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FEB -7 1996

Dr. Peter I. Joseph, M.D.  
Deputy Director  
NSDA/AHHS/BPEP  
Unit 150  
4700 River Road  
Riverdale, MD 20737

Dear Dr. Joseph:

Subject: Zinc Phosphide Concentrate for Rodent and Insect  
Control  
EPA Registration No. 56222-6  
Revised labeling submitted April 7, 1995, in response  
to EPA letter dated January 9, 1995

The revised proposed labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, and pursuant to E.O. Notice 94-7, is acceptable provided that you modify the labeling as indicated below.

1. The proposed new name for this product -- "ZINC PHOSPHIDE CONCENTRATE FOR RODENT AND INSECT CONTROL" -- is acceptable.
2. In the claim statement which appears on the center panel of the first page of labeling, change "norway" to "Norway" and "polynesian" to "Polynesian".
3. Delete the "adjuvants and adhesives" paragraph which appears in the introductory portion of the "DIRECTIONS FOR USE" at the bottom of the right panel of the first page of the label. Information concerning what is known concerning alternative adhesives and adjuvants that do not adversely affect bait effectiveness may be proposed for inclusion in the paragraphs of the "MIXING DIRECTIONS" for type(s) of baits in which the substances are appropriate alternative ingredients. The information in the "MIXING DIRECTIONS" is supposed to describe

CONCURRENCES

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DATE	2/7/96							

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the optimum recipes for making baits of various types from this concentrate. If such is not the case, the "MIXING DIRECTIONS" should be amended to make it so. To precede the "MIXING DIRECTIONS" with text which implies that the section on how to prepare baits should not be taken very seriously seems to us to be inappropriate.

4. Make the changes listed below to the "MIXING DIRECTIONS".
  - a. Change the parenthetical text immediately following "MEAT BAITs" to read
 

"(ground meat, canned dog or cat food, and/or dry meat-based pet food)".
  - b. Delete the following from the list of materials from which "FRUIT OR VEGETABLE BAITs" can be made: "dandelions", "grapes", "mulberry", "figs", "apricots", and "nuts". These categories are too vague in description, too likely to be resemble with human foods, and/or to lack a sufficient data base establishing them as appropriate carriers for baits used to control the vertebrate pests listed on the proposed revised label. Some of these items are not covered well by the proposed mixing directions for this category of baits.
 

The proposed directions for making "FRUIT OR VEGETABLE BAITs" have been dichotomized, without subheadings, into instructions for making prebait and toxic bait. It appears that the concentrate is to be added to mixed prebait, rather than to the vegetable oil prior to its being mixed with the chosed fruit or vegetable. If the latter direction was intended, this portion of the "MIXING DIRECTIONS" must be revised to indicate the correct order in which ingredients are to be mixed with one another.
5. Make the changes listed below to the directions for "VOLFS AND WHITE-FOOTED MICE IN ORCHARDS, GROVES, NURSERIES, VINYARDS, AND NONPREPARING FRUIT TREES".
  - a. Change "barely" to "barley" in the second paragraph of the "USE RESTRICTIONS".
  - b. Change "at 2 foot or more intervals" to "at intervals of 2 feet or more" under the directions for "HAND BAITING" with "Fruit Baits".
  - c. In first sentence of "GROUND BROADCAST BAITING" directions, insert a comma between "trees" and "broadcast".
6. Make the changes listed below to the directions for "VOLFS AND WHITE-FOOTED MICE IN PASTURES, RANGELANDS, AND REFORESTATION AREAS".

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- a. Change "barely" to "barley" in the second paragraph of the "USE RESTRICTIONS".
  - b. Delete "by" from second sentence of the directions for "TRAIL BUILDER BAITING".
7. Make the change listed below to the directions for "VOLES AND WHITE-FOOTED MICE IN LAWNS, GOLF COURSES, NURSERIES, AND NONCROP AREAS".
- a. Change "barely" to "barley" in the second paragraph of the "USE RESTRICTIONS".
8. Make the changes listed below to the directions for "WOODRATS".
- a. In the opening phrase of "USE RESTRICTIONS", change "right-of-ways" to "rights-of-way".
  - b. Under "BAITING" "In Rural Agricultural Buildings", replace period after "woodrat activity" with a comma so that the "if you are able . . ." text is part of the first sentence of this subsection.
9. Make the changes listed below to the directions for "MUSKRATS AND NUTRIA".
- a. In the opening phrase of "USE RESTRICTIONS", insert "or" between "milo" and "corn crops".
  - b. Change second full sentence under "USE RESTRICTIONS" to read  

"Do not apply baits where nontarget species might be adversely affected."
  - c. Extend the first sentence of the "BAITING" directions for "Small Rafts and Ground Placements" to read  

"Once prebaits have been eaten, apply 4 pieces of toxic bait per raft or ground placement."
- We apologize for our errors in the directions that we gave you for the "MUSKRAT AND NUTRIA" directions.
10. Make the changes indicated below to the directions for "GROUND SQUIRRELS"
- a. Alter the opening phrase of "USE RESTRICTIONS" as indicated below.
    - (1) Change "antelope ground" to "whitetail antelope squirrel".

- (2) Note that the full Genus name "Spermophilus" may be abbreviated as "S." for all species except the first in the list (Townsend's ground squirrel) for which it is use.
- (3) Capitalize first letters of common names for claimed pests only when they begin a sentence (not applicable in this case) or when the first word in the common name is a proper noun (e.g., Uinta) or a possessive thereof (e.g., Franklin's).
- (4) Change "crop rights-of-way" to "noncrop rights-of-way".

b. To the end of the third paragraph of "USE RESTRICTIONS", add the sentence

"Grain baits are not recommended for controlling Belding's ground squirrel."

11. Make the change indicated below to the directions for "PRAIRIE DOGS".

a. In third sentence of "PREBAITING" directions, change "gram" to "grams".

The comments listed below pertain to efficacy requirements for certain claims which appear on the revised proposed label.

- 1. At the time of the next reregistration of Zinc Phosphide, we expect to require submission or citation of efficacy data which support all public health claims which appear on the label for end-use products. For this product, the public health claims include those pertaining to commensal rodents, Peromyscus spp., and ground squirrels. Data supporting the Peromyscus spp. claims are required now as a condition of the acceptance of your new labeling (see below). Some "bridging" of claims across species may be possible with large Genera such as Peromyscus and Spermophilus, but we will need to see data on a number of different types of ground squirrels which are important pests and/or sufficiently distinct in food selection or other factors to appear to limit the extent of data "bridging" that would be appropriate. At minimum, we expect to require data for the following types: Ammospermophilus leucurus, S. beecheyi, S. richardsonii, S. lateralis, S. columbianus, and S. variegatus, at least). We suspect that there available data may be adequate to support claims for control of some of these types, if the data are submitted or cited.
- 2. We have reviewed your comments and supporting document regarding your desire to have us consider the results of a laboratory efficacy test as being sufficient to support claims for control of Peromyscus spp. We have concluded, however, that field trials

still are needed. Although some method development and product testing work was done with Peromyscus mice at our old Beltsville facility, we do not feel that we established a link between the results of laboratory and field trials sufficient to allow the former to be used in lieu of the latter. We also were unable to locate any data in our files from the Beltsville facility which support the Peromyscus claims proposed for this product.

We share your concern about the special procedures and potential hazards of working with Peromyscus spp. in the 1990's and would not expect you to conduct field trials in areas where there is any known or suspected incidence of fatal or serious diseases vectored by these mice. Any relevant data from field trials that already have been run with Zinc Phosphide baits used to control Peromyscus spp. may be submitted or cited to address these claims.

- 3. We have considered your points with respect to data requirement for the control of Microtus spp. in and around buildings. We have concluded that, if cited, existing efficacy data from field trials of Zinc Phosphide baits used to control these animals would be adequate to support claims for their control in commensal situations. If you find that Microtine voles are not encountered in commensal situations to any, we expect that you will propose to remove these claims from this product's label.

We were unable to locate data in our files from the Beltsville facility which showed good performance of Zinc Phosphide baits in laboratory efficacy trials.

- 4. The new labeling of this product authorizes use of many different types of baits which, as the product may be sold or distributed only as concentrate, the user must prepare personally in order to control an enormous number of pests in a broad range of sites. While you have stressed a need for users to have flexibility in selecting baits to meet local conditions, we are concerned that there might be a significant amount of bad advice floating around on this product's label through all of the possible bait-species-site combinations presented. Therefore, we urge you to revisit this label annually with your personnel to determine which baits have and have not worked successfully with each target species and to propose to revise the labeling for this product accordingly.

In addition, please submit one copy of your final printed labeling before you release the product for shipment. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA §6(e). Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

A stamped copy of the proposed labeling submitted April 4, 1995, is enclosed for your records. If you have any questions regarding this letter, please contact Peg Perrault at (703) 305-5409 or (703) 305-6000.

Sincerely yours,

Robert A. Forrest  
Product Manager 14  
Insecticide-Rodenticide Branch  
Registration Division (7505C)

**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS  
DANGER**

Keep away from humans, domestic animals, and pets. May be fatal or harmful if swallowed. Avoid eye or skin contact. Do not breathe dust. When mixing baits wear an approved respirator. Avoid contamination of feed or food stuffs. Prevent the contact of bait with acids. Wear rubber gloves when handling bait. Keep products away from irresponsible individuals, domestic animals, pets, and poultry. Wash hands thoroughly with soap and water after use.

**ENVIRONMENTAL HAZARDS**

This product is toxic to wildlife and fish. Birds and other wildlife feeding in treated areas may be killed. Use with care when applying in areas frequented by wildlife or adjacent to any body of water. For terrestrial uses, 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 apply in a manner where livestock may consume bait. Do not apply in areas where a hazard exists to rare or endangered species. Do not contaminate water by cleaning of equipment or disposal of wastes.

**ENDANGERED SPECIES CONSIDERATIONS**

**NOTICE:** The killing of a member of an endangered species during Zinc Phosphide baiting operations may result in a fine and/or imprisonment under the Endangered Species Act. All users of this product must determine whether endangered species are known to occur or might occur in the intended use areas. Consult the nearest U.S. Fish and Wildlife Service regional office or the appropriate State agency for current information on habitats occupied by endangered species. **Use of this product is subject to limitations set forth on the endangered species considerations attached to this label for the purpose of protecting endangered species.**

**RESTRICTED USE PESTICIDE**

**Due to hazards to nontarget species**

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicators certification.

**ZINC PHOSPHIDE CONCENTRATE**

**FOR RODENT AND LAGOMORPH CONTROL**

*For the control of voles, house mice, white-footed mice, norway rats, roof rats, polynesian rats, rice rats, Florida water rats, cotton rats, pocket gophers, muskrats, nutria, prairie dogs, wood rats, ground squirrels, marmots and woodchucks, and black-tailed jackrabbits at sites noted in directions for use.*

**ACTIVE INGREDIENT:**

Zinc Phosphide ..... 63.2%

**INACTIVE INGREDIENTS:** ..... 36.8%

**TOTAL** ..... 100.0%

**KEEP OUT OF REACH OF CHILDREN**

**DANGER - POISON**



**STATEMENT OF PRACTICAL TREATMENT**

Any persons applying zinc phosphide products and experiencing signs or symptoms such as nausea, abdominal pain, tightness in the chest or weakness, should be seen by a physician immediately.

**IF SWALLOWED:** Immediately call a Poison Control Center or physician, or transport the patient to the nearest hospital. Do not drink water. Do not administer anything by mouth or make the patient vomit unless advised to do so by a physician.

**IF IN EYES:** Flush with plenty of water. Get medical attention if irritation persists.

**IF ON SKIN:** Remove contaminated clothing and wash affected areas with soap and water.

UNITED STATES DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE  
RIVERDALE, MD 20737-1237  
EPA Reg. No. 56228-6  
EPA Est. No. 56228-1D-1

Net Weight 02

56228-6

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## MIXING DIRECTIONS

**GRAIN BAITS** (wheat, oats, barley, rye, milo, or millet): Mix 1.1 pounds of heated lecithin into 2.3 pounds of heated mineral oil. Slowly blend 3.25 pounds **ZINC PHOSPHIDE CONCENTRATE** into this mixture until evenly blended. Pour new mixture over 93.4 pounds of whole, rolled, or hulled grain and mix thoroughly.

**SUNFLOWER SEED BAITS:** Mix 1.1 pounds of heated lecithin into 2.3 pounds of heated mineral oil. Slowly blend 3.25 pounds **ZINC PHOSPHIDE CONCENTRATE** into this mixture until evenly blended. Pour new mixture over 93.4 pounds of sunflower seed and mix thoroughly.

**MEAT BAITS** (ground meat, or canned dog, cat food, and/or dry meat based pet food): Slowly blend 1 ounce of **ZINC PHOSPHIDE CONCENTRATE** into 2 pounds of meat.

**FRUIT OR VEGETABLE BAITS** (carrots, sweet potatoes, dandelions, alfalfa, beet tops, cabbage, potato, grapes, mulberry, apricots, figs, nuts, apples, or pears): Cut root vegetables and fruits into 1/2-inch cubes except when treating muskrat, nutria or jackrabbits. For muskrat, nutria or rabbit control work, cut carrots or sweet potatoes into 2-inch lengths. Cut leafy vegetables into 3 to 6-inch lengths. Drain fluids or juices from bait material. Place 10 pounds of cut up bait material in a 5 gallon container. Treat bait material with vegetable oil at a rate of 1 oz/10 lbs of bait material. Tumble or stir until consistent coverage is attained. Use as prebait as this formulation. For preparation of treated bait, prepare bait material as above for prebait, but add 7 1/2 level tablespoons (40 grams) of **ZINC PHOSPHIDE CONCENTRATE** per 10 pounds of bait. Mix bait thoroughly by manual stirring or use of a mechanical tumbling type mixer. Well-mixed bait should display a consistent coverage.

Bait materials resembling human foods must be altered in form by cubing, crushing, balling, or pelletizing so that they are not readily recognizable as food. Also care should be taken to offer the bait in size and form that is the most effective in controlling the pest species and less attractive to nontarget animals.

## RODENTS IN AND AROUND BUILDINGS

**USE RESTRICTIONS:** For control of Norway rats (*Rattus norvegicus*), roof rats (*R. rattus*), house mice (*Mus musculus*), white-footed mice (*Peromyscus leucopus*), meadow voles (*Microtus pennsylvanicus*), prairie voles, (*M. ochrogaster*), mountain voles (*M. montanus*), California voles (*M. californicus*), and pine voles (*M. pinetorum*) in and around homes, and industrial, commercial, agricultural, and public buildings. Do not place bait in areas where there is a possibility of contaminating food or surface that come into direct contact with food. Do not broadcast bait.

Apply bait in locations out of reach of children, pets, domestic animals and nontarget wildlife, or in tamper-resistant bait stations. These stations must be resistant to destruction by dogs and by children under six years of age, and must be used in a manner that prevents such children from reaching into bait compartments and obtaining bait. If bait can be shaken from stations when they are lifted, units must be secured or otherwise immobilized. Even stronger bait stations are needed in areas open to hoofed livestock, raccoons, bears, other potentially destructive animals, or in areas prone to vandalism. Dogs, cats, and other nontarget animals may actively search for bait, especially when meat-based baits are used.

**SELECTION OF TREATMENT AREAS:** Determine areas where rats or mice will most likely find and consume the bait. Generally, these are along walls, by gnawed openings, in or beside burrows, in corners and concealed places, between floors and walls, or in locations where rodents or their signs have been seen. Protect bait from rain or snow. Remove as much alternative food as possible.

### APPLICATION DIRECTIONS:

**Rats:** Apply 1 to 2 teaspoons of bait per placement. Grain, fruit or vegetable, and meat-based baits may be used.

**Mice and Voles:** Apply 1 teaspoon of bait per placement. Space placements at 8- to 12-foot intervals. Grain and fruit or vegetable baits may be used for mice and voles. Meat-based baits may be used for house mice but not for voles or white-footed mice.

Collect and properly dispose of uneaten bait and dead rodents after completion of the baiting program.

## VOLES AND WHITE-FOOTED MICE IN ORCHARDS, GROVES, NURSERIES, VINEYARDS, AND NONBEARING FRUIT TREES

**USE RESTRICTIONS:** For control of meadow, prairie, California, mountain, and pine voles and white-footed mice in orchards, groves, nurseries, vineyards, ornamental plantings, highway medians, and plantings of nonbearing fruit trees. In orchards and vineyards, apply only after harvest while crop is in a nonbearing phase. Do not apply bait to bare ground.

Use baits made from wheat, oats, barley, rye, millet, sunflower seeds, or fruit baits.

### APPLICATION DIRECTIONS:

#### HAND BAITING:

**Fruit Baits:** Place 1 or 2 cubes at 2 foot or more intervals in active trails under the cover of grass or artificial cover near the bases of infested trees.

**Grain or Sunflower Seed Baits:** Near the base of each infested tree place teaspoonful quantities of bait at 2-4 locations, either on surface or at the mouths of holes leading directly to underground burrow systems. Cover bait artificially (e.g., by using mats or boards) or by pulling overhanging grass back into place. Do not disturb the runway system. Apply bait at rates of 3-5 pounds per acre of infested trees.

**TRAIL BUILDER BAITING** (grain or sunflower-seed baits only): Follow manufacturer's instructions for the type of equipment used. Drop teaspoonful quantities of bait at 4- to 5-foot intervals in the artificial trail made by the machine just inside the dripline of both sides of the trees. Apply bait at rates of 2-3 pounds per acre.

**GROUND BROADCAST BAITING** (grain or sunflower-seed baits only): Under infested trees broadcast bait evenly by cyclone seeder or by (rubber-gloved) hand. Concentrate baiting in areas with the the greatest degree of vegetative cover. Apply bait at rates of 6-10 pounds per acre.

**AERIAL APPLICATION** (grain baits only): Broadcast bait at rates of 6-10 pounds per acre. Apply bait immediately after harvest and before leaf fall, when the grass is not yet matted. Do not apply bait by aerial application to grape vineyards or to any actively growing crop.



**VOLES AND WHITE-FOOTED MICE IN BERRY PRODUCTION AREAS**

**USE RESTRICTIONS:** For control of meadow, prairie, California, mountain, and pine voles and white-footed mice in blueberry, blackberry, gooseberry, boysenberry, raspberry, and strawberry production areas. Apply bait in fair weather after harvest while crop is in a nonbearing phase. Do not apply bait to bare ground unless bait is artificially covered (e.g., by using mats or boards). Do not apply bait by air.

Use baits made from wheat, oats, barley, rye, or millet.

**APPLICATION DIRECTIONS:**

**HAND BAITING:** Near the base of each infested vine or bush, place teaspoonful quantities of bait at 2-4 locations, either on the surface or at the mouths of holes leading directly to underground burrow systems. Cover bait artificially (e.g., by using mats or boards) or by pulling overhanging grass back into place. Do not disturb the runway system. Apply bait at rates of 3-5 pounds per acre of infested vines and bushes.

**TRAIL BUILDER BAITING:** Follow manufacturer's instructions for the type of equipment used. Drop teaspoon quantities of bait at 4- to 5-foot intervals in the artificial trail made by the machine just inside the drip line on both sides of the plants. Apply bait at rates of 3-4 pounds per acre.

**GROUND BROADCAST BAITING:** Under infested plants broadcast bait evenly by cyclone seeder or by (rubber-gloved) hand. Concentrate baiting in areas with the greatest degree of vegetative cover. Apply bait at rates of 6-10 pounds per acre.

**VOLES AND WHITE-FOOTED MICE PASTURES, RANGELANDS, A., REFORESTATION AREAS**

**USE RESTRICTIONS:** For control of meadow, prairie, California, mountain, and pine voles, and white-footed mice in pasture, rangeland, and reforestation areas. Fall treatments should occur prior to seed fall or seeding efforts. Spring treatments may be needed to protect emergent seedlings.

Use baits made from wheat, oats, barley, rye or millet.

**APPLICATION DIRECTIONS:**

**HAND BAITING:** Place teaspoonful quantities of bait in surface runways or at the mouths of holes leading to underground burrow systems. Apply bait at rates of 3-5 pounds per acre of infested areas.

**TRAIL BUILDER BAITING:** Follow manufacturer's instructions for the type of equipment used. Drop by teaspoonful quantities of bait at 4- to 5-foot intervals in the artificial trail made by the machine. Apply bait at rates of 2-3 pounds per acre.

**GROUND BROADCAST BAITING:** Apply bait in 20-foot swaths by cyclone seeder or by (rubber-gloved) hand. Apply bait at rates of 6-10 pounds per acre.

**AERIAL APPLICATION:** Apply bait evenly at rates of 6-10 pounds per acre in infested areas.

**VOLES AND WHITE-FOOTED MICE IN LAWNS, GOLF COURSES, NURSERIES, AND NONCROP AREAS**

**USE RESTRICTIONS:** For control of meadow, prairie, California, mountain, and pine voles, and white-footed mice in rights-of-way, noncrop areas, lawns, parks, turf and grass fields, nurseries, and golf courses when significant damage and/or heavy infestations occur. Do not apply bait to bare ground. Do not apply bait by air.

Use baits made from wheat, oats, barley, rye or millet.

**PREBAITING:** Prebaiting with untreated grain of the type to be used for treated baiting may lead to more consistent acceptance of treated bait. Prebaits should be applied, at rates appropriate for treated baiting, 2-3 days before toxic baits are to be used.

**APPLICATION DIRECTIONS:**

**HAND BAITING:** Place teaspoonful quantities of bait in surface runways or at the mouths of holes leading to underground burrow systems. Apply bait at rates of 3-5 pounds per acre of infested area.

**TRAIL BUILDER BAITING:** Follow manufacturer's instructions for the type of equipment used. Place teaspoonful quantities of bait at 4- to 5-foot intervals in the artificial trail made by the machine. Apply bait at rates of 2-3 pounds per acre.

**GROUND BROADCAST BAITING:** Apply bait evenly by cyclone seeder or by (rubber-gloved) hand. Apply bait at rates of 6-10 pounds per acre.

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**CALIFORNIA AND MOUNTAIN VOLES IN SUGAR BEETS** (*California only*)

**USE RESTRICTIONS:** For control of California voles and mountain voles in sugar beets. Grazing of sugar beets tops by livestock is prohibited. Do not apply bait within 30 days of harvest. Use baits made from wheat, oats, barley, rye, or millet.

**PREBAITING:** Prebaiting with untreated grain if the type to be used for treated baiting may lead to more consistent acceptance of treated baiting, 2-3 days before treated baits are to be used.

**APPLICATION DIRECTIONS:**

**BAITING:** Apply bait by mechanical spreader or aircraft through infested areas at rates of 5-10 pounds per acre, depending on the density of the infestation. If the field was prebaited, delay baiting until prebait has been accepted by the target species. Do not make more than two applications of zinc phosphide baits to the same field in one crop cycle.

**RATS IN SUGARCANE FIELDS**

**USE RESTRICTIONS:** For control of Polynesian rats (*Rattus exulans*), Norway rats, roof rats, rice rats (*Oryzomys palustris*), Florida water rats (*Neofiber alleni*) and cotton rats (*Sigmodon hispidus*), in sugarcane fields. Do not apply bait more than four (4) times to any one area during the entire crop cycle. Do not apply bait within 30 days of harvest. Use baits made from wheat, oats, barley, rye, milo, or millet.

**APPLICATION DIRECTIONS:**

**PREBAITING:** Prebaiting with untreated grain of the type to be used for treated baiting usually is recommended to enhance acceptance of treated bait by rats. Prebaits should be applied at a rate of 3 pounds per acre, 1-2 weeks before treated baits are to be used.

**BAITING:** Broadcast bait by aircraft, ground-driven equipment, or by (rubber-gloved) hand at a rate of 5 pounds per acre. The total rate of application to any one area may not exceed 20 pounds of bait for an entire crop cycle.

**ROOF AND NORWAY RATS IN MACADAMIA NUT ORCHARDS** (*Hawaii only*)

**USE RESTRICTIONS:** For control of roof rats and Norway rats in Macadamia nut orchards. Do not apply bait more than four times to any orchard area in any one year. Except for burrow baiting (see below), do not apply bait within 30 days of any harvesting round. Do not apply bait by air. Use baits made from wheat, oats, barley, rye, or millet.

**APPLICATION DIRECTIONS:**

**BAIT STATIONS:** Baits may be placed in bait stations located in trees or on the ground at the bases of trees. Place 1-2 teaspoons (4-8 grams) of bait in each bait station. Uneaten bait must be removed from trees prior to shaker harvest or from ground prior to mechanized harvest.

**BURROW TREATMENT:** Place 1-2 teaspoons (4-8 grams) of bait in each burrow entrance. No preharvest interval is required if nuts are not retrieved from the ground. If nuts are to be retrieved from the ground, the 30-day preharvest interval applies.

**BROADCAST BAITING:** Broadcast bait by ground-driven equipment or by (rubber-gloved) hand at a rate of 5 pounds per acre. The total rate of application to any one area may not exceed 20 pounds of bait per acre for an entire crop cycle.

## WOODRATS

**USE RESTRICTIONS:** For use to control eastern woodrats (Neotoma floridana), southern plains woodrats (N. micropus), whitethroat woodrats (N. albigula), desert woodrats (N. lepida), Mexican woodrats (N. mexicana), dusky-footed woodrats (N. fuscipes), and bushytail woodrats (N. cinerea) in rangelands, pastures, noncrop right-of-ways adjacent to canals or waterways, dormant orchards, tree farms, and rural agricultural buildings. Do not apply bait by air. Use baits made from wheat, oats, barley, rye or millet.

### APPLICATION DIRECTIONS:

#### BAITING

**Outdoors:** When baiting outside at the sites noted above, scatter teaspoon amounts (4-5 grams) of bait over one square foot of ground in runway near or leading to the entrance of the den.

**In Rural Agricultural Buildings:** Place one ounce of bait in a shallow open container near each point of woodrat activity. If you are able to bait in areas not accessible to children, pets, domestic animals, and wildlife, and where contamination of food or feed will not occur. In all other locations bait must be placed in tamper-resistant bait stations secured, if necessary, to prevent bait from being spilled out of the unit. Check stations frequently for continued presence of bait and to remove any sticks or other foreign objects brought into stations by woodrats.

Replenish bait as long as there is continued evidence that woodrats are taking it. Remove all bait when woodrats cease to accept it.

## KANGAROO RATS

**USE RESTRICTIONS:** For control of Ord's kangaroo rats (Dipodomys ordii), Merriam's kangaroo rats (D. merriami), and banner-tailed kangaroo rats (D. spectabilis) in rangelands, pastures, and noncrop areas. Do not broadcast bait. Do not apply bait by air. Do not apply bait to bare ground unless artificial cover is added. Use baits made from wheat, oats, barley, rye, or millet.

### APPLICATION DIRECTIONS:

**HAND BAITING:** Place one tablespoon (about 12 grams) of bait in two locations on opposite sides of mounds, concentrating on the feeding runs near entrances to burrows.

## MUSKRATS AND NUTRIA

**USE RESTRICTIONS:** For control of muskrats (Ondatra zibethica) and nutria (Myocaster coypu) in areas where these animals damage levees, irrigation ditchbanks, or water impoundments, or where they might feed on rice, soybean, milo, corn crops, or damage turf. Do not apply baits directly where crops are growing. Do not apply baits where prebaiting indicates nontarget species. Check with State and local authorities to determine whether there are any legal restrictions against poisoning muskrats or nutria. Use baits made from carrots, sweet potatoes, apples, or pears.

### APPLICATION DIRECTIONS:

**PREBAITING:** Before preparing or using treated baits, prebait by applying carrots, sweet potatoes, apples, or pears, prepared in the manner indicated above in the FRUIT OR VEGETABLE BAITS section. Cut carrots or sweet potatoes into 2-inch lengths.

When preparing to control muskrats or nutria on large waterways (large streams, canals, ponds, lakes, and bayous), place 10 pounds of prebait on large (4 feet by 4 foot) rafts spaced 1/4-1/2 mile apart. On small waterways (small streams, irrigation ditches), place 4 pieces of prebait on rafts that are at least 6 inches by 6 inches. Anchor rafts appropriately for sizes of rafts and the bodies of water in which they are placed, considering factors such as size, depth, winds, current, and potential for flooding. Locate rafts near burrows and runways used by muskrats and nutria or near places where these animals are causing damage.

Prebait may also be placed on the ground beside burrows or runways used by muskrats or nutria. Use 2-5 pieces of prebait at ground locations.

Check each raft or ground placement daily to assess the amount of prebait that has been taken.

**BAITING:** When at least half of the prebait has been taken by the target species, replace prebait with treated bait of the same vegetable or fruit carrier.

**Large Rafts:** If all or nearly all of the prebait has been taken, apply 10 pounds of treated bait to the raft. If 1/2-3/4 of the prebait has been taken, remove the remainder and apply 5 pounds of treated bait. If most of the treated bait is eaten on the first night, replenish bait to the amount originally used. Regardless of the level of initial consumption of treated bait, keep at least 5 pounds of treated bait present for 72-hour period.

**Small Rafts and Ground Placements:** Once prebaits have been eaten, apply 4 pieces of treated bait per raft. Maintain this level of baiting for a 72-hour period.

Collect and properly dispose of unattractant bait and gussered dead rodents after completion of the control program. Terminate the program if nontarget animals are consuming baits. Extend the program beyond 72 hours only if there is evidence that target animals still are consuming bait or if factors other than bait shyness (e.g., weather) appear to have limited bait acceptance on one or more days.

Do not treat the same area with zinc phosphide bait at intervals of less than 30 days.

## POCKET GOPHERS

**USE RESTRICTIONS:** For control of pocket gophers (Geomys spp., Thomomys spp., or Pappogeomys spp.) in rangelands, croplands, reforestation areas, parks, lawns, and noncrop areas. Bait must be applied directly into underground burrow systems. Do not broadcast bait or apply it above ground in any way. Use baits made from wheat, oats, barley, rye, or millet.

### APPLICATION DIRECTIONS:

**HAND BAITING:** Remove burrow plug from flat side of fan-shaped mound or locate the main burrow by probing with a metal rod or wooden stick. Begin probing 6-12 inches from the flat side of the mound until the main underground tunnel is located. Soil resistance against the probe will drop abruptly when the tunnel is entered. Through the opening created by probing or removing the plug, insert one teaspoonful (4 grams) of bait into the main tunnel. Bait may be applied with a manually-operated mechanical probe. Close the tunnel with a rock, sod, or other object that will exclude light. Take care that no soil falls in and covers the bait. One pound of bait will treat 1-8 acres, depending upon pocket gopher density. Pick up and bury all spilled bait.

**BURROW BUILDER:** Follow manufacturer's instructions for the type of equipment used. Apply 1-2 pounds of bait per acre into tunnels created by the burrow builder. Space artificial tunnels 20 to 30 feet apart. Apply bait by this method only when soil condition is proper to insure formation of good artificial burrows. Pick up and bury all spilled bait.

## GROUND SQUIRRELS

**USE RESTRICTIONS:** For control of antelope ground squirrel (*Ammospermophilus leucurus*), Townsend's ground squirrel (*Spermophilus townsendii*), California ground squirrel (*Spermophilus beecheyi*), Columbian ground squirrel (*Spermophilus columbianus*), Franklin's ground squirrel (*Spermophilus franklinii*), Golden-mantled ground squirrel (*Spermophilus lateralis*), Richardson's ground squirrel (*Spermophilus richardsonii*), Round-tailed ground squirrel (*Spermophilus tereticaudus*), Thirteen lined ground squirrel (*Spermophilus tridecemlineatus*), Rock squirrel (*Spermophilus variegatus*), Unita ground squirrel (*Spermophilus armatus*), Belding's ground squirrel (*Spermophilus beldingii*), Idaho ground squirrel (*Spermophilus brunneus*), Wyoming ground squirrel (*Spermophilus elegans*), and Washington ground squirrel (*Spermophilus washingtoni*) in crop rights-of-way, dormant orchards and vineyards, ornamentals, cemeteries, highway medians, golf courses, nurseries, canal and ditch banks, rangelands, pastures, lawn and turf grasses, and along fence rows. Do not apply bait on roads, near residential areas, or over water. Do not apply bait by air.

Do not treat the same area with zinc phosphide bait at intervals of less than 30 days

Use baits made from grain or fruit and vegetable baits noted in mixing directions

### APPLICATION DIRECTIONS:

**PREBAITING:** Prebaiting with untreated grain of the type to be used for preparing treated bait is strongly recommended as a means of enhancing acceptance of treated bait. Apply prebait 2-4 days before treated bait is to be used. Prebait should be exposed in the same manner as is to be used for applying treated bait. If treated bait is to be applied manually, scatter a teaspoon amount (4 grams) on the ground near each burrow or runway. If treated bait is to be ground-broadcast, broadcast prebait at a rate of 6 pounds per acre.

Before prebait is applied, it may be helpful to scatter small amounts of several different grains in the infested area to determine (1) whether the ground squirrels are ready to accept grains; (2) which grain they seem to prefer; and (3) whether there is significant consumption of grain by nontarget species.

### BAITING

**Spot Baiting:** After all or most of the prebait has been taken by the target species, scatter a tablespoon amount of treated bait around each active burrow or runway. Allow bait to fall through grass to ground surface but do not apply to bare ground. Do not place bait in heaps or piles.

**Ground-Broadcast Baiting:** Broadcast toxic bait only after all or most of the prebait has been consumed. Apply bait using hand-powered or ground driven broadcasting equipment in swaths 10-15 feet wide in infested areas. Apply treated bait at rates of 6 pounds per acre or less, depending upon rate of acceptance of prebait and ground squirrel density.

Bury spilled or unused bait, and observed animal carcasses within three days after bait application.

## PRAIRIE DOGS

**USE RESTRICTIONS:** For control of black-tailed prairie dogs (*Cynomys ludovicianus*), white-tailed prairie dogs (*C. leucurus*), and Gunnison prairie dogs (*C. gunnisoni*) on rangelands and pastures in the western United States (North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, New Mexico, Arizona, Colorado, Utah, Wyoming, and Montana) where nontarget species, especially the black footed ferret, will not be at risk (see "ENDANGERED SPECIES CONSIDERATIONS" on this label). Do not use this product to control the endangered Utah prairie dog (see "ENDANGERED SPECIES CONSIDERATIONS"). Do not apply bait by air. Baits may only be applied from mid-summer through mid-winter (July to February) of the following year. Do not apply zinc phosphide bait more than once during this period.

Use baits made from wheat, oats, barley, rye, and millet.

### APPLICATION DIRECTIONS:

**PREBAITING:** Prebaiting with untreated grain of the type to be used for preparing treated bait is required. Apply prebait 1-2 days before treated bait is to be used. Scatter a teaspoon amount (4 gram) of prebait on ground near each active mound.

Before prebait is applied, it may be helpful to scatter small amounts of several different grains in the infested area to determine (1) whether the prairie dogs are accepting grains; (2) which grain they seem to prefer; and (3) whether there is significant consumption of grain by nontarget species.

**OBSERVATION:** Before and during prebaiting observe infested area regularly and systematically to assess presence and potential for exposure of nontarget animals to treated bait. If nontarget animals that might be harmed by the bait are observed in the infested area, do not apply treated bait.

### BAITING

After all or most of the prebait has been taken by prairie dogs, scatter a teaspoon amount (no more than 4 grams) of treated bait in 6-inch (diameter) bait spots at the edges of each active mound or in adjacent feeding areas.

Bury spilled or unused bait and observed animal carcasses within three days after bait application.

## WOODCHUCKS, YELLOWBELLY MARMOTS, AND BLACK-TAILED JACKRABBITS

**USE RESTRICTIONS:** For control of woodchucks (*Marmota monax*), yellowbelly marmots (*M. flaviventris*), and black-tailed jackrabbits (*Lepus californicus*) in rangelands, pastures, and noncrop areas. Do not apply baits made from this product in food- or feed-crop areas. Do not apply baits by air. Use baits made from fruit or vegetables.

### APPLICATION DIRECTIONS:

**PREBAITING:** Prebaiting with untreated 1- to 2-inch pieces of fruit or vegetable is recommended to enhance acceptance of treated bait by target species and to assess potential for risks associated with bait take by nontarget species. Treat fruit or vegetable pieces with corn oil.

**Marmots:** Place 4-5 pieces of prebait under rock overhangs, in protected crevices, or at the sides of burrows dug in areas that are not rocky. Place prebait in the morning.

**Jackrabbits:** Prepare furrow adjacent to fields being damaged or other areas from which it is desired to exclude black-tailed jackrabbits. Place 6-9 fruit or vegetable pieces per site.

### BAITING

Apply treated bait in locations where prebait was accepted, using the same procedures that were employed for prebaiting.

Collect and properly dispose of uneaten bait and animal carcasses after completion of the baiting program, which should be set at 72 hours under most circumstances. Extend the baiting period only if circumstances other than bait shyness appeared to have adversely affected bait acceptance on one or more days. Shorten baiting period if animals other than marmots or black-tailed jackrabbits are taking baits.

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**ENDANGERED SPECIES ATTACHMENT**

The endangered species considerations listed in this attachment must be regarded as part of the label for **Zinc Phosphide Concentrate for Rodent and Lagomorph Control**.

Do not use this product outdoors within 100 yards of the occupied habitats of the following endangered animals:

Alabama beach mouse (Peromyscus polionotus ammobates) in Baldwin County, Alabama;

Anastasia Island beach mouse (P. p. phasma) on Anastasia Island, St. John's County, Florida;

Choctawhatchee beach mouse (P. p. allophrys) in Wilton and Bay counties, Florida;

Perdido Key beach mouse (p. p. trissyllepsis) in Baldwin County, Alabama, and in Escambia County, Florida;

Southeastern beach mouse (P. p. niveiventris) in Volusia and St. Lucie counties, Florida;

Key Largo cotton mouse (P. gossypinus allapaticola) on Key Largo, Monroe County, Florida;

Key Largo woodrat (Neotoma floridana smalli) on Key Largo, Monroe County, Florida;

Amargosa vole (Microtus californicus scirpensis) in Inyo County, California;

Florida salt marsh vole (M. pennsylvanicus dukecampbelli) in the Waccasassa bay area in Levy County, Florida;

Hualapai Mexican vole (M. mexicanus hualpaiensis) in Mohave County, Arizona;

Fresno kangaroo rat (Dipodomys nitratooides exilis) in Fresno and Merced counties, California;

Giant kangaroo rat (D. ingens) in Merced, Fresno, Kings, Tulare, Kern, San Luis Obispo, and Santa Barbara counties, California;

Morro Bay kangaroo rat (D. heermanni morroensis) in San Luis Obispo County, California;

Stephen's kangaroo rat (D. stephensi) in Riverside, San Diego, and San Bernardino Counties, California;

Tipton kangaroo rat (D. nitratooides nitratooides) in Kings, Tulare, Kern, and Fresno counties;

Salt marsh harvest mouse (Reithrodontomys raviventris) in Marin, Sonoma, Nevada, Solano, Contra Costa, Alameda, San Mateo, and San Francisco counties, California;

Silver rice rat (Oryzomys palustris natator, aka O. argentatus) on Big Torch, Johnston, Middle Torch, Raccoon, Saddlebunch, Little Pine, Summerland, and Water keys in Monroe County, Florida;

Point Arena mountain beaver (Aplodontia rufa nigra) in Mendocino County, California;

Delmarva Peninsula fox squirrel (Sciurus niger cinereus) on the Delmarva Peninsula in Delaware, Maryland, and Virginia;

Lower Keys rabbit (Sylvilagus palustris hefneri) on Sugarloaf, Welles, Annette, Hopkins, Geiger, Boca Chica, and Big Pine keys in Monroe County, Florida;

Do not use this product outdoors within 100 yards of occupied habitat of the following organisms unless the bait is used in tamper-resistant bait stations capable of excluding the endangered animal in question:

Attwater's greater prairie chicken (Tympanuchus cupido attwateri) in Austin, Fort Bend, Galveston, and Refugio counties, Texas;

Nene (Hawaiian goose, (Nesochen sandvicensis) on the islands of Hawaii, Kauai, and Maui; and

Mariana crow (Corvus kubaryi) on Guam.

Do not use this product outdoors within the occupied habitats of the following endangered animals:

Carolina northern flying squirrel (Glaucomys sabrinus carolinensis) in North Carolina and Tennessee; and

Utah prairie dog (Cynomys parvidens) in Garfield, Iron, Kane, Wayne, Sevier, and Piute counties, Utah;

Do not use this Product outdoors within the occupied habitats of the following organisms unless the bait is used in tamper-resistant bait stations capable of excluding the endangered animal in question:

Louisiana black bear (Ursus americanus luteolus) in Louisiana and Mississippi;

San Joaquin kit fox (Vulpes macrotis mutica) in Alameda, Contra Costa, Fresno, Kern, Kings, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Santa Clara, Stanislaus, or Tulare counties, California;

Alala (Hawaiian crow, Corvus hawaiiensis) on the island of Hawaii);

Mississippi sandhill crane (Grus canadensis pulla) in Jackson County, Mississippi;

Puerto Rican plain pigeon (Columba inornata wetmorei) in Puerto Rico;

Yellow-shouldered Blackbird (Agelaius xanthomus) in Puerto Rico; and

San Clemente sage sparrow (Amphispiza belli clementeae) on San Clemente Island, California.

Do not use this product in habitats occupied or occasionally visited by whooping cranes (Grus americana) during the period from 30 days before the expected arrival of cranes to 30 days after the time of their usual departure, unless the bait is applied in tamper-resistant bait stations that appear to be capable of excluding cranes.

Do not use this product within 7 kilometers (4.34 miles) of any prairie dog town to limit risks to the black-footed ferret (Mustela nigripes) from exposure to Zinc Phosphide or destruction of its prey base, unless the colony is an isolated black-tailed prairie dog town less than 80 acres in size or an isolated white-tailed or Gunnison prairie dog town less than 200 acres in size, or unless the town has been appropriately surveyed, using methods acceptable to the U.S. Fish and Wildlife Service, and found by the FWS not to be a suitable site for ferret reintroductions.

To protect the Hawaiian coot (Fulica americana alai) and the Hawaiian duck (Anas wyvilliana), do not use this product within 100 yards of any water or wetland on or adjacent to any golf course or turf farm on the islands of Kauai, Oahu, or Maui, unless the bait is in a tamper-resistant bait station believed to be capable of excluding these birds.

Unless the local U.S. Fish and Wildlife Service office has determined that there are no gray wolves (Canis lupus) or grizzly bears (Ursus arctos horribilis) in the general vicinity of bait applications in Arizona, Colorado, Idaho, Michigan, Minnesota, Montana, New Mexico, Oregon, Wisconsin, and Wyoming, do not apply this product outdoors within occupied habitat of these species unless the bait is applied in tamper-resistant bait stations capable of excluding these species.