increase in cancer or birth defects. Repeated oral dose exposures to rats and mice have resulted in skeletal and dental fluorosis, kidney damage, and liver damage in rats. Chronic (2-year) studies conducted by the National Toxicology Program (NTP) with sodium fluoride administered in the drinking water of rats and mice were considered to present equivocal evidence of carcinogenic activity in male rats based on an increased incidence of osteosarcoma as compared to historical controls. No evidence for carcinogenicity in female rats and mice was found. Adverse developmental effects were not evident in animal studies. The reproductive effects of fluoride are equivocal: Infertility was noted in female mice from an oral reproduction study but only at a dose level associated with excessive systemic toxicity. A reduction in fertility has been reported in male rats in one study but no effects on fertility were observed over three generations in mice fed sodium fluoride in the diet. In several studies with both rats and mice, no adverse effects were noted on sperm morphology or DNA damage. Sodium fluoride has generally produced no genetic changes in standard tests using bacterial cells. Both positive and negative responses have been reported in assays using animals and animal cells. Fluoride is readily absorbed in the lungs from inhalation and in the gastrointestinal tract. Both uptake in bone and urinary excretion are rapid processes. Daily retention in bone of increased amounts of fluoride intake is estimated to be 50%. If intake is reduced, a two-phase resorption of fluoride from bone occurs with a rapid process on the order of weeks and a slower phase with a half-life of 8 years.

Sodium fluoroaluminate

Single exposure (acute) studies indicate that this material is practically non-toxic if swallowed (rat LD50 >5,000 mg/kg), no more than slightly toxic if absorbed through skin (rabbit LD50 >2,100 mg/kg), slightly toxic if inhaled (rat 4-hr LC50 between 2 and 5 mg/l), non-irritating to rabbit skin and moderately irritating to rabbit eyes.

No skin allergy was observed in guinea pigs following repeated exposure. Repeated dietary exposure in rats produced accumulation of fluoride in the bones and effects on the teeth, stomach and kidneys. Repeated application to the skin of rabbits produced reduced weight gain. A long-term feeding study in dogs produced effects on blood parameters, bone marrow and the kidneys. No birth defects were observed in the offspring of rats exposed orally during pregnancy. Birth defects were observed in the offspring of mice exposed orally during pregnancy at doses which produced adverse effects in the mothers. No genetic changes were observed in tests using bacteria. Both positive and negative results were seen in tests using animals.

12 ECOLOGICAL INFORMATION

Ecotoxicological Information

Data on this material and/or its components are summarized below.

Fluorides

The ecological effects of fluorides have been summarized in the IPCS Environmental Health Criteria document on fluorine and fluorides. Generally, fluoride is no more than slightly toxic to freshwater and marine fish and freshwater and marine invertebrates (acute LC50 values >100 mg/l). Trout fry appeared to be the most sensitive species with an LC50 range of 6-15 mg/l when exposed for 10 days. There are no reports of adverse effects in wild birds and domestic fowl can tolerate levels up to 300 mg/kg without adverse effects. Honeybees have been reported to be affected in areas with fluoride emission sources, and slight damage may result to plants with excessive levels of fluoride in the air and soil.

This material is moderately to slightly toxic to *Daphnia pulex* (48-hr EC50 7.6-13.0 mg/l), slightly toxic to rainbow trout (96-hr LC50 47.0 mg/l), and practically non-toxic to bluegill (96-hr LC50 >400 mg/l). The oral LD50 for bobwhite quail is >2,150 mg/kg.

Chemical Fate Information

Data on this material and/or its components are summarized below.

Fluorides



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12 ECOLOGICAL INFORMATION

The bioavailability of fluoride is largely dependent on the media and the presence of aluminum or calcium which form stable mineral complexes. Fluoride is naturally present in groundwater and seawater and in soil. Naturally occurring levels are commonly found in the range of 0.01-0.3 mg/l in surface water and up to 25 mg/l in ground water. Average soil concentrations for fluoride are generally in the range of 200-400 mg/kg.

13 DISPOSAL CONSIDERATIONS

Waste Disposal

Recover, reclaim or recycle when practical. Dispose of in accordance with federal, state and local regulations.

14 TRANSPORT INFORMATION

DOT Name Not Regulated by DOT
DOT Technical Name
DOT Hazard Class
UN Number
DOT Packing Group PG
RQ

15 REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

Immediate (Acute) Health	Y	Fire	N
Delayed (Chronic) Health	Y	Reactive	N
		Sudden Release of Pressure	N

The components of this product are all on the TSCA inventory list.

Ingredient Related Regulatory Information:

SARA Reportable Quantities

Sodium fluoroaluminate

CERCLA RQ

NE

SARA TPQ

NE

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

Sodium fluoroaluminate

Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

Sodium fluoroaluminate

16 OTHER INFORMATION



KRYOCIDE Insecticide

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Revision Information

Revision Date 07 SEP 2001 Revision Number 5
Supercedes Revision Dated 31-AUG-2001

Revision Summary

Updated due to changes in regulatory information.

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark

Miscellaneous

Stability - not photochemically reactive; stable at temperatures <0C to 54 C; does not react with metals within this temperature range.

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