

**ACCEPTED****NOV 13 1987**Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under  
EPA Reg. No. 2548-7000050 DETIA ROTOX AP (small label) --- FRONT PANEL  
00100  
0015000200 RESTRICTED USE PESTICIDE  
00250 DUE TO ACUTE INHALATION TOXICITY OF HIGHLY  
00300 TOXIC HYDROGEN PHOSPHIDE (PHOSPHINE, PH<sub>3</sub>) GAS  
00350  
0040000450 For retail sale to and use only by certified applicators for  
00500 these uses covered by the applicator's certification or persons  
01000 trained in accordance with the accompanying product manual working  
01050 under the direct supervision and in the physical presence of the  
01100 certified applicator. Physical presence means on site or on the  
01150 premises. Read and follow the label and the Research Products  
01200 Company product manual which contains complete instructions for  
01250 the safe use of this pesticide.  
01300  
0135000850 Detia(R) ROTOX(R) AP  
00900  
00950  
0100001050 active Ingredient: Aluminum Phosphide.....57%  
01100 Inert Ingredients:.....43%  
01150 TOTAL.....100%  
01200  
0125001300 KEEP OUT OF REACH OF CHILDREN  
01350  
0140001450 DANGER/PELIGRO-POISON  
01500  
0155001600 PRECAUCION AL USUARIO: Si usted no lee ingles, no use este  
01650 producto hasta que la etiqueta se le haya sido explicado  
01700 ampliamente.  
0175001800 STATEMENT OF PRACTICAL TREATMENT  
01850  
0190001950 Symptoms of overexposure to hydrogen phosphide are headache,  
02000 dizziness, nausea, difficult breathing, vomiting and diarrhea.  
02050 In all cases of overexposure get medical attention immediately.  
02100 Take victim to the doctor or emergency treatment facility.  
0215002200 IF GAS OR DUST FROM PELLETS IS INHALED: Get exposed person to  
02250 fresh air. Keep warm and make sure person can breathe freely.  
02300 If breathing has stopped, give artificial respiration by  
02350 mouth-to-mouth or other means of resuscitation. Do not give  
02400 anything by mouth to an unconscious person.

IF THE PELLETS OR THEIR DUST ARE SWALLOWED: Drink or administer

02450 one or two glasses of water and induce vomiting by touching back  
 02500 of throat with finger, or if available, administer syrup of  
 02550 ipecac. Do not give anything by mouth if victim is unconscious  
 02600 or not alert.

02650  
 02700 IF PELLETS OR THEIR DUST GET ON SKIN OR CLOTHING: Brush or  
 02750 shake material off clothes and shoes in well ventilated area.  
 02800 Allow clothes to aerate in a ventilated area prior to  
 02850 laundering. Do not leave contaminated clothing in occupied  
 02900 and/or confined areas such as automobiles, vans, motel rooms,  
 02950 homes, etc. Wash contaminated skin thoroughly with soap and  
 03000 water.

03050  
 03100 IF DUST FROM THE PELLETS GETS IN EYES: Flush with plenty of  
 03150 water. Get medical attention.

03200  
 03250 See side panels for additional precautionary statements.

03300  
 03350 Manufactured by: Detia Freyberg, GMBH  
 03400 P. O. Box 10  
 03450 6947 Laudenbach  
 03500 F.R. of Germany

03550  
 03600  
 03650 Distributed by: Research Products Company  
 03700 Div. of McShares, Inc.  
 03750 P. O. Box 1460  
 03800 Salina, KS 67402-1460

03850  
 03900  
 03950 EPA Establishment No. 33982WG01 Net Contents:  
 04000 EPA Registration No. 2548-70 Net Contents:

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# LEFT PANEL

## HAZARDS TO HUMANS AND DOMESTIC ANIMALS

### KEEP OUT OF REACH OF CHILDREN DANGER/POISON

Aluminum phosphide in pellets or their dust can be fatal if  
 swallowed. Do not get in eyes, in nose, on skin or on clothing.  
 Do not eat, drink or smoke while handling aluminum phosphide  
 fumigants. When the container is opened Detia(R) ROTOX(R) AP  
 will begin to release hydrogen phosphide (phosphine) which is an  
 extremely toxic gas. Contact with water, acids and some other  
 liquids will accelerate this reaction. Pure hydrogen phosphide  
 gas is odorless; the odor is due to a contaminant. Since an  
 odor may not be detected under certain circumstances, the  
 absence of a garlic odor does not mean that hydrogen phosphide  
 gas is absent. Observe proper application and disposal

05100 procedures specified elsewhere in the labeling to prevent  
05150 overexposure.

05200  
05250 FREQUENT EXPOSURE TO LOW CONCENTRATIONS ABOVE PERMISSIBLE LEVELS  
05300 OVER A PERIOD OF DAYS OR WEEKS MAY CAUSE POISONING.  
05350

05400 NOTE TO PHYSICIAN

05450  
05500 Refer to "Detia(R) ROTOX(R) AT and Detia(R) ROTOX(R) AP  
05550 Instruction Booklet" for this section.  
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05650 RIGHT PANEL

05700 DIRECTIONS FOR USE

05750  
05800 It is a violation of federal law to use this product in a  
05850 manner inconsistent with its labeling.  
05900

05950  
06000 The "Detia(R) ROTOX(R) AT and Detia(R) ROTOX(R) AP Instruction  
06050 Booklet" is a part of labeling. Refer to it for application  
06100 procedures and other information necessary to properly use  
06150 Detia(R) ROTOX(R).  
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06250  
06300 THIS PRODUCT IS ACCOMPANIED BY THE LABELING LISTED ABOVE. READ  
06350 AND UNDERSTAND THE ENTIRE LABELING. ALL PARTS OF THE LABELING  
06400 ARE EQUALLY IMPORTANT FOR SAFE AND EFFECTIVE USE OF THIS  
06450 PRODUCT. CALL RESEARCH PRODUCTS COMPANY OR EPA IF YOU HAVE ANY  
06500 QUESTIONS OR DO NOT UNDERSTAND ANY PART OF THIS LABELING.  
06550

06600  
06650 Refer to product labeling for use restrictions to protect  
06700 ENDANGERED SPECIES.  
06750

06800 STORAGE AND DISPOSAL  
06850  
06900

06950 Refer to "Detia(R) ROTOX(R) AT and Detia(R) ROTOX(R) AP  
07000 Instruction Booklet" for this section.

ACCEPTED

NOV 13 1987

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act,  
as amended, for the pesticide  
registered under  
EPA Reg. No. 2548-70

## DETIA ROTOX AP LABEL --- FRONT PANEL

RESTRICTED USE PESTICIDE  
DUE TO ACUTE INHALATION TOXICITY OF HIGHLY  
TOXIC HYDROGEN PHOSPHIDE (PHOSPHINE, PH<sub>3</sub>) GAS

For retail sale to and use only by certified applicators for  
those uses covered by the applicator's certification or persons  
trained in accordance with the accompanying product manual working  
under the direct supervision and in the physical presence of the  
certified applicator. Physical presence means on site or on the  
premises. Read and follow the label and the Research Products  
Company product manual which contains complete instructions for  
the safe use of this pesticide.

Detia(R) ROTOX(R) AP

Active Ingredient: Aluminum Phosphide.....57%  
Inert Ingredients:.....43%  
TOTAL.....100%

KEEP OUT OF REACH OF CHILDREN

DANGER/PELIGRO-POISON

PRECAUCION AL USUARIO: Si usted no lee ingles, no use este  
producto hasta que la etiqueta se le haya sido explicado  
ampliamente.

## STATEMENT OF PRACTICAL TREATMENT

Symptoms of overexposure to hydrogen phosphide are headache,  
dizziness, nausea, difficult breathing, vomiting and diarrhea.  
In all cases of overexposure get medical attention immediately.  
Take victim to the doctor or emergency treatment facility.

IF GAS OR DUST FROM PELLETS IS INHALED: Get exposed person to  
fresh air. Keep warm and make sure person can breathe freely.  
If breathing has stopped, give artificial respiration by  
mouth-to-mouth or other means of resuscitation. Do not give  
anything by mouth to an unconscious person.

IF THE PELLETS OR THEIR DUST ARE SWALLOWED: Drink or administer

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 03250 See side panels for additional precautionary statements.

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03900  
 03950 EPA Establishment No. 339B2WG01 Net Contents:  
 ( 4000 EPA Registration No. 2548-70 Net Contents:  
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#### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

KEEP OUT OF REACH OF CHILDREN  
 DANGER/POISON

04550 Aluminum phosphide in pellets or their dust can be fatal if  
 04600 swallowed. Do not get in eyes, in nose, on skin or on clothing.  
 04650 Do not eat, drink or smoke while handling aluminum phosphide  
 04700 fumigants. When the container is opened Detia(R) ROTOX(R) AP  
 04750 will begin to release hydrogen phosphide (phosphine) which is an  
 04800 extremely toxic gas. Contact with water, acids and some other  
 04850 liquids will accelerate this reaction. Pure hydrogen phosphide  
 04900 gas is odorless, the odor is due to a contaminant. Since an  
 04950 odor may not be detected under certain circumstances, the  
 05000 absence of a garlic odor does not mean that hydrogen phosphide  
 05050 gas is absent. Observe proper application and disposal.

05100 procedures specified elsewhere in the labeling to prevent  
 05150 overexposure.  
 05200

05250 FREQUENT EXPOSURE TO LOW CONCENTRATIONS ABOVE PERMISSIBLE LEVELS  
 05300 OVER A PERIOD OF DAYS OR WEEKS MAY CAUSE POISONING.  
 05350

05400 NOTE TO PHYSICIAN  
 05450

05500 Aluminum phosphide in pellets or their dust reacts with moisture  
 05550 from the air, water, acids, and many other liquids to release  
 05600 hydrogen phosphide (phosphine) gas. Mild exposure by inhalation  
 05650 causes malaise (indefinite feeling of sickness), ringing of  
 05700 ears, fatigue, nausea and pressure in chest which are relieved  
 05750 by removal to fresh air. Moderate poisoning causes weakness,  
 05800 vomiting, epigastric pain (pain just above the stomach), chest  
 05850 pain, diarrhea and dyspnea (difficulty in breathing). Symptoms  
 05900 of severe poisoning may occur within a few hours or up to  
 05950 several days, resulting in pulmonary edema (fluid in lungs) and  
 06000 may lead to dizziness, cyanosis (blue or purple skin color),  
 06050 unconsciousness and death.  
 06100

06150 In sufficient quantity, hydrogen phosphide affects the liver,  
 06200 kidneys, lungs, nervous system and circulatory system.  
 06250 Inhalation can cause lung edema (fluid in lungs) and hyperemia  
 06300 (excess of blood in a body part), small perivascular brain  
 06350 hemorrhages and brain edema (fluid in brain). Ingestion can  
 06400 cause lung and brain symptoms, but damage to the viscera (body  
 06450 cavity organs) is more common. Hydrogen phosphide poisoning may  
 06500 result in (1) pulmonary edema, (2) liver elevated serum GOT, LDH  
 06550 and alkaline phosphatase, reduced prothrombin, hemorrhage and  
 06600 jaundice (yellow skin color) and (3) kidney hematuria (blood in  
 06650 urine) and anuria (abnormal or lack of urination). Pathology is  
 06700 characteristic of hypoxia (oxygen deficiency in body tissue).  
 06750 Treatment is symptomatic.  
 06800  
 06850  
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#### 06950 RIGHT PANEL

#### 07000 DIRECTIONS FOR USE

07100 It is a violation of federal law to use this product in a  
 07150 manner inconsistent with its labeling.  
 07200

07250 The "Detia(R) ROTOX(R) AT and Detia(R) ROTOX(R) AP Instruction  
 07300 Booklet" is a part of labeling. Refer to it for application  
 07350 procedures and other information necessary to properly use  
 07400 Detia(R) ROTOX(R).  
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07500  
 07550 THIS PRODUCT IS ACCOMPANIED BY THE LABELING LISTED ABOVE. READ  
 07600 AND UNDERSTAND THE ENTIRE LABELING. ALL PARTS OF THE LABELING  
 07650 ARE EQUALLY IMPORTANT FOR SAFE AND EFFECTIVE USE OF THIS  
 07700  
 07750

07900 PRODUCT: CALL RESEARCH PRODUCTS COMPANY OR EPA IF YOU HAVE ANY  
07950 QUESTIONS OR DO NOT UNDERSTAND ANY PART OF THIS LABELING.  
07990

07950 Refer to product labeling for use restrictions to protect  
08000 ENDANGERED SPECIES.  
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08150 STORAGE AND DISPOSAL  
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08250 STORAGE  
08300

08350 Flasks should be stored in a dry, well ventilated area, away  
08400 from heat and under lock and key. Post as a pesticide storage  
08450 area. Do not contaminate water, food or feed by storing  
08500 pesticides in the same areas used to store these commodities.  
( 550

08550 Do not store in buildings where humans or domestic animals  
08600 reside. Refer to the "Detia(R) ROTOX(R) AT and Detia(R)  
08650 ROTOX(R) AP Instruction Booklet" for additional storage  
08700 instructions.  
08750  
08800

08850 DISPOSAL OF UNREACTED OR PARTIALLY REACTED PELLETS (From spills,  
08900 Leaking flasks or other sources)  
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09000 Unreacted or partially reacted Detia(R) ROTOX(R) pellets are  
09050 acutely hazardous. Improper disposal of this product is a  
09100 violation of federal law.  
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09200 If this product cannot be disposed of by ordinary use or  
09250 according to labeling instructions, contact your state pesticide  
09300 or environmental control agency or the hazardous waste  
( 09350 representative at the nearest EPA regional office for guidance.  
2400 Do not contaminate water by disposal.

09450 Reacted pellets are not hazardous. For complete disposal, spill  
09500 and leak procedures refer to the booklet "Detia(R) ROTOX(R) AT  
09550 and Detia(R) ROTOX(R) AP Instruction Booklet."  
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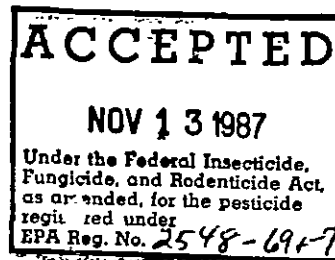
09750 DISPOSAL OF EMPTY FLASKS  
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09850 METHOD ONE: Triple rinse flasks and stoppers with water. Then  
09900 offer for recycling or reconditioning, or puncture and dispose  
09950 of them in a sanitary landfill or other approved site or by  
10000 other procedures approved by state and local authorities.  
10050 Dispose of rinsate in a sanitary landfill or by other approved  
10100 procedures.  
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10200 METHOD TWO: Remove lids and place empty flasks outdoors or in  
10250 structure being fumigated until residue in flasks is reacted.  
10300 Puncture and dispose of them in a sanitary landfill or other  
10350 approved site or by other procedures approved by state and local  
10450 authorities.

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10550 GENERAL  
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10650 Consult federal, state and local disposal authorities for  
10700 approved procedures other than those given above. Approved  
10750 procedures vary for different types of generators.  
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10850 \*If in doubt concerning whether the dust is reacted and/or  
10900 concerning proper disposal techniques contact Research Products  
10950 Company.





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RESTRICTED USE  
PESTICIDE

DUE TO ACUTE INHALATION TOXICITY OF HIGHLY  
TOXIC HYDROGEN PHOSPHIDE (PHOSPHINE, PH<sub>3</sub>) GAS

For retail sale to and use only by certified applicators for those uses covered by the applicator's certification or persons trained in accordance with this product manual working under the direct supervision and in the physical presence of the certified applicator. Physical presence means on site or on the premises. Read and follow the label and the Research Products Company product manual which contains complete instructions for the safe use of this pesticide.

Detia(R) ROTOX(R) AT  
and  
Detia(R) ROTOX(R) AP

INSTRUCTION BOOKLET

EPA Registration No. 2548-69  
EPA Registration No. 2548-70  
EPA Establishment No. 33982WG01

Research Products Company  
Div. of McShares, Inc.  
P. O. Box 1460  
Salina, KS 67402-1460



NOV 2 1987

01850 F	TABLE OF CONTENTS	
01900	I.	INTRODUCTION.....
01950	A.	History.....
02000	B.	Product Description.....
02050	C.	Product Packaging.....
02100	D.	What is Hydrogen Phosphide?.....
02150	E.	Safety Recommendations.....
02200		
02250	II.	PRECAUTIONARY STATEMENTS.....
02300	A.	Hazards to Humans and Domestic Animals..
02350	B.	Statement of Practical Treatment.....
02400	C.	Note to Physician.....
02450	D.	Physical and Chemical Hazards.....
02500		
02550	III.	DIRECTIONS FOR USE.....
02600	A.	General.....
02650	B.	Protective Clothing.....
( 700	C.	Respiratory Protection.....
02750	D.	Hydrogen Phosphide Exposure Limits.....
02800	E.	Industrial Hygiene Monitoring.....
02850	F.	List of Burrowing Pests.....
02900	G.	Application Instructions.....
02950	H.	Environmental Hazards.....
03000	I.	Endangered Species Restrictions.....
03050	J.	Special Local Restrictions.....
03100	K.	Storage and Disposal.....
03150	L.	Spill and Leak Procedures.....

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# I. INTRODUCTION

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## A. HISTORY

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The history of Detia(R) pesticides is long, dating back to the mid-1930's. In 1970 Detia(R) GAS EX-B was introduced into the United States. The manufacturer, Detia Freyberg GMBH, West Germany was the early pioneer in the development of hydrogen phosphide as a fumigant gas.

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## B. PRODUCT DESCRIPTION

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Both Detia(R) ROTOX(R) AP and Detia(R) ROTOX(R) AT are a mixture of aluminum phosphide (57% by weight), ammonium carbamate and urea which is pressed into tablet and/or pellet form. The nearly spherical pellets are about 3/8" in diameter and weigh 0.6 grams each. The tablets are either disc shaped (4/5" in diameter and 1/5" thick) or spherical in shape (5/8" in diameter) and weigh 3.0 grams each. A pellet will produce about 0.2 gram hydrogen phosphide, the tablet about 1.0 gram. Both react with atmospheric moisture to produce hydrogen phosphide (PH3) in the following way:



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Warm, humid air accelerates the reaction while cool, dry air has the opposite effect.

Detia(R) ROTOX(R) also contains ammonium carbamate which liberates ammonia and carbon dioxide as follows:



These gases are essentially nonflammable and act as inerting agents to reduce fire hazards. The ammonia gas also serves as a warning agent.

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## C. PRODUCT PACKAGING

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The tablets are packaged 500 and 100 to a flask. The pellets are packaged 1660 and 500 to a flask.

The aluminum flasks in which they are packaged are resealable and seamless. Their shelf life is almost unlimited as long as the packaging remains well sealed and intact. Once opened, the flasks may be tightly resealed and stored for future use.

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## D. WHAT IS HYDROGEN PHOSPHIDE?

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Hydrogen phosphide, more commonly referred to as phosphine, is a colorless gas which is toxic to rodents, humans, and other forms of animal life. It is very mobile with a high vapor pressure. Thus, the penetrating capability of hydrogen phosphide is great. The combination of high molecular activity, vapor pressure and toxicity at low dosages accounts for its wide acceptance as a fumigant.

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E. SAFETY RECOMMENDATIONS

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1. Carefully read the labeling and follow instructions explicitly.

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2. Never allow uninstructed persons to handle Detia(R).

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3. Wear dry gloves made of cotton or other material when contact with tablets, pellets or their dust is likely.

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4. Open fumigant containers in open air. Never open in a flammable atmosphere.

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5. Do not allow Detia(R) to contact liquid water or to pile up.

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6. Dispose of empty containers in a proper manner consistent with the label instructions.

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7. Aerate contaminated clothing in well ventilated area prior to washing.

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8. Keep containers tightly closed except when removing product.

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9. Do not reuse aluminum phosphide containers for any purpose other than recycling or reconditioning.

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10. OSHA recommends that the exposure screening of employees be conducted to detect impaired pulmonary function. OSHA recommends that any employees developing the above condition be referred for medical attention.

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II. PRECAUTIONARY STATEMENTS

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A. HAZARDS TO HUMANS AND DOMESTIC ANIMALS

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Keep Out of Reach of Children

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DANGER-POISON

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Aluminum phosphide in pellets, tablets or their dust can be fatal if swallowed. Do not get in eyes, in nose, on skin or on clothing. Do not eat, drink or smoke while handling aluminum phosphide fumigants. When the container is opened, Detia(R) ROTOX(R) will begin to release hydrogen phosphide (phosphine) which is an extremely toxic gas. Contact with water, acids and some other liquids will accelerate this reaction. Pure hydrogen phosphide gas is odorless; the odor is due to a contaminant. Since an odor may not be detected under certain circumstances, the absence of a garlic odor does not mean that hydrogen phosphide gas is absent. Observe proper application and disposal procedures specified elsewhere in the labeling to prevent overexposure.

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FREQUENT EXPOSURE TO CONCENTRATIONS ABOVE PERMISSIBLE LEVELS OVER A PERIOD OF DAYS OR WEEKS MAY CAUSE POISONING.

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B. STATEMENT OF PRACTICAL TREATMENT

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Symptoms of overexposure to hydrogen phosphide are headache, dizziness, nausea, difficult breathing, vomiting and diarrhea. In all cases of overexposure get medical

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08650 attention immediately. Take victim to a doctor or emergency  
 08700 treatment facility.  
 08750  
 08800 U 1. If gas or dust from tablets or pellets is inhaled: Get  
 08900 exposed person to fresh air. Keep warm and make sure  
 08950 person can breathe freely. If breathing has stopped,  
 09000 give artificial respiration by mouth-to-mouth or other  
 09050 means of resuscitation. Do not give anything by mouth  
 09100 to an unconscious person.  
 09150  
 09200 U 2. If the pellets, tablets or their dust are swallowed:  
 09300 Drink or administer one or two glasses of water and induce  
 09350 vomiting by touching back of throat with finger, or if  
 09400 available, administer syrup of ipecac. Do not give  
 09450 anything by mouth if victim is unconscious or not alert.  
 09500  
 09600 U 3. If pellets, tablets or their dust gets on skin or  
 ( 850 U clothing: Brush or shake material off clothes and shoes in  
 09750 well ventilated area. Allow clothes to aerate in a ventilated  
 09800 area prior to laundering. Do not leave contaminated  
 09850 clothing in occupied and/or confined area such as  
 09900 automobiles, vans, motel rooms, homes, etc. Wash  
 09950 contaminated skin thoroughly with soap and water.  
 10000  
 10050 U 4. If dust from the pellets or tablets gets in eyes:  
 10150 Flush with plenty of water. Get medical attention.  
 10200  
 10250 C. NOTE TO PHYSICIAN  
 10300 Aluminum phosphide tablets, pellets or their dust reacts  
 10350 with moisture from the air, water, acids and many other  
 10400 liquids to release hydrogen phosphide (phosphine) gas. Mild  
 10450 exposure by inhalation causes malaise (indefinite feeling of  
 10500 sickness), ringing of ears, fatigue, nausea and pressure in  
 ( 0550 chest which are relieved by removal to fresh air. Moderate  
 0600 poisoning causes weakness, vomiting, epigastric pain (pain  
 10650 just above the stomach), chest pain, diarrhea and dyspnea  
 10700 (difficulty in breathing). Symptoms of severe poisoning may  
 10750 occur within a few hours or up to several days, resulting in  
 10800 pulmonary edema (fluid in lungs) and may lead to dizziness,  
 10850 cyanosis (blue or purple skin color), unconsciousness and  
 10900 death.  
 10950  
 11000 In sufficient quantity hydrogen phosphide affects the liver,  
 11050 kidneys, lungs, nervous system, and circulatory system.  
 11100 Inhalation can cause lung edema (fluid in lungs) and  
 11150 hyperemia (excess of blood in a body part), small  
 11200 perivascular brain hemorrhages and brain edema (fluid in  
 11250 brain). Ingestion can cause lung and brain symptoms, but  
 11300 damage to the viscera (body cavity organs) is more common.  
 11350 Hydrogen phosphide poisoning may result in (1) pulmonary  
 11400 edema, (2) liver elevated serum GOT, LDH and alkaline  
 11450 phosphatase, reduced prothrombin, hemorrhage and jaundice  
 11500 (yellow skin color) and (3) kidney hematuria (blood in

11600 urine) and anuria (abnormal or lack of urination).  
 11650 Pathology is characteristic of hypoxia (oxygen deficiency in  
 11700 body tissue). Frequent exposure over a period of days or  
 11750 weeks may cause poisoning. Treatment is symptomatic.  
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11850 The following measures are suggested for use by the  
 11900 physician in accordance with his own judgment:  
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1. In its milder to moderate forms (symptoms of poisoning may take up to 24 hours to make their appearance), the following is suggested:

- a. Complete rest 1-2 days during which the patient must be kept quiet and warm.
- b. If the patient suffers from vomiting or increased blood sugar, appropriate solutions should be administered. Treatment with oxygen is recommended as is the administration of cardiac and circulatory stimulants.

2. In cases of severe poisoning (intensive care unit recommended):

- a. Where pulmonary edema is observed, steroid therapy should be considered and close medical supervision is recommended. Blood transfusions may be necessary.
- b. In case of manifest pulmonary edema, venesection should be performed under vein pressure control. Heart glycosides (I.V.) can be used in case of hemoconcentration. Venesection may result in shock. In the case of progressive edema of the lungs, immediately intubate and remove edema fluid and administer oxygen over-pressure respiration, as well as any measures required for shock treatment. In case of kidney failure, extracorporeal hemodialysis is necessary. There is no specific antidote known for this poisoning.
- c. If pellets or tablets are ingested, induce vomiting. Flush the stomach with a diluted potassium permanganate solution or a solution of magnesium peroxide until flushing liquid ceases to smell of carbide. Thereafter, apply carbomedicinal's.

#### D. PHYSICAL AND CHEMICAL HAZARDS

14000 Aluminum phosphide in tablets, pellets or partially spent  
 14050 dust will release hydrogen phosphide gas if exposed to  
 14100 moisture from the air or if it comes into contact with  
 14150 water, acids or many other liquids. Piling of tablets,  
 14200 pellets or dust from their fragmentation may cause a

14300 temperature increase and confine the release of gas so that  
 14350 ignition could occur.  
 14400  
 14450 Always open flasks of Detia(R) ROTOX in open air. Never  
 14500 open in a flammable atmosphere because on rare occasions  
 14550 they may flash. When opening, point the container away from  
 14600 the face and body and slowly loosen the cap. These  
 14650 precautions will also reduce the applicator's exposure to  
 14700 hydrogen phosphide gas.  
 14750  
 14800 Pure hydrogen phosphide gas is practically insoluble in  
 14850 water and oils and is stable at normal fumigation  
 14900 temperatures. However, it may react with certain metals and  
 14950 cause corrosion, especially at higher temperatures and  
 15000 relative humidities. Metals such as copper, brass and other  
 15050 copper alloys, and precious metals such as gold and silver  
 15100 are susceptible to corrosion by hydrogen phosphide.

### III. DIRECTIONS FOR USE

#### A. GENERAL

1. It is a violation of federal law to use this product in a manner inconsistent with its labeling. Detia(R) ROTOX(R) AT and AP are Restricted Use Pesticides due to the acute inhalation toxicity of hydrogen phosphide (phosphine, PH<sub>3</sub>) gas. These products are for retail sale to and use only by certified applicators for those uses covered by the applicator's certification or persons trained in accordance with this product manual working under the direct supervision and in the physical presence of the certified applicator. Physical presence means on site or on the premises.
2. Detia(R) is a highly hazardous material and may be used only by individuals trained in its proper use. Before using, read and follow the label precautions and directions on the label and in labeling.

Additional copies of this manual are available from:

Research Products Company  
 Div. of McShares, Inc.  
 P. O. Box 1460  
 Salina, Kansas 67402-1460  
 913-825-2181

3. Do not fumigate with this product when burrow temperature is below 40 degrees F (5 degrees C).

#### B. PROTECTIVE CLOTHING

Wear dry gloves made of cotton or other material when

17000 contact with tablets, pellets, or their dust is likely.  
17050 Wash hands after use.  
17100

17150 C. RESPIRATORY PROTECTION

17200 Respiratory protection need not be available for outdoor  
17250 applications.  
17300

17350 D. HYDROGEN PHOSPHIDE EXPOSURE LIMITS

17400 Exposure to hydrogen phosphide must not exceed the 8  
17450 hour TWA of 0.3 ppm.  
17500

17550 E. INDUSTRIAL HYGIENE MONITORING

17600 Monitoring is not required outdoors.  
17650

17700 F. LIST OF BURROWING PESTS

17750 Dettia(R) ROTOX(R) may be used out of doors only for the  
17800 control of the following burrowing rodents and moles: marmot  
7850 sp. - woodchucks and yellow-belly marmots (rockchucks),  
17900 prairie dogs (except Utah prairie dog), Norway and roof  
17950 rats, mice, ground squirrels, moles (except in Indiana),  
18000 voles, gophers and chipmunks (except in California).  
18050

18100 G. APPLICATION INSTRUCTIONS

18150 Add from 1 to 4 Dettia(R) ROTOX(R) AT tablets or 5 to 20  
18200 Dettia(R) ROTOX(R) AP pellets to each burrow opening. Seal  
18250 tightly by shoveling soil over the entrance. Place the  
18300 pellets or tablets far enough down the burrow that the soil  
18350 used to plug the burrow doesn't cover the pellets or  
18400 tablets, slowing down their action. Where possible,  
18450 subsurface tunnels or runways should be treated every 5 to  
18500 10 feet with a dose of 2 to 4 tablets or 10 to 20 pellets.  
18550 Use lower rates in smaller burrows, in tight soils, under  
18600 moist soil conditions and higher rates in larger burrows, in  
18650 porous soils and/or when soil moisture is low. In extremely  
( 8700 dry or porous soil, it is sometimes not possible to obtain  
18750 satisfactory results. This is particularly true in  
18800 instances where the burrow systems are extensive such as  
18850 moles or gophers. It is always better not to fumigate  
18900 during extended periods of dry weather. Treat reopened  
18950 burrows and fresh runways a second time 1 to 3 days after  
19000 the initial treatment.  
19050

19100 Dettia(R) may be used out of doors only, for control of  
19150 burrowing pests. Do not use within 15 feet (5 meters) of  
19200 inhabited structures. Do not apply to burrows which may  
19250 open under or into occupied buildings.  
19300

19350 H. ENVIRONMENTAL HAZARDS

19400 This product is highly toxic to wildlife. Non-target  
19450 organisms exposed to hydrogen phosphide gas in burrows will  
19500 be killed. Do not apply directly to water or wetlands  
19550 (swamps, bogs, marshes, and potholes). Do not contaminate  
19600 water by cleaning of equipment or disposal of wastes.



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## I. ENDANGERED SPECIES RESTRICTIONS

The use of Detia(R) ROTOX(R) in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of federal laws. Before using this pesticide on range and/or pastureland in the counties listed below, you must obtain the PESTICIDE USE BULLETIN FOR PROTECTION OF ENDANGERED SPECIES for the county in which the product is to be used. The bulletin is available from your county extension agent, state fish and game office, or your pesticide dealer. Use of this product in a manner inconsistent with the PESTICIDE USE BULLETIN FOR PROTECTION OF ENDANGERED SPECIES is a violation of federal laws.

Even if applicable county bulletins do not prohibit the use of this product at the intended site of application, you may not use this product for control of prairie dogs in the states of Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah or Wyoming unless a pre-control survey has been conducted. Contact the nearest U.S. Fish and Wildlife Service endangered species specialist to determine survey requirements in your area. This survey must be in compliance with the black-footed ferret survey guidelines, developed by the U.S. Fish and Wildlife Service, and a determination must be made in accordance with the guidelines that black-footed ferrets are not present in the treatment area.

## CALIFORNIA

Fresno, Inyo, Kern, Kings, Madera, Merced, Monterey, San Benito, San Luis Obispo, Santa Barbara, Stanislaus and Tulare

## FLORIDA

Statewide

## GEORGIA

Appling, Atkinson, Bacon, Baker, Ben Hill, Blackley, Berrien, Brantley, Brooks, Bryan, Bullock, Calhoun, Camden, Candler, Charlton, Chatham, Clinch, Coffee, Colquitt, Cook, Crisp, Decatur, Dodge, Dooly, Daugherty, Early, Echols, Effingham, Emanuel, Evans, Glynn, Grady, Irwin, Jeff Davis, Jenkins, Johnson, Lanier, Laurens, Lee, Liberty, Long, Lowndes, Macon, McIntosh, Miller, Mitchell, Montgomery, Pierce, Pulaski, Screven, Seminole, Telfair, Tattnall, Thomas, Tift, Toombs, Treutlen, Turner, Ware, Wayne, Wheeler, Wilcox and Worth

## NEW MEXICO

Hidalgo

22400 UTAH  
22450 Beaver, Garfield, Iron, Kane, Piute, Sevier, Washington and  
22500 Wayne  
22550

22600 WYOMING  
22650 Albany  
22700

J. SPECIAL LOCAL RESTRICTIONS

(1) NORTH CAROLINA

Detia(R) ROTOX(R) may only be used for control of rats and mice in the state of North Carolina. Use against other pests is not permitted.

(2) OKLAHOMA

A special permit for black-tailed prairie dog control by poisoning is required in Oklahoma. Contact the Oklahoma State Department of Wildlife Conservation to obtain this permit.

(3) WISCONSIN

A state permit is required for use of pesticides in Wisconsin to control small mammals, except rats or mice. Please contact your local Department of Natural Resources office for information.

(4) INDIANA

Use of Detia(R) ROTOX(R) for mole control is not legal in the state of Indiana.

(5) MISSOURI

A state permit is required for use of pesticides in Missouri to control small mammals, except rats and mice. Please contact the Missouri Department of Conservation office for information.

(6) KANSAS

A special permit for black-tailed prairie dog control by poisoning is required in Kansas. Contact the Kansas Fish and Game Commission to obtain this permit.

(7) CALIFORNIA

Use of Detia(R) ROTOX for chipmunk control is not legal in the state of California.

K. STORAGE AND DISPOSAL

1. STORAGE

Flasks should be stored in a dry, well ventilated area, away from heat and under lock and key. Post as a pesticide storage area. Do not contaminate water, food or feed by storing pesticides in the same areas used to store these commodities. Do not store in buildings

25100 where humans or domestic animals reside. Keep out of  
25150 reach of children.

25200  
25250 Detia(R) ROTOX(R) is supplied in gas tight resealable,  
25300 aluminum flasks. Do not expose the product inside  
25350 flasks to atmospheric moisture any longer than is  
25400 necessary. Seal tightly before returning opened flasks  
25450 to storage. The shelf life of Detia(R) is virtually  
25500 unlimited if the containers are tightly sealed.

25550  
25600 U 2. DISPOSAL OF UNREACTED OR PARTIALLY REACTED TABLETS OR  
25700 PELLETS  
25750 (From spills, leaking flasks or other sources) Unreacted  
25800 or partially reacted Detia(R) ROTOX(R) AP or Detia(R)  
25850 ROTOX(R) AT are acutely hazardous. Improper disposal of  
25900 these products is a violation of federal law. If these  
25950 products cannot be disposed of by ordinary use or  
3000 according to the instructions that follow, contact your  
26050 state pesticide or environmental control agency or the  
26100 hazardous waste representative at the nearest EPA  
26150 regional office for guidance. Do not contaminate water  
26200 by disposal.

26250  
26300 Some local and state waste disposal regulations may vary  
26350 from the following recommendations. Disposal procedures  
26400 should be reviewed with appropriate authorities to  
26450 ensure compliance with local regulations.

26500  
26550 FOR SPECIFIC INSTRUCTIONS SEE "SPILL AND LEAK  
26600 PROCEDURES" BELOW.

26650  
26700 3. DISPOSAL OF EMPTY FLASKS  
26800 U a. Method\_Q08: Triple rinse flasks and stoppers  
26850 with water. Then offer for recycling or reconditioning,  
26900 or puncture and dispose of them in a sanitary landfill  
26950 or other approved site or by other procedures  
27000 approved by state and local authorities. Dispose of  
27050 rinsate in a sanitary landfill or by other approved  
27100 procedures. Small quantities can be poured out on  
27150 the ground.

27200  
27300 U b. Method\_I02: Remove lids and place empty flasks outdoors  
27350 until residue in flasks is reacted. Puncture and  
27400 dispose of them in a sanitary landfill or other  
27450 approved site or by other procedures approved by  
27500 state and local authorities.

27550  
27600 L. SPILL AND LEAK PROCEDURES

27650 1. GENERAL  
27700 A spill, other than incidental to application or normal  
27750 handling or punctured flasks can produce high levels of  
27800 gas, and therefore, attending personnel must wear a SCBA  
27850 or its equivalent when the concentrations of hydrogen

27900 phosphide gas is unknown. If the concentration is  
28000 known, other NIOSH/MSHA approved respiratory protection  
28050 can be worn. Wear dry cotton or other gloves when  
28100 handling spilled material.  
28150  
28200 2. DAMAGE TO FIBERBOARD CASE  
28250 Check aluminum flasks. If they are damaged handle as  
28300 described below. If they are undamaged return them to  
28350 cardboard cartons or other suitable packaging which  
28400 complies with DOT regulations.  
28450  
28500 3. LEAKING FLASK PROCEDURES  
28550 If aluminum flasks have been punctured or damaged  
28600 causing a leak, the product may be immediately used, the  
28650 container may be temporarily repaired with aluminum tape  
28700 or the Detia(R) may be transferred from the damaged  
28750 flask to a sound metal container which should be sealed  
28800 and properly labeled as aluminum phosphide. Transport  
28850 the damaged containers to an area suitable for pesticide  
28900 storage for inspection. Further instructions and  
28950 recommendations may be obtained, if required, from  
29000 Research Products Company.  
29050  
29100 Handle empty damaged containers as described under  
29150 "DISPOSAL OF EMPTY FLASKS" above.  
29200  
29250 4. SPILL PROCEDURES  
29300 Do not flush spillage down drain with water. DO NOT  
29350 use water at anytime to clean up a spill. Water in  
29400 contact with unreacted tablets or pellets will rapidly  
29450 accelerate the production of hydrogen phosphide gas and  
29500 could cause spontaneous ignition of the gas. If the  
29550 spill is only a few minutes old and is not contaminated  
29600 by other materials, collect the spillage and place it  
29650 back into the original flask or other sound metal  
29700 container and tighten the cap. If possible, use  
29750 immediately. CAUTION! AN IGNITION MAY OCCUR WHEN THESE  
29800 CONTAINERS ARE REOPENED.  
29850  
29900 If the spilled material is contaminated or has begun to  
29950 visibly decompose, gather it up and place it into open  
30000 top, perforated gallon cans and process it immediately.  
30050  
30100 Do not add more than about one flask (2 to 3 lbs.) of  
30150 spilled material to the bucket. If on-site  
30200 deactivation is not feasible, these open containers  
30250 should be transported in open vehicles to a suitable  
30300 area away from occupied buildings. Wet or dry  
30350 deactivation must then be carried out as described in the  
30400 section immediately below.  
30450  
30500 U 5. DEACTIVATION AND DISPOSAL OF UNREACTED OR PARTIALLY REACTED  
30600 TABLETS OR PELLETS

30850 U

a. Wet Method

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30900

Transport material by hand or in open vehicles to open air away from occupied structures. Fill a drum 2/3 full with water.

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Add 1/4 cup of low sudsing detergent or surfactant in each gallon of water. Each flask of tablets or pellets should be mixed with no less than 1 gallon of water/detergent solution. Slowly pour the material into the water as it is stirred. Stir occasionally thereafter for at least 36 hours. Appropriate respiratory protection must be worn. DO NOT COVER THE CONTAINER. IF THE CONTAINER IS COVERED THE HYDROGEN PHOSPHIDE BEING GENERATED WILL BE CONFINED AND WILL DECOMPOSE EXPLOSIVELY. The wet method of deactivation is the method of choice for quantities in excess of 5 flasks (10 to 15 pounds). It is safe to dispose of this slurry.

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Dispose of the resulting deactivated slurry, with or without preliminary pouring out of excess water, at a sanitary landfill or other suitable burial site approved by local authorities. Where permissible this slurry may be poured into a storm sewer or out onto the ground.

32050 U

b. Dry Method

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As an alternative to the wet method, when permissible small amounts (up to 5 flasks) of partially reacted or unreacted material may be spread out in an open, secure area away from occupied buildings to be deactivated by atmospheric moisture.

( 2450  
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32700

NOTE: Never place pellets, tablets, their dust or the dust/water slurry in a confined container such as a closed drum or plastic bags. Any hydrogen phosphide generated will be confined and may decompose explosively.