

Continuing Education Workshop

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Pesticide Label Reading



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Overview

- What is a pesticide label
- Where you are required to keep the labels
- Responsibility of applicators and employees to read and follow label instructions
- What information can be found on labels
- Practice label reading



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What is a pesticide label?

- Complex legal document
- Detailed safety instructions
- Detailed use instructions

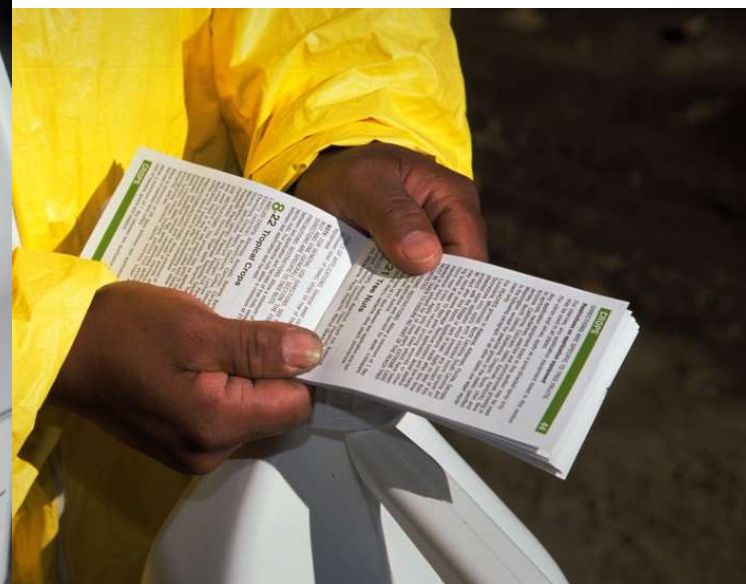


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What is a pesticide label?



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Labels and Labeling

- The **label** is the information printed on, or physically attached to, the pesticide container itself.
- **Labeling** includes the label plus any other information about the product the label refers to.
- Labeling can also include websites directing you to for more information about uses or restrictions, like the EPA Bulletins Live! Two website
- Directions for a product that are not directly on the label, but the label directs you to are legally binding



Where are you required to keep labels?

- Copy of the label must be available at each use site.
 - Mix/load site
 - Application site
 - Storage facility
- Section 7.05 of PAA: For commercial applicators
 - Label shall be in the possession of applicator at the site of application whenever an application is performed



Where are you required to keep labels?

Central Display: Information from the pesticide label, application specific information and Safety Data Sheets are required to be displayed.



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Where are you required to keep labels?

- “You have the right to look at pesticide use records, applicable pesticides safety information, and SDSs for all the pesticides used in the last two years where you work...”



When are you required to read the label?

- Before buying
- Before mixing
- Before loading
- Before applying
- Before storing
- Before transporting
- Before disposing



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The Label is the Law

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

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.

**Read the label, understand the label,
and then follow the label!**



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Pesticide Label Reading Exercise



Pesticide Label Reading Exercise

1. What is the brand name?
2. What kind of pesticide is it?
3. What is/are the active ingredients?
4. What is the EPA registration number?
5. What is the signal word?
6. What are the precautionary statements?
 - a. What are the hazards to humans and domestic animals?
 - b. What are the environmental hazards?
 - c. What are the physical and chemical hazards?
7. What is the PPE for applicators and other handlers?
8. Can this pesticide be used in residential areas?
9. Can this pesticide be applied via chemigation?
10. The label lists weather conditions that can impact drift. What are they?
11. What droplet sizes should be used when applying this pesticide via groundboom?
12. What is the maximum release height for a groundboom application of this pesticide?
13. What is the maximum amount of this product that can be applied per acre per year?
14. What are 3 crops this pesticide can be used on?
15. What are 3 pests this pesticide is effective against?
16. What should you do with the empty pesticide container?

Question 1: What is the brand name?

Answer: Brandt Lime Sulfur

Brandt® Lime Sulfur



Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

ACTIVE INGREDIENT:	
Calcium polysulfide	29.0%
OTHER INGREDIENTS:	71.0%
TOTAL:	100.0%

Density: Baume at 60°F 31*
Lbs Per Gallon at 68°F 10.6
Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.

EPA Reg. No. 61842-30-48813

EPA Est. No. 48498-CA-1

KEEP OUT OF REACH OF CHILDREN DANGER – PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID

IF IN EYES: Hold eyes 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 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 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 the poison control center or doctor. Do not give anything 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-866-374-1975 for emergency medical treatment information.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate gastric lavage.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. This product is corrosive to flesh because of its caustic alkaline nature.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:

Coveralls over long-sleeved shirt and long pants.
Chemical-resistant gloves (barrier laminate butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).

Chemical-resistant footwear plus socks.

Goggles or face shield.

Chemical-resistant headgear for overhead exposure.

Chemical-resistant apron when mixing, loading or cleaning equipment or spills.

Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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/PPE 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

This pesticide is toxic to fish. Drift may be hazardous to aquatic organisms in water adjacent to treated areas. 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.

PHYSICAL OR CHEMICAL HAZARDS

Do not mix BRANDT LIME SULFUR with acids or phosphate fertilizer products. Deadly and potentially extremely flammable hydrogen sulfide gas may be emitted.

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 and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

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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 over long-sleeved shirt and long pants, chemical-resistant gloves, chemical-resistant footwear plus socks, goggles or face shield, chemical-resistant headgear for overhead exposure.


Question 2: What kind of pesticide is it?

Answer: Fungicide



Brandt® Lime Sulfur

Fungicide



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ACTIVE INGREDIENT:
Calcium polysulfide 29.0%
OTHER INGREDIENTS: 71.0%
TOTAL: 100.0%

Density: Baume at 60°F 31*
Lbs Per Gallon at 68°F 10.6
Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.

EPA Reg. No. 61842-30-48813 EPA Est. No. 48498-CA-1

**KEEP OUT OF REACH OF CHILDREN
DANGER – PELIGRO**

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FIRST AID

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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 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 the poison control center or doctor. Do not give anything 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-866-374-1975 for emergency medical treatment information.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate gastric lavage.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS
DANGER: Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. This product is corrosive to flesh because of its caustic alkaline nature.

PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials that are chemical resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:
Coveralls over long-sleeved shirt and long pants.
Chemical-resistant gloves (barrier laminate butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).
Chemical-resistant footwear plus socks.
Goggles or face shield.
Chemical-resistant headgear for overhead exposure.
Chemical-resistant apron when mixing, loading or cleaning equipment or spills.
Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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/PPE 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
This pesticide is toxic to fish. Drift may be hazardous to aquatic organisms in water adjacent to treated areas. 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.

PHYSICAL OR CHEMICAL HAZARDS
Do not mix BRANDT LIME SULFUR with acids or phosphate fertilizer products. Deady and potentially extremely flammable hydrogen sulfide gas may be emitted.

DIRECTIONS FOR USE
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AGRICULTURAL USE REQUIREMENTS
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BRANDT LIME SULFUR – 2019-02 – Page 1 of 4

Question 3: What is/are the active ingredients?

Answer: Calcium polysulfide



Brandt® Lime Sulfur

Fungicide

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ACTIVE INGREDIENT:
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TOTAL: 100.0%

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Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.
EPA Reg. No. 61842-30-48813 EPA Est. No. 48498-CA-1

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DANGER – PELIGRO**
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FIRST AID
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HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-866-374-1975 for emergency medical treatment information.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate gastric lavage.

PRECAUTIONARY STATEMENTS
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DANGER: Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. This product is corrosive to flesh because of its caustic alkaline nature.
PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials that are chemical resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:
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Chemical-resistant gloves (barrier laminate butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).
Chemical-resistant footwear plus socks.
Goggles or face shield.
Chemical-resistant headgear for overhead exposure.
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BRANDT LIME SULFUR – 2019-02 – Page 1 of 4


Question 4: What is the EPA registration number?

Answer: 61842-30-48813



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Fungicide



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PRECAUTIONARY STATEMENTS

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PERSONAL PROTECTIVE EQUIPMENT (PPE)
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 Coveralls over long-sleeved shirt and long pants.
 Chemical-resistant gloves (barrier laminate butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).
 Chemical-resistant footwear plus socks.
 Goggles or face shield.
 Chemical-resistant headgear for overhead exposure.
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BRANDT LIME SULFUR – 2019-02 – Page 1 of 4


Question 5: What is the signal word?

Answer: Danger/Peligro



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Fungicide



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FIRST AID

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PRECAUTIONARY STATEMENTS

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PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials that are chemical resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:
Coveralls over long-sleeved shirt and long pants.
Chemical-resistant gloves (barrier laminate butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).
Chemical-resistant footwear plus socks.
Goggles or face shield.
Chemical-resistant headgear for overhead exposure.
Chemical-resistant apron when mixing, loading or cleaning equipment or spills.
Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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/PPE 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
This pesticide is toxic to fish. Drift may be hazardous to aquatic organisms in water adjacent to treated areas. 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.

PHYSICAL OR CHEMICAL HAZARDS
Do not mix BRANDT LIME SULFUR with acids or phosphate fertilizer products. Deady and potentially extremely flammable hydrogen sulfide gas may be emitted.

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 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 48 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 over long-sleeved shirt and long pants, chemical-resistant gloves, chemical-resistant footwear plus socks, goggles or face shield, chemical-resistant headgear for overhead exposure.

BRANDT LIME SULFUR – 2019-02 – Page 1 of 4

Question 6a: What are the hazards to humans and domestic animals

Answer: DANGER: Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. This product is corrosive to flesh because of its caustic alkaline nature.



Brandt® Lime Sulfur

Fungicide

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ACTIVE INGREDIENT:	
Calcium polysulfide	29.0%
OTHER INGREDIENTS:	71.0%
TOTAL:	100.0%

Density: Baume at 60°F 31*
 Lbs Per Gallon at 68°F 10.6
 Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.
 EPA Reg. No. 61842-30-48813 EPA Est. No. 48498-CA-1

KEEP OUT OF REACH OF CHILDREN
DANGER – PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FIRST AID

IF IN EYES: Hold eyes 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 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 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 the poison control center or doctor. Do not give anything 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-866-374-1975 for emergency medical treatment information.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate gastric lavage.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. This product is corrosive to flesh because of its caustic alkaline nature.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical resistant to this product are made of any waterproof material.

USER SAFETY RECOMMENDATIONS:

Users should: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing/PPE 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

This pesticide is toxic to fish. Drift may be hazardous to aquatic organisms in water adjacent to treated areas. 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.

PHYSICAL OR CHEMICAL HAZARDS

Do not mix BRANDT LIME SULFUR with acids or phosphate fertilizer products. Deadly and potentially extremely flammable hydrogen sulfide gas may be emitted.

DIRECTIONS FOR USE

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AGRICULTURAL USE REQUIREMENTS

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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 over long-sleeved shirt and long pants; chemical-resistant gloves; chemical-resistant footwear plus socks; goggles or face shield; chemical-resistant headgear for overhead exposure.

BRANDT LIME SULFUR – 2019-02 – Page 1 of 4

Brandt Lime Sulfur

Fungicide



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ACTIVE INGREDIENT:	
Calcium polysulfide	29.0%
OTHER INGREDIENTS:	71.0%
TOTAL:	100.0%

Density: Baume at 60°F 31°
Lbs Per Gallon at 68°F 10.6
Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.

EPA Reg. No. 61942-30-48813 EPA Est. No. 48498-CA-1

KEEP OUT OF REACH OF CHILDREN DANGER — PELIGRO

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FIRST AID

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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 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 the poison control center or doctor. Do not give anything 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

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PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

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PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:

Coveralls over long-sleeved shirt and long pants.
Chemical-resistant gloves (barrier laminate; butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).
Chemical-resistant footwear plus socks,
Goggles or face shield,
Chemical-resistant headgear for overhead exposure.
Chemical-resistant apron when mixing, loading or cleaning equipment or spills.

Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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/PPE 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

This pesticide is toxic to fish. Drift may be hazardous to aquatic organisms in water adjacent to treated areas. 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.

PHYSICAL OR CHEMICAL HAZARDS

Do not mix BRANDT LIME SULFUR with acids or phosphate fertilizer products. Deadly and potentially extremely flammable hydrogen sulfide gas may be emitted.

DIRECTIONS FOR USE

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Question 7: What is the PPE for applicators and other handlers?

Answer:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves
- Chemical-resistant footwear plus socks
- Goggles or face shield
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when mixing, loading or cleaning equipment or spills.

Brandt Lime Sulfur

Fungicide



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ACTIVE INGREDIENT:	
Calcium polysulfide	29.0%
OTHER INGREDIENTS:	
	71.0%
TOTAL:	100.0%

Density: Baume at 60°F31°
Lbs Per Gallon at 68°F10.6
Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.

EPA Reg. No. 61942-30-48813 EPA Est. No. 48498-CA-1

KEEP OUT OF REACH OF CHILDREN DANGER — PELIGRO

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FIRST AID

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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 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 the poison control center or doctor. Do not give anything 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-866-374-1975 for emergency medical treatment information.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate gastric lavage.

PRECAUTIONARY STATEMENTS

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PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:

Coveralls over long-sleeved shirt and long pants.
Chemical-resistant gloves (barrier laminate; butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).

Chemical-resistant footwear plus socks,

Goggles or face shield,

Chemical-resistant headgear for overhead exposure.

Chemical-resistant apron when mixing, loading or cleaning equipment or spills.

Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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/PPE 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

This pesticide is toxic to fish. Drift may be hazardous to aquatic organisms in water adjacent to treated areas. 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.

PHYSICAL OR CHEMICAL HAZARDS

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DIRECTIONS FOR USE

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Question 6b: What are the environmental hazards?

Answer: This pesticide is toxic to fish. Drift may be hazardous to aquatic organisms in water adjacent to treated areas. 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.



Brandt Lime Sulfur

Fungicide



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ACTIVE INGREDIENT:	
Calcium polysulfide	29.0%
OTHER INGREDIENTS:	71.0%
TOTAL:	100.0%

Density: Baume at 60°F31°
Lbs Per Gallon at 68°F10.6
Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.

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KEEP OUT OF REACH OF CHILDREN DANGER – PELIGRO

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FIRST AID

IF IN EYES: Hold eyes 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 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 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 the poison control center or doctor. Do not give anything to an unconscious person.

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NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate gastric lavage.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. This product is corrosive to flesh because of its caustic alkaline nature.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:

Coveralls over long-sleeved shirt and long pants.
Chemical-resistant gloves (barrier laminate; butyl, nitrile, neoprene or natural rubber > 14 mils; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).
Chemical-resistant footwear plus socks.
Goggles or face shield.
Chemical-resistant headgear for overhead exposure.
Chemical-resistant apron when mixing, loading or cleaning equipment or spills.

Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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/PPE 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

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PHYSICAL OR CHEMICAL HAZARDS

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DIRECTIONS FOR USE

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Question 6c: What are the physical and chemical hazards?

Answer: Do not mix BRANDT LIME SULFUR with acids or phosphate fertilizer products. Deadly and potentially extremely flammable hydrogen sulfide gas may be emitted.



Question 8: Can this pesticide be used in residential areas?

Answer: NO!

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT for agricultural pesticides.

INSTRUCTIONS FOR USE

Some fruits and other plants are susceptible to injury from sulfur under certain climatic conditions. The user is advised not to use sulfur on any crop unless local use has proved that sulfur does not damage crops in that locality.

USE PRECAUTIONS: Do not use this product within 30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.

RESTRICTIONS: Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

Do not apply, or allow to drift, to painted surfaces as a permanent stain may result. Do not combine BRANDT LIME SULFUR with other pesticides unless previous experience has shown them to be compatible. If tank mixing, always follow the more restrictive label directions. This product cannot be mixed with any product containing a label prohibition against such mixing. Read entire label and use strictly in accordance with label directions.

Do not apply this product through any type of irrigation system.

Do not use this product for crop thinning.

Unless otherwise indicated, the following use rates are per 100 gallons of water. Where a rate range is given, use the higher rates when disease is severe or where disease was severe in the previous season.

Do not apply more than 30 gallons of this product/acre/year to any crop listed on this label.

Do not apply this product to harvested fruit.

of this product that are NOT for agricultural pesticides. This product is used to produce greenhouses.

from sulfur under certain conditions on any crop unless local use has proved that sulfur does not damage crops in that locality.

30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.

to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

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ion system.

per 100 gallons of water, when disease is severe or where disease was severe in the previous season.

re/year to any crop listed on this label.

e.g., wind direction, wind speed, and temperature at application (e.g., ground, foliage, drift). The applicator and operator should make appropriate adjustments when using this product.

ter than 10 mph at the time of application.

according to the American Society of Mechanical Engineers (ASME) for standard nozzles (see ASME A11.2 for nozzle diameter (VMD) for nozzles).

more than 4 feet above the canopy.

er than above the canopy. Do not apply this product for crop thinning.

eds less than 3 mph, the rate of application should be reduced. Where atmospheric inversions exist, or where temperature inversions exist, do not make applications. Do not make applications when atmospheric conditions are unfavorable.

ontrate spray applications. Do not apply more than 30 gallons of this product/acre/year to any crop listed on this label.

ate sprays do not exceed 30 gallons per acre on a per acre basis. (Rust is effectively controlled with sulfur.)

ALMONDS

DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT or DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.

PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply ¼ to 1 ½ gallons.

APPLES

DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 ½ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.

DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 ½ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 ½ to 2 gallons, repeat in Pre-Pink and Pink stages.

PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.

PINK for Powdery Mildew, Apple Scab—Apply 2 ½ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.

PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.

PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.

GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply ½ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.

POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

BLUEBERRIES

Phomopsis Cane and Twig Blight—Apply 5 to 6 gallons per 100 to 150 gallons of diluted spray per acre. Apply during delayed dormant stage after leaf buds begin to break. To aid control of Mummy Berry (caused by the fungus *Monilinia vaccinii-corymbosi*), apply a post harvest (September to October) or early dormant spray of 8 gallons BRANDT LIME SULFUR per 100 gallons of water. Use 200 to 300 gallons of spray per acre. **Restriction:** Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during period of warm temperatures.

CANE BERRIES

(Such as Blackberries, Boysenberries, Raspberries, and other canberries) **FALL** application for Red Berry Mite, Blackberry Leaf Mite—Apply 8 gallons after old canes have been removed from the field.

DORMANT or DELAYED DORMANT (Green Bud) for Anthracnose, Cane Blight, Powdery Mildew, Overwintering Spores, Rust—Apply 6 to 12 gallons. For Spur Blight—Apply one spray at 12 gallons or two sprays at 10 gallons before buds break and show silver. For Overwintering Spores only—Apply 2 1/3 gallons.

DELAYED DORMANT or when leaf buds first start to open for Red Berry (Blackberry mite), Rose Scale, Oyster Scale, San Jose Scale, and Yellow Rust—Apply 8 gallons.

EARLY SPRING, when new growth is 1 ½ inches long, use 5 gallons for the control of Rose Scale, Oyster Scale, San Jose Scale and Yellow Rust. When fruiting canes are 8 to 12 inches long and before blossoms have opened—for Anthracnose, Cane Blight, Powdery Mildew and Rust—Apply 8 1/3 gallon. **Restriction:** Do not use on raspberries at this timing.

CHERRIES (SWEET)

DELAYED DORMANT for Powdery Mildew—Apply 7 ½ gallons. For the control of Coryneum Blight, Scale Insects, Peach Twig Borer, Leaf Curl, Silver Mites—Apply 6 to 11 gallons per 100 gallons of spray or at a rate of 3 gallons with 1 ½ gallons of superior type oil per 100 gallons for additional control of Brown Mites and Red Mites.

POST-HARVEST for Brown Mites, Two Spotted Mite—Apply 1 gallon plus 4 pounds wettable sulfur. Apply to the cherry trees after the fruit has been harvested. **POST-HARVEST** for Powdery Mildew—Apply 10 to 20 gallons per acre in sufficient water for coverage. Apply to the cherry trees after the fruit has been harvested.

Question 9: Can this pesticide be applied via chemigation?

Answer: NO!

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT for agricultural pesticides.

INSTRUCTIONS FOR USE

Some fruits and other plants are susceptible to injury from sulfur under certain climatic conditions. The user is advised not to use sulfur on any crop unless local use has proved that sulfur does not damage crops in that locality.

USE PRECAUTIONS: Do not use this product within 30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.

RESTRICTIONS: Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

Do not apply, or allow to drift, to painted surfaces as a permanent stain may result. Do not combine BRANDT LIME SULFUR with other pesticides unless previous experience has shown them to be compatible. If tank mixing, always follow the more restrictive label directions. This product cannot be mixed with any product containing a label prohibition against such mixing. Read entire label and use strictly in accordance with label directions.

Do not apply this product through any type of irrigation system.

Do not use this product for crop thinning.

Unless otherwise indicated, the following use rates are per 100 gallons of water. Where a rate range is given, use the higher rates when disease is severe or where disease was severe in the previous season.

Do not apply more than 30 gallons of this product/acre/year to any crop listed on this label.

Do not apply this product to harvested fruit.

from sulfur under certain conditions on any crop unless local use has proved that sulfur does not damage crops in that locality.

30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury.

temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.

to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

as a permanent stain may result. Do not combine BRANDT LIME SULFUR with other pesticides unless previous experience has shown them to be compatible. If tank mixing, always follow the more restrictive label directions. This product cannot be mixed with any product containing a label prohibition against such mixing. Read entire label and use strictly in accordance with label directions.

ion system.

per 100 gallons of water, when disease is severe or where disease was severe in the previous season.

Do not apply more than 30 gallons of this product/acre/year to any crop listed on this label.

Do not apply this product to harvested fruit.

Do not apply this product to harvested fruit.

Do not apply this product to harvested fruit.

Do not apply this product to harvested fruit.

Do not apply this product to harvested fruit.

Do not apply this product to harvested fruit.

ALMONDS

DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT or DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.

PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply ¼ to 1 ½ gallons.

APPLES

DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 ½ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.

DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 ½ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 ½ to 2 gallons, repeat in Pre-Pink and Pink stages.

PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.

PINK for Powdery Mildew, Apple Scab—Apply 2 ½ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.

PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.

PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.

GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply ½ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.

POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

BLUEBERRIES

Phomopsis Cane and Twig Blight—Apply 5 to 6 gallons per 100 to 150 gallons of diluted spray per acre. Apply during delayed dormant stage after leaf buds begin to break. To aid control of Mummy Berry (caused by the fungus *Monilinia vaccinii-corymbosi*), apply a post harvest (September to October) or early dormant spray of 8 gallons BRANDT LIME SULFUR per 100 gallons of water. Use 200 to 300 gallons of spray per acre. **Restriction:** Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during period of warm temperatures.

CANE BERRIES

(Such as Blackberries, Boysenberries, Raspberries, and other canberries) **FALL** application for Red Berry Mite, Blackberry Leaf Mite—Apply 8 gallons after old canes have been removed from the field.

DORMANT or DELAYED DORMANT (Green Bud) for Anthracnose, Cane Blight, Powdery Mildew, Overwintering Spores, Rust—Apply 6 to 12 gallons. For Spur Blight—Apply one spray at 12 gallons or two sprays at 10 gallons before buds break and show silver. For Overwintering Spores only—Apply 2 1/3 gallons.

DELAYED DORMANT or when leaf buds first start to open for Red Berry (Blackberry mite), Rose Scale, Oyster Scale, San Jose Scale, and Yellow Rust—Apply 8 gallons.

EARLY SPRING, when new growth is 1 ½ inches long, use 5 gallons for the control of Rose Scale, Oyster Scale, San Jose Scale and Yellow Rust. When fruiting canes are 8 to 12 inches long and before blossoms have opened—for Anthracnose, Cane Blight, Powdery Mildew and Rust—Apply 8 1/3 gallon. **Restriction:** Do not use on raspberries at this timing.

CHERRIES (SWEET)

DELAYED DORMANT for Powdery Mildew—Apply 7 ½ gallons. For the control of Coryneum Blight, Scale Insects, Peach Twig Borer, Leaf Curl, Silver Mites—Apply 6 to 11 gallons per 100 gallons of spray or at a rate of 3 gallons with 1 ½ gallons of superior type oil per 100 gallons for additional control of Brown Mites and Red Mites.

POST-HARVEST for Brown Mites, Two Spotted Mite—Apply 1 gallon plus 4 pounds wettable sulfur. Apply to the cherry trees after the fruit has been harvested. **POST-HARVEST** for Powdery Mildew—Apply 10 to 20 gallons per acre in sufficient water for coverage. Apply to the cherry trees after the fruit has been harvested.

Question 13: What is the maximum amount of this product that can be applied per acre per year?

Answer: 30 gallons of this product/acre/year

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT for agricultural pesticides.

INSTRUCTIONS FOR USE

Some fruits and other plants are susceptible to injury from sulfur under certain climatic conditions. The user is advised not to use sulfur on any crop unless local use has proved that sulfur does not damage crops in that locality.

USE PRECAUTIONS: Do not use this product within 30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.

RESTRICTIONS: Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

Do not apply, or allow to drift, to painted surfaces as a permanent stain may result. Do not combine BRANDT LIME SULFUR with other pesticides unless previous experience has shown them to be compatible. If tank mixing, always follow the more restrictive label directions. This product cannot be mixed with any product containing a label prohibition against such mixing. Read entire label and use strictly in accordance with label directions.

Do not apply this product through any type of irrigation system.

Do not use this product for crop thinning.

Unless otherwise indicated, the following use rates are per 100 gallons of water. Where a rate range is given, use the higher rates when disease is severe or where disease was severe in the previous season.

Do not apply more than 30 gallons of this product/acre/year to any crop listed on this label.

Do not apply this product to harvested fruit.

of this product that are NOT for agricultural pesticides. This product is used to produce greenhouses.

from sulfur under certain conditions on any crop unless local use has proved that sulfur does not damage crops in that locality.

30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.

to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

as a permanent stain may result. Do not combine BRANDT LIME SULFUR with other pesticides unless previous experience has shown them to be compatible. If tank mixing, always follow the more restrictive label directions. This product cannot be mixed with any product containing a label prohibition against such mixing. Read entire label and use strictly in accordance with label directions.

per 100 gallons of water. Where a rate range is given, use the higher rates when disease is severe or where disease was severe in the previous season.

re/year to any crop listed on this label.

e.g., wind direction, wind speed, and temperature at application (e.g., ground, foliage, drift). The applicator and operator should make adjustments when necessary.

ter than 10 mph at the application site. Do not apply this product through any type of irrigation system.

according to the American Society of Mechanical Engineers (ASME) standard for standard nozzles (ANSI S12.1) or the manufacturer's (VMD) for nozzles used.

more than 4 feet above the canopy. Do not use this product for crop thinning. Unless otherwise indicated, the following use rates are per 100 gallons of water. Where a rate range is given, use the higher rates when disease is severe or where disease was severe in the previous season.

Do not apply more than 30 gallons of this product/acre/year to any crop listed on this label.

ALMONDS

DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT** or **DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.

PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply ¼ to 1 ½ gallons.

APPLES

DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 ½ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.

DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 ½ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 ½ to 2 gallons, repeat in Pre-Pink and Pink stages.

PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.

PINK for Powdery Mildew, Apple Scab—Apply 2 ½ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.

PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.

PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.

GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply ½ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.

POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

BLUEBERRIES

Phomopsis Cane and Twig Blight—Apply 5 to 6 gallons per 100 to 150 gallons of diluted spray per acre. Apply during delayed dormant stage after leaf buds begin to break. To aid control of Mummy Berry (caused by the fungus *Monilinia vaccinii-corymbosi*), apply a post harvest (September to October) or early dormant spray of 8 gallons BRANDT LIME SULFUR per 100 gallons of water. Use 200 to 300 gallons of spray per acre. **Restriction:** Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during period of warm temperatures.

CANE BERRIES

(Such as Blackberries, Boysenberries, Raspberries, and other canberries) **FALL** application for Red Berry Mite, Blackberry Leaf Mite—Apply 8 gallons after old canes have been removed from the field.

DORMANT or **DELAYED DORMANT** (Green Bud) for Anthracnose, Cane Blight, Powdery Mildew, Overwintering Spores, Rust—Apply 6 to 12 gallons. For Spur Blight—Apply one spray at 12 gallons or two sprays at 10 gallons before buds break and show silver. For Overwintering Spores only—Apply 2 1/3 gallons.

DELAYED DORMANT or when leaf buds first start to open for Red Berry (Blackberry mite), Rose Scale, Oyster Scale, San Jose Scale, and Yellow Rust—Apply 8 gallons.

EARLY SPRING, when new growth is 1 ½ inches long, use 5 gallons for the control of Rose Scale, Oyster Scale, San Jose Scale and Yellow Rust. When fruiting canes are 8 to 12 inches long and before blossoms have opened—for Anthracnose, Cane Blight, Powdery Mildew and Rust—Apply 8 1/3 gallon. **Restriction:** Do not use on raspberries at this timing.

CHERRIES (SWEET)

DELAYED DORMANT for Powdery Mildew—Apply 7 ½ gallons. For the control of Coryneum Blight, Scale Insects, Peach Twig Borer, Leaf Curl, Silver Mites—Apply 6 to 11 gallons of spray or at a rate of 3 gallons with 1 ½ gallons of superior type oil per 100 gallons for additional control of Brown Mites and Red Mites.

POST-HARVEST for Brown Mites, Two Spotted Mite—Apply 1 gallon plus 4 pounds wettable sulfur. Apply to the cherry trees after the fruit has been harvested.

POST-HARVEST for Powdery Mildew—Apply 10 to 20 gallons per acre in sufficient water for coverage. Apply to the cherry trees after the fruit has been harvested.

Question 10: The label lists weather conditions that can impact drift. What are they?

Answer: wind direction, wind speed, temperature, relative humidity

SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product.

For groundboom applications:

WIND SPEED: Do not apply at wind speeds greater than 10 mph at the application site.

DROPLET SIZE: Apply as a medium or coarser spray according to the American Society of Agricultural Engineers (ASAE) 572 definition for standard nozzles (Medium and Coarse) and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.

RELEASE HEIGHT: Apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

NON-AGRICULTURAL USE REQUIREMENTS
The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.
Do not enter or allow others to enter treated areas until sprays have dried.

INSTRUCTIONS FOR USE
Some fruits and other plants are susceptible to injury from sulfur under certain climatic conditions. The user is advised not to use sulfur on any crop unless local use has proved that sulfur does not damage crops in that locality.
USE PRECAUTIONS: Do not use this product within 30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.
RESTRICTIONS: Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, houses, pleasure boats and recreational vehicles; in or on any day care facility or on humans or pets.

Do not drift to painted surfaces as a permanent stain may result. Do not use BRANDT LIME SULFUR with other pesticides unless as shown them to be compatible. If tank mixing, always follow the label directions. This product cannot be mixed with a label prohibition against such mixing. Read entire label and follow label directions.
Do not use BRANDT LIME SULFUR for crop thinning.
When given, use the higher rates when disease is severe or when the crop is in the previous season.
Do not apply more than 30 gallons of this product/acre/year to any crop listed on the label.

DRIFT MANAGEMENT
Weather conditions (e.g., wind direction, wind speed, relative humidity) and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product.

APPLICATIONS:
Do not apply at wind speeds greater than 10 mph at the application site.
Apply as a medium or coarser spray according to the American Society of Agricultural Engineers (ASAE) 572 definition for standard nozzles (Medium and Coarse) and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.
Apply using a nozzle height of no more than 4 feet above the ground or crop canopy, rather than above the canopy. Nozzles should be turned off at row ends and when spraying around trees.

APPLICATIONS: If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions of temperature inversions exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.
DILUTE SPRAY OR APPLICATION - For general dilute applications, use higher gallonage (100-400 gal/acre) on larger trees where required.
CONCENTRATE SPRAY OR APPLICATION - For concentrate spray applications, use 100 gal/acre. **Restriction:** When using concentrate sprays do not exceed 12 gallons of BRANDT LIME SULFUR per 100 gallons on a per acre basis. (Rust mites and scale insects have been shown to be more effectively controlled with dilute or semi-dilute applications.)

ALMONDS
DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT** or **DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.
PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply ¾ to 1 ½ gallons.

APPLES
DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 ½ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.
DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 ½ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 ½ to 2 gallons, repeat in Pre-Pink and Pink stages.
PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.
PINK for Powdery Mildew, Apple Scab—Apply 2 ½ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.
PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.

PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.
GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply ½ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.
POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

BLUEBERRIES
Phomopsis Cane and Twig Blight—Apply 5 to 6 gallons per 100 to 150 gallons of diluted spray per acre. Apply during delayed dormant stage after leaf buds begin to break. To aid control of Mummy Berry (caused by the fungus *Monilinia vaccinii-corymbosi*), apply a post harvest (September to October) or early dormant spray of 8 gallons BRANDT LIME SULFUR per 100 gallons of water. Use 200 to 300 gallons of spray per acre. **Restriction:** Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during period of warm temperatures.

CANE BERRIES
(Such as Blackberries, Boysenberries, Raspberries, and other canberries)
FALL application for Red Berry Mite, Blackberry Leaf Mite—Apply 8 gallons after old canes have been removed from the field.
DORMANT or **DELAYED DORMANT** (Green Bud) for Anthracnose, Cane Blight, Powdery Mildew, Overwintering Spores, Rust—Apply 6 to 12 gallons. For Spur Blight—Apply one spray at 12 gallons or two sprays at 10 gallons before buds break and show silver. For Overwintering Spores only—Apply 2 1/3 gallons.
DELAYED DORMANT or when leaf buds first start to open for Red Berry (Blackberry mite), Rose Scale, Oyster Scale, San Jose Scale, and Yellow Rust—Apply 8 gallons.

EARLY SPRING, when new growth is 1 ½ inches long, use 5 gallons for the control of Rose Scale, Oyster Scale, San Jose Scale and Yellow Rust. When fruiting canes are 8 to 12 inches long and before blossoms have opened—for Anthracnose, Cane Blight, Powdery Mildew and Rust—Apply 8 1/3 gallon. **Restriction:** Do not use on raspberries at this timing.

CHERRIES (SWEET)
DELAYED DORMANT for Powdery Mildew—Apply 7 ½ gallons. For the control of Coryneum Blight, Scale Insects, Peach Twig Borer, Leaf Curl, Silver Mites—Apply 6 to 11 gallons per 100 gallons of spray or at a rate of 3 gallons with 1 ½ gallons of superior type oil per 100 gallons for additional control of Brown Mites and Red Mites.
POST-HARVEST for Brown Mites, Two Spotted Mite—Apply 1 gallon plus 4 pounds wettable sulfur. Apply to the cherry trees after the fruit has been harvested.
POST-HARVEST for Powdery Mildew—Apply 10 to 20 gallons per acre in sufficient water for coverage. Apply to the cherry trees after the fruit has been harvested.

Question 11: What droplet sizes should be used when applying this pesticide via groundboom?

Answer: medium and coarse

SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product.

For groundboom applications:

WIND SPEED: Do not apply at wind speeds greater than 10 mph at the application site.

DROPLET SIZE: Apply as a medium or coarser spray according to the American Society of Agricultural Engineers (ASAE) 572 definition for standard nozzles (Medium and Coarse) and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.

RELEASE HEIGHT: Apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

NON-AGRICULTURAL USE REQUIREMENTS
The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.
Do not enter or allow others to enter treated areas until sprays have dried.

INSTRUCTIONS FOR USE
Some fruits and other plants are susceptible to injury from sulfur under certain climatic conditions. The user is advised not to use sulfur on any crop unless local use has proved that sulfur does not damage crops in that locality.
USE PRECAUTIONS: Do not use this product within 30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.
RESTRICTIONS: Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, houses, pleasure boats and recreational vehicles; in or on any day care facility or on humans or pets.
Do not drift, to painted surfaces as a permanent stain may result. Do not use BRANDT LIME SULFUR with other pesticides unless as shown them to be compatible. If tank mixing, always follow active label directions. This product cannot be mixed with any other product having a label prohibition against such mixing. Read entire label and follow label directions.
Do not use BRANDT LIME SULFUR for crop thinning.
When used for foliar application, use the following use rates per 100 gallons of water:
For general dilute applications, use the higher rates when disease is severe or when temperatures are above 85°F.
For concentrate applications, use the lower rates when disease is severe or when temperatures are above 85°F.
Do not apply more than 30 gallons of this product/acre/year to any crop listed on the label.

DRIFT MANAGEMENT
Pesticide drift can be influenced by weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product.
RESTRICTIONS: Do not apply at wind speeds greater than 10 mph at the application site.
Do not apply as a medium or coarser spray according to the American Society of Agricultural Engineers (ASAE) 572 definition for standard nozzles (Medium and Coarse) and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.
Apply using a nozzle height of no more than 4 feet above the ground or crop canopy, rather than above the canopy. Nozzles should be turned off at row ends and when spraying downwind of the crop canopy.
RESTRICTIONS: If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions of temperature inversions exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.

DILUTE SPRAY OR APPLICATION - For general dilute applications, use higher gallonage (100-400 gal/acre) on larger trees where required.
CONCENTRATE SPRAY OR APPLICATION - For concentrate spray applications, use 100 gal/acre. **Restriction:** When using concentrate sprays do not exceed 12 gallons of BRANDT LIME SULFUR per 100 gallons on a per acre basis. (Rust mites and scale insects have been shown to be more effectively controlled with dilute or semi-dilute applications.)

ALMONDS
DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT** or **DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.
PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply ¾ to 1 ½ gallons.

APPLES
DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 ½ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.
DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 ½ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 ½ to 2 gallons, repeat in Pre-Pink and Pink stages.
PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.
PINK for Powdery Mildew, Apple Scab—Apply 2 ½ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.
PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.
PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.
GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply ½ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.
POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

BLUEBERRIES
Phomopsis Cane and Twig Blight—Apply 5 to 6 gallons per 100 to 150 gallons of diluted spray per acre. Apply during delayed dormant stage after leaf buds begin to break. To aid control of Mummy Berry (caused by the fungus *Monilinia vaccinii-corymbosi*), apply a post harvest (September to October) or early dormant spray of 8 gallons BRANDT LIME SULFUR per 100 gallons of water. Use 200 to 300 gallons of spray per acre. **Restriction:** Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during period of warm temperatures.

CANE BERRIES
(Such as Blackberries, Boysenberries, Raspberries, and other canberries)
FALL application for Red Berry Mite, Blackberry Leaf Mite—Apply 8 gallons after old canes have been removed from the field.
DORMANT or **DELAYED DORMANT** (Green Bud) for Anthracnose, Cane Blight, Powdery Mildew, Overwintering Spores, Rust—Apply 6 to 12 gallons. For Spur Blight—Apply one spray at 12 gallons or two sprays at 10 gallons before buds break and show silver. For Overwintering Spores only—Apply 2 1/3 gallons.
DELAYED DORMANT or when leaf buds first start to open for Red Berry (Blackberry mite), Rose Scale, Oyster Scale, San Jose Scale, and Yellow Rust—Apply 8 gallons.
EARLY SPRING, when new growth is 1 ½ inches long, use 5 gallons for the control of Rose Scale, Oyster Scale, San Jose Scale and Yellow Rust. When fruiting canes are 8 to 12 inches long and before blossoms have opened—for Anthracnose, Cane Blight, Powdery Mildew and Rust—Apply 8 1/3 gallon. **Restriction:** Do not use on raspberries at this timing.

CHERRIES (SWEET)
DELAYED DORMANT for Powdery Mildew—Apply 7 ½ gallons. For the control of Coryneum Blight, Scale Insects, Peach Twig Borer, Leaf Curl, Silver Mites—Apply 6 to 11 gallons per 100 gallons of spray or at a rate of 3 gallons with 1 ½ gallons of superior type oil per 100 gallons for additional control of Brown Mites and Red Mites.
POST-HARVEST for Brown Mites, Two Spotted Mite—Apply 1 gallon plus 4 pounds wettable sulfur. Apply to the cherry trees after the fruit has been harvested.
POST-HARVEST for Powdery Mildew—Apply 10 to 20 gallons per acre in sufficient water for coverage. Apply to the cherry trees after the fruit has been harvested.

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Question 12: What is the maximum release height for a groundboom application of this pesticide?

Answer: 4 feet above the ground or crop canopy

SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product.

For groundboom applications:

WIND SPEED: Do not apply at wind speeds greater than 10 mph at the application site.

DROPLET SIZE: Apply as a medium or coarser spray according to the American Society of Agricultural Engineers (ASAE) 572 definition for standard nozzles (Medium and Coarse) and the minimum volume mean diameter (VMD) for spinning atomizer nozzles.

RELEASE HEIGHT: Apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

NON-AGRICULTURAL USE REQUIREMENTS
The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.
Do not enter or allow others to enter treated areas until sprays have dried.

INSTRUCTIONS FOR USE
Some fruits and other plants are susceptible to injury from sulfur under certain climatic conditions. The user is advised not to use sulfur on any crop unless local use has proved that sulfur does not damage crops in that locality.
USE PRECAUTIONS: Do not use this product within 30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high; avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.
RESTRICTIONS: Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, houses, pleasure boats and recreational vehicles; in or on any day care facility or on humans or pets.
Do not drift, to painted surfaces as a permanent stain may result.
Do not use BRANDT LIME SULFUR with other pesticides unless as shown them to be compatible. If tank mixing, always follow active label directions. This product cannot be mixed with a label prohibition against such mixing. Read entire label and observe label directions.
Do not use BRANDT LIME SULFUR for crop thinning.
When used for foliar application, the following use rates are per 100 gallons of water:
For general dilute applications, use the higher rates when disease is severe or when temperatures are above 85°F.
For concentrate applications, use the lower rates when disease is severe or when temperatures are above 85°F.
Do not apply more than 30 gallons of this product/acre/year to any crop listed on the label.

DRIFT MANAGEMENT
When applying this product, consider the following factors to minimize drift:
a) Wind direction, wind speed, and relative humidity (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product.
b) Nozzle height: Do not use a nozzle height of more than 4 feet above the ground or crop canopy.
c) Application timing: Apply during periods of low wind speed and high relative humidity.
d) Application method: Use groundboom applications rather than aerial applications.
e) Application rate: Use the lowest application rate that will provide adequate control.
f) Application time: Apply during periods of low wind speed and high relative humidity.
g) Application site: Do not apply to residential sites or areas where drift could cause injury to humans, animals, or crops.
h) Application equipment: Use equipment that is properly calibrated and maintained.
i) Application operator: Use proper application techniques and wear appropriate protective clothing.
j) Application conditions: Do not apply when wind speeds are greater than 10 mph at the application site.
k) Application site preparation: Prepare the application site according to the label directions.
l) Application site monitoring: Monitor the application site for drift and take appropriate action if drift is observed.
m) Application site cleanup: Clean up any drift that has occurred.
n) Application site disposal: Dispose of any drift that has occurred.
o) Application site record keeping: Keep records of all applications, including date, time, location, and amount applied.
p) Application site safety: Follow all safety instructions on the label.
q) Application site notification: Notify appropriate authorities if drift is observed.
r) Application site investigation: Investigate the cause of drift if it occurs.
s) Application site remediation: Remediate any drift that has occurred.
t) Application site prevention: Prevent drift from occurring in the future.
u) Application site evaluation: Evaluate the effectiveness of the application and make adjustments as needed.
v) Application site documentation: Document all application details.
w) Application site communication: Communicate with other growers and stakeholders.
x) Application site training: Train application operators on proper techniques.
y) Application site research: Conduct research on drift management.
z) Application site innovation: Develop new drift management strategies.

ALMONDS
DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT** or **DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.
PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply ¾ to 1 ½ gallons.

APPLES
DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 ½ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.
DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 ½ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 ½ to 2 gallons, repeat in Pre-Pink and Pink stages.
PINK for Powdery Mildew, Apple Scab—Apply 2 ½ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.
PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.
PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.
GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply ½ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.
POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

BLUEBERRIES
Phomopsis Cane and Twig Blight—Apply 5 to 6 gallons per 100 to 150 gallons of diluted spray per acre. Apply during delayed dormant stage after leaf buds begin to break. To aid control of Mummy Berry (caused by the fungus *Monilinia vaccinii-corymbosi*), apply a post harvest (September to October) or early dormant spray of 8 gallons BRANDT LIME SULFUR per 100 gallons of water. Use 200 to 300 gallons of spray per acre. **Restriction:** Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during period of warm temperatures.

CANE BERRIES
(Such as Blackberries, Boysenberries, Raspberries, and other canberries)
FALL application for Red Berry Mite, Blackberry Leaf Mite—Apply 8 gallons after old canes have been removed from the field.
DORMANT or **DELAYED DORMANT** (Green Bud) for Anthracnose, Cane Blight, Powdery Mildew, Overwintering Spores, Rust—Apply 6 to 12 gallons. For Spur Blight—Apply one spray at 12 gallons or two sprays at 10 gallons before buds break and show silver. For Overwintering Spores only—Apply 2 1/3 gallons.
DELAYED DORMANT or when leaf buds first start to open for Red Berry (Blackberry mite), Rose Scale, Oyster Scale, San Jose Scale, and Yellow Rust—Apply 8 gallons.
EARLY SPRING, when new growth is 1 ½ inches long, use 5 gallons for the control of Rose Scale, Oyster Scale, San Jose Scale and Yellow Rust. When fruiting canes are 8 to 12 inches long and before blossoms have opened—for Anthracnose, Cane Blight, Powdery Mildew and Rust—Apply 8 1/3 gallon. **Restriction:** Do not use on raspberries at this timing.

CHERRIES (SWEET)
DELAYED DORMANT for Powdery Mildew—Apply 7 ½ gallons. For the control of Coryneum Blight, Scale Insects, Peach Twig Borer, Leaf Curl, Silver Mites—Apply 6 to 11 gallons per 100 gallons of spray or at a rate of 3 gallons with 1 ½ gallons of superior type oil per 100 gallons for additional control of Brown Mites and Red Mites.
POST-HARVEST for Brown Mites, Two Spotted Mite—Apply 1 gallon plus 4 pounds wettable sulfur. Apply to the cherry trees after the fruit has been harvested.
POST-HARVEST for Powdery Mildew—Apply 10 to 20 gallons per acre in sufficient water for coverage. Apply to the cherry trees after the fruit has been harvested.

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Question 14: What are 3 crops can this pesticide be used on?

Answer: almonds, apples, blueberries, caneberries, cherries (sweet and tart), citrus, oranges, currants, fruit trees (bearing and non-bearing), grapes, hazelnuts, nectarines, peaches, pears, pecans, pistachios, plums, prunes, quince, red clover, alfalfa, ornamentals.

ALMONDS

DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT OR DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.

PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply $\frac{3}{4}$ to 1 $\frac{1}{2}$ gallons.

APPLES

DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 $\frac{1}{2}$ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.

DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 $\frac{1}{2}$ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 $\frac{1}{2}$ to 2 gallons, repeat in Pre-Pink and Pink stages.

PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.

PINK for Powdery Mildew, Apple Scab—Apply 2 $\frac{1}{2}$ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.

PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.

PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.

GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply $\frac{1}{2}$ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.

POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 $\frac{1}{2}$ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

PEARS

DORMANT for Pear Leaf Blister Mite—Apply 5 to 7 gallons. May be combined with oils labeled for dormant use on pears.

DORMANT or DELAYED DORMANT to prevent Pear Scab infections and to aid in the control of hatching eggs and young nymphs of Green Apple Aphid, Rosy Apple Aphid, and Pear Psylla and to control Scab, Powdery Mildew, San Jose Scale, Rust Mite, Pear Leaf Blister Mite, European Red Mite, and Brown Almond Mite—Apply 11 gallons.

DELAYED DORMANT for Pear Leaf Blister Mite, Rust Mite, European Red Mite, San Jose Scale, Pear Psylla—Apply 3 gallons plus 1 $\frac{1}{2}$ gallons supreme or superior type oil. For Scab—Apply 6 gallons.

Restriction: DO NOT use on d'Anjou, Comice or Seckle varieties after Delayed Dormant.

GREEN TIP TO FINGER BUD for Scab, Rust Mite, Powdery Mildew—Apply 6 gallons.

CRACKED BUD for Scab, Powdery Mildew—Apply 5 gallons.

CLUSTER BUD for Scab, Powdery Mildew—Apply 2 $\frac{1}{2}$ gallons.

FINGER BUD for Scab, Powdery Mildew—Apply 2 gallons.

PETAL FALL for Scab, Powdery Mildew—Apply 3 gallons.

GROWING SEASON FOLIAR SPRAYS for persistent Powdery Mildew—Apply 1 2/3 quarts throughout the growing season as needed. For concentrate sprays follow State Agricultural Experiment Station recommendations.

POST-HARVEST (Early to Mid-September): For Rust Mite, Pear Leaf Blister Mite—Apply 4 gallons plus $\frac{3}{4}$ gallon supreme or superior type oil, OR 11 gallons with no oil, OR 2 gallons plus 4 pounds of wettable sulfur. Apply to the pear trees after the fruit has been harvested.

POST HARVEST (Late fall after temperatures cool (mid-October to November) before the first frost): For Scale Insects, Pear Psylla, Aphid and Mite Eggs, Pear Leaf Blister Mite—Apply 3 to 5 gallons plus 1 $\frac{1}{2}$ to 2 gallons of supreme or superior type oil. For Bud Mite (Pacific Coast States)—Apply when mites first penetrate under bud scales. Apply to the pear trees after the fruit has been harvested.

Restrictions: DO NOT allow Post Harvest sprays to drift to adjacent apple orchards as defoliation may occur. Oils must not be used with BRANDT LIME SULFUR except as indicated above. DO NOT apply oil after lime sulfur sprays as injury may occur. Allow a minimum of 10 days between a Delayed Dormant oil application and a later lime sulfur application. DO NOT apply BRANDT LIME SULFUR if oil has been applied after Delayed Dormant. Allow 30 days between oil and lime sulfur sprays in the growing season, as injury may occur. Use only on lime sulfur tolerant varieties. Drought, cold and high temperatures, and other conditions may weaken trees. DO NOT apply BRANDT LIME SULFUR or oils to trees in weakened condition.

Bonus question: Can you use this pesticide on a crop that is not listed on the label?

Bonus answer: NO!

Question 15: What are 3 pests this pesticide is effective against?

Answer: powdery mildew, scale insects, leaf curl, black knot, blister mite, rust mite, two spotted mite, thrips, citricola scale, etc!

ALMONDS
DORMANT for Powdery Mildew, Shothole—Apply 1 to 3 applications of 8 gallons at two week intervals between November 15 and December 15. **DORMANT OR DELAYED DORMANT** for Scab (*Cladosporium carpophilum*) apply 8-16 gallons in 100 gallons per acre in a concentrate spray per acre. As a dilute spray apply 4 gallons.
PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply ¾ to 1 ½ gallons.

APPLES
DORMANT for Blister Mite, Rust Mite, Brown Mite, European Red Mite and San Jose Scale—Apply 6 to 11 gallons, or 3 gallons plus 1 ½ gallons supreme or superior type oil spray. For Blister Mite and Rust Mite only—Apply 3 gallons. Apple Scab and Powdery Mildew are not controlled at this stage.
DELAYED DORMANT for Blister Mite, Rust Mite, Apple Scab, Brown Mite, Powdery Mildew—Apply 3 gallons. For Leaf Spot—Increase rate to 7 ½ to 10 gallons. (See Growing Season recommendation). For Scab only—Apply 1 ½ to 2 gallons, repeat in Pre-Pink and Pink stages.
PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.
PINK for Powdery Mildew, Apple Scab—Apply 2 ½ gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.
PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.
PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.
GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply ½ gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury.
Restriction: DO NOT USE ON GINGER GOLD APPLES.
POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

PEARS
DORMANT for Pear Leaf Blister Mite—Apply 5 to 7 gallons. May be combined with oils labeled for dormant use on pears.
DORMANT or DELAYED DORMANT to prevent Pear Scab infections and to aid in the control of hatching eggs and young nymphs of Green Apple Aphid, Rosy Apple Aphid, and Pear Psylla and to control Scab, Powdery Mildew, San Jose Scale, Rust Mite, Pear Leaf Blister Mite, European Red Mite, and Brown Almond Mite—Apply 11 gallons.
DELAYED DORMANT for Pear Leaf Blister Mite, Rust Mite, European Red Mite, San Jose Scale, Pear Psylla—Apply 3 gallons plus 1 ½ gallons supreme or superior type oil. For Scab—Apply 6 gallons.
Restriction: DO NOT use on d'Anjou, Comice or Seckle varieties after Delayed Dormant.
GREEN TIP TO FINGER BUD for Scab, Rust Mite, Powdery Mildew—Apply 6 gallons.
CRACKED BUD for Scab, Powdery Mildew—Apply 5 gallons.
CLUSTER BUD for Scab, Powdery Mildew—Apply 2 ½ gallons.
FINGER BUD for Scab, Powdery Mildew—Apply 2 gallons.
PETAL FALL for Scab, Powdery Mildew—Apply 3 gallons.
GROWING SEASON FOLIAR SPRAYS for persistent Powdery Mildew—Apply 1 2/3 quarts throughout the growing season as needed. For concentrate sprays follow State Agricultural Experiment Station recommendations.
POST-HARVEST (Early to Mid-September): For Rust Mite, Pear Leaf Blister Mite—Apply 4 gallons plus ¾ gallon supreme or superior type oil, OR 11 gallons with no oil, OR 2 gallons plus 4 pounds of wettable sulfur. Apply to the pear trees after the fruit has been harvested.
POST HARVEST (Late fall after temperatures cool (mid-October to November) before the first frost): For Scale Insects, Pear Psylla, Aphid and Mite Eggs, Pear Leaf Blister Mite—Apply 3 to 5 gallons plus 1 ½ to 2 gallons of supreme or superior type oil. For Bud Mite (Pacific Coast States)—Apply when mites first penetrate under bud scales. Apply to the pear trees after the fruit has been harvested.
Restrictions: DO NOT allow Post Harvest sprays to drift to adjacent apple orchards as defoliation may occur. Oils must not be used with BRANDT LIME SULFUR except as indicated above. DO NOT apply oil after lime sulfur sprays as injury may occur. Allow a minimum of 10 days between a Delayed Dormant oil application and a later lime sulfur application. DO NOT apply BRANDT LIME SULFUR if oil has been applied after Delayed Dormant. Allow 30 days between oil and lime sulfur sprays in the growing season, as injury may occur. Use only on lime sulfur tolerant varieties. Drought, cold and high temperatures, and other conditions may weaken trees. DO NOT apply BRANDT LIME SULFUR or oils to trees in weakened condition.

Bonus question: Can you use this pesticide to kill a pest that is not listed on the label?

Bonus answer: YES!

Question 16: What should you do with the empty pesticide container?

Answer: triple rinse and recycle

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Keep pesticide in original container. Store product in a secure locked place, inaccessible to children, pets and livestock. Do not put concentrate or dilute into food or drink containers. Keep container in the shade. For help with any spill, leak, fire, or exposure involving this material call day or night CHEMTREC (800) 424-9300.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your state Pesticide or Environmental Control Agency or the Hazardous Waste representative of the nearest EPA Regional Office for guidance.

CONTAINER HANDLING: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of container in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

PLUMS
DORMANT for Leaf Curl—Apply 10 to 12 gallons.
GREEN TIP for Black Knot—Apply 6 ¼ gallons.
DORMANT or DELAYED DORMANT for Scale Insects, Silver Mites, Peach Twig Borers, Coryneum Blight, Peach Leaf Curl, Aphids—Apply 6 to 11 gallons per 100 gallons spray or 3 gallons with 1 ½ gallons superior type oil per 100 gallons spray for additional control of Brown Mites and Red Mites.
LATE SEASON for Blotch, Powdery Mildew—Use 2 quarts, apply weekly beginning 3 to 5 weeks before harvest. For Brown Rot (Fruit Rot)—Apply 3 quarts at 20, 10 and 2 days before harvest.

PRUNES
GREEN TIP STAGE for Black Knot—Apply 6 ¼ gallons.
DORMANT or DELAYED DORMANT for Scale Insects, Silver Mites, Peach Twig Borers, Coryneum Blight, Peach Leaf Curl, Aphids—Apply 6 to 11 gallons per 100 gallons spray or 3 gallons with 1 ½ gallons of superior type oil for additional control of Brown Mites and Red Mites.
LATE SEASON for Brown Rot (Fruit Rot), Leaf Spot, Powdery Mildew—Apply 2 quarts in weekly applications beginning 3 to 5 weeks before harvest.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Keep pesticide in original container. Store product in a secure locked place, inaccessible to children, pets and livestock. Do not put concentrate or dilute into food or drink containers. Keep container in the shade. For help with any spill, leak, fire, or exposure involving this material call day or night CHEMTREC (800) 424-9300.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your state Pesticide or Environmental Control Agency or the Hazardous Waste representative of the nearest EPA Regional Office for guidance.

CONTAINER HANDLING: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of container in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

WARRANTY AND LIMITATION OF DAMAGES

Brandt Consolidated Inc. (BCI) warrants only that this product conforms to the product description on the label. Except as warranted by this label, BCI makes no representation or warranty or guarantee, whether expressed or implied, of fitness for a particular purpose of merchantability, or of product performance. BCI does not authorize any agent or representative to make any such representation, warranty or guarantee. To the extent consistent with applicable law, BCI's maximum liability for breach of its warranty or for use of this product, regardless of the form of action, shall be limited to the purchase price of this product. To the extent consistent with applicable law, buyer and user acknowledge and assume all risks and disposal liability resulting from handling, storage, use and disposal of this product. If buyer does not agree with or accept these warranty and liability limitations, buyer may return the unopened container to the place of purchase for full refund. Buyer's use of this product shall constitute conclusive evidence of buyer's acknowledgement and acceptance of the foregoing limitations. Some states do not allow the exclusion of implied warranties or the limitation of certain damages, so the above may not apply. The purchase, delivery, acceptance and use of this product by the buyer are subject to the terms and conditions of seller's sales invoice for this product. (TKI20141217)

NET CONTENTS: 2.5 gallons

Manufactured by/for:
 Brandt Consolidated, Inc.
 2935 South Koke Mill Road
 Springfield, Illinois 62711 USA
 www.brandt.co
 800 300 6559

BRANDT LIME SULFUR – 2015-10 – Page 4 of 4

2

Not for application to residential sites. This product may not be used on any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

ACTIVE INGREDIENTS	
Calcium Sulfur	29.0%
Other Ingredients	71.0%
TOTAL	100.0%

3

Density: 11.31 lbs/gal
Contains Calcium and Sulfur expressed as Gypsum - 3.0 lbs. per gallon. Other combined Sulfur 1.9 lbs. per gallon.

4

KEEP OUT OF REACH OF CHILDREN
Do not use this product near children. If you need to use it, explain it to you in detail. If you need to use it, explain it to you in detail.

5

FIRST AID

IF IN EYES: Hold eyes 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 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 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 the poison control center or doctor. Do not give anything 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-866-374-1975 for emergency medical treatment information.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate gastric lavage.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Causes eye damage. Causes skin burns. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wash thoroughly with water after handling and before eating, drinking, or chewing gum. This product is corrosive to flesh because of its nature.

6a

PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some materials resistant to this product are made of any waterproof material.

Mixers, loaders, applicators and other handlers must wear:

Coveralls over long-sleeved shirt and long pants.
Chemical-resistant gloves (barrier laminate; butyl, nitrile, neoprene or natural rubber; polyethylene; polyvinyl chloride (PVC) > 14 mils; viton > 14 mils).

7

Goggles or face shield plus socks.
Chemical-resistant gear for overhead exposure.
Chemical-resistant gear when mixing, loading or cleaning equipment or spills.

Discard clothing and other absorbent material that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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/PPE 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

This water-soluble product is toxic to fish. Drift may be hazardous to aquatic organisms in surface waters. Do not apply directly to water, or to areas where surface water may be present. Do not apply to intertidal areas below the mean high water mark. Do not apply to equipment washwater or rinseate.

6b

PHYSICAL AND CHEMICAL HAZARDS: Do not mix BRANDT LIME SULFUR with acids or phosphate fertilizer products. Deadly and potentially flammable hydrogen sulfide gas may be emitted.

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 and restricted-entry intervals. 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 48 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 over long-sleeved shirt and long pants, chemical-resistant gloves, chemical-resistant footwear plus socks, goggles or face shield, chemical-resistant headgear for overhead exposure.



Agricultural plants on farms, forests, nurseries, or greenhouses. Do not enter or allow others to enter treated areas until sprays have dried.

INSTRUCTIONS FOR USE

Some fruits and other plants are susceptible to injury from sulfur under certain climatic conditions. The user is advised not to use sulfur on any crop unless local use has proved that sulfur does not damage crops in that locality.

USE PRECAUTIONS: Do not use this product within 30 days of an oil spray at any stage other than dormant (deciduous only) unless prior experience in your immediate area has shown that shorter intervals will not result in phytotoxic injury. BRANDT LIME SULFUR may burn foliage when temperature is high, avoid applying this material during very hot periods of the day (above 85°F). Keep container tightly closed when not in use. If crust should form on the surface, break through the crust so product will pour.

RESTRICTIONS: Not for use on structures, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets. Do not apply, or allow to be applied, to any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets. Do not apply, or allow to be applied, to any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets. Do not apply, or allow to be applied, to any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

8

Do not apply this product through any type of structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets. Do not apply, or allow to be applied, to any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

9

SPRAY DRIFT: A variety of factors (e.g., wind direction, wind speed, temperature, relative humidity, nozzle type, method of application (e.g., ground, aerial, or broadcast), and spray drift) may contribute to spray drift. The applicator and grower must evaluate all factors and make appropriate adjustments when applying this product.

13

For groundboom application: WIND SPEED: Do not apply this product when wind speed is greater than 10 mph at the application site.

10

DROPLET SIZE: Apply as a fine mist using a spinning atomizer nozzle (Medium and Coarse) or a spray nozzle (Medium and Coarse) definition for standard nozzles (medium mean diameter (VMD) for standard nozzles).

11

RELEASE HEIGHT: Apply this product at a height above the ground or crop canopy.

12

For airblast applications: Sprays must be directed into the crop canopy, rather than over the top. Outward pointing nozzles should be turned off at all times.

TEMPERATURE INVERSIONS: If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions of temperature inversions exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions.

DILUTE SPRAY OR APPLICATION: For general dilute applications, use higher gallonage (100-400 gal/acre) on larger trees where required.

CONCENTRATE SPRAY OR APPLICATION: For concentrate spray applications, use 100 gal/acre. Restriction: When using concentrate sprays do not exceed 12 gallons of BRANDT LIME SULFUR per 100 gallons on a per acre basis. (Rust mites and scale insects have been shown to be more effectively controlled with dilute or semi-dilute applications.)

4 gallons.
PRE-BLOOM, EARLY BLOOM and FULL BLOOM for Brown Rot Blossom Blight—Apply 1/2 to 1 1/2 gallons.

APPLES
DORMANT for European Red Mite, San Jose Scale, Apple Scab, Brown Mite, and Rust Mite—Apply 3 gallons. **DELAIED DORMANT** for Rust Mite, Apple Scab, Brown Mite, Powdery Mildew, and Leaf Spot—Increase rate to 7 1/2 to 10 gallons. (See Groundboom application.) For Scab only—Apply 1 1/2 to 2 gallons, repeat in Petal and Pink stages.

15

PRE-PINK for Powdery Mildew, Apple Scab—Apply 2 to 3 gallons. For Apple Scab repeat in Pink stage. For Powdery Mildew see Pink stage recommendation.

PINK for Powdery Mildew, Apple Scab—Apply 2 1/2 gallons or 2 gallons plus 5 pounds of wettable sulfur. A Petal Fall application may be needed.

PRE-BLOOM for Blotch—Apply 2 gallons, repeat at Petal Fall, and again 10 days later.

PETAL FALL for Blotch—(See Pre-Bloom directions)—Apply 2 gallons. Repeat in 10 days.

GROWING SEASON FOLIAR SPRAYS for Leaf Spot—Apply 1/2 gallon (See Delayed Dormant directions). **Precaution:** Use on Delicious apples may cause injury. **Restriction:** DO NOT USE ON GINGER GOLD APPLES.

POST-HARVEST (Late fall after temperatures cool (Mid-October to November) before the first frost): For Rust Mite, Blister Mite, San Jose Scale, Aphid and Mite eggs—Apply 3 to 5 gallons plus 1 1/2 to 2 gallons of supreme or superior type oil. Apply to the apple trees after the fruit has been harvested. **Precaution:** Post-Harvest applications of BRANDT LIME SULFUR may cause early defoliation. Early Post-Harvest sprays (early to mid September) can retard tree growth and are not recommended.

BLUEBERRIES
Phomopsis Cane and Twig Blight—Apply 5 to 6 gallons per 100 to 150 gallons of diluted spray per acre. Apply during delayed dormant stage after leaf buds begin to break. To aid control of Mummy Berry (caused by the fungus Monilinia vaccinii-corymbosi), apply a post-harvest (September to October) or early dormant spray of 8 gallons BRANDT LIME SULFUR per 100 gallons of water. Use 200 to 300 gallons of spray per acre. **Restriction:** Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during period of warm temperatures.

CANEBERRIES
(Such as Blackberries, Boysenberries, Raspberries, and other caneberris)
FALL application for Red Berry Mite, Blackberry Leaf Mite—Apply 8 gallons after old canes have been removed from the field.

DORMANT or DELAYED DORMANT (Green Bud) for Anthracnose, Cane Blight, Powdery Mildew, Overwintering Spores, Rust—Apply 6 to 12 gallons. For Spur Blight—Apply one spray at 12 gallons or two sprays at 10 gallons before buds break and show silver. For Overwintering Spores only—Apply 2 1/3 gallons.

DELAYED DORMANT or When leaf buds first start to open for Red Berry (Blackberry mite), Rose Scale, Oyster Scale, San Jose Scale, and Yellow Rust—Apply 8 gallons.

EARLY SPRING, when new growth is 1 1/2 inches long, use 5 gallons for the control of Rose Scale, Oyster Scale, San Jose Scale and Yellow Rust. When fruiting canes are 8 to 12 inches long and before blossoms have opened, use Anthracnose, Cane Blight, Powdery Mildew and Rust—Apply 8 1/3 gallon. **Restriction:** Do not use on raspberries at this timing.

CHERRIES (SWEET)
DELAYED DORMANT for Powdery Mildew—Apply 7 1/2 gallons. For the control of Coryneum Blight, Scale Insects, Peach Twig Borer, Leaf Curl, Silver Mites—Apply 6 to 11 gallons per 100 gallons of spray or at a rate of 3 gallons with 1 1/2 gallons of superior type oil per 100 gallons for additional control of Brown Mites and Red Mites.

POST-HARVEST for Brown Mites, Two Spotted Mite—Apply 1 gallon plus 4 pounds wettable sulfur. Apply to the cherry trees after the fruit has been harvested. **POST-HARVEST** for Powdery Mildew—Apply 10 to 20 gallons per acre in sufficient water for coverage. Apply to the cherry trees after the fruit has been harvested.

PLUMS
Apply 10 to 12 gallons.
STORAGE AND DISPOSAL
Do not contaminate water, food, or feed by storage and disposal.

Questions about the Pesticide Label Reading
Exercise?

Enforceable language vs. informational language

- Any direction or precaution that is necessary to achieve effective, safe use of the product must be stated in mandatory terms
 - Must, Will, DO NOT
- Any direction that is not truly necessary for effective, safe use of the product, or which is too vague or subjective for a user to clearly follow, must NOT be stated in mandatory terms.
 - Recommended



Take Home Messages

- The label is the law!
- Always read the label before any pesticide handling activity
- Employers are required to display pesticide label information, application specific information, and Safety Data Sheets in a central location
- Label instructions are there to keep you safe...even if they may be confusing



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Mode of Action (MOA)



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Overview

- What is Mode of Action?
- Factors to consider when addressing resistance concerns
- Using the pesticide label to make effective applications
- Resources for applicators



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What is Mode of Action (MOA)?

- The way a pesticide kills or adversely affects the target organism
 - Photosynthesis Inhibitor - Herbicide
 - Insect Growth Inhibitor - Insecticide
 - Signal Transduction Inhibitor - Fungicide



MOA



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Contact vs. Systemic:

- Contact: Kills what it directly contacts
 - Gramoxone (paraquat dicholoride)
- Systemic: The pesticide moves through the pest to kill it
 - Stinger (clopyralid)



Contact



Systemic



Contact vs. Systemic Insecticides:

- Contact: Insects killed on contact of the insecticide
 - Penetrate the skin
- Systemic: Absorbed and transported through plants
 - Renders plants toxic to insects

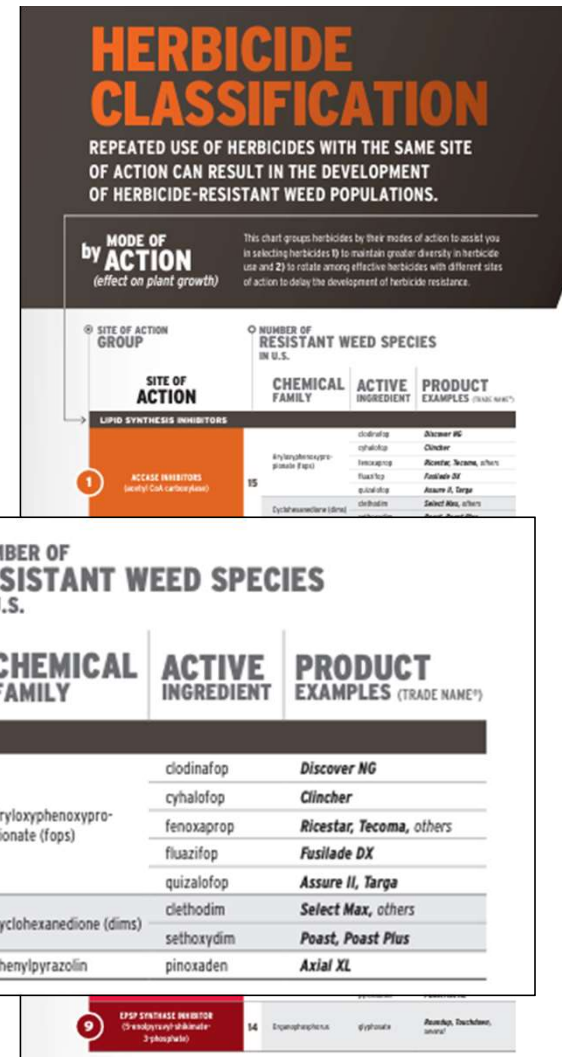


Group Number:

- Pesticide classification system
 - Classifies pesticides based on their pest interaction
- Sometimes found on the label
- Breadcrumb you can use to find more info on that pesticide



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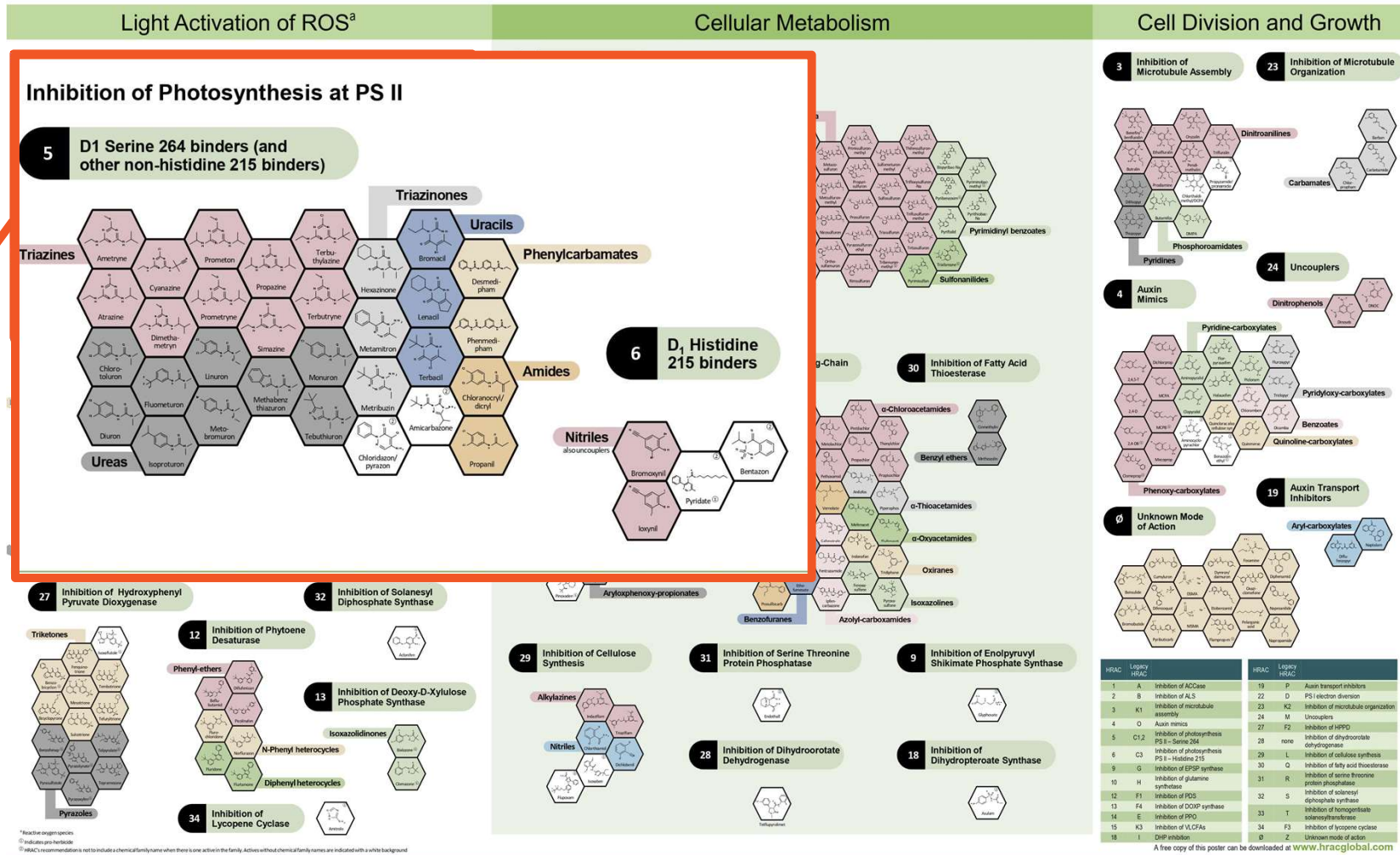
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Herbicide Group Numbers

Groups 5 and 6 interfere with a plant's ability to photosynthesize

HRAC Mode of Action Classification 2022

Revised January 2022



HRAC	Legacy HRAC	Inhibition	HRAC	Legacy HRAC	Inhibition
1	A	Inhibition of ACCase	19	P	Auxin transport inhibitors
2	B	Inhibition of ALS	22	D	PS electron diversion
3	K1	Inhibition of microtubule assembly	23	K2	Inhibition of microtubule organization
4	O	Auxin mimics	24	M	Uncouplers
5	C1,2	Inhibition of photosynthesis PS II - Serine 264	27	F2	Inhibition of SPPD
6	C3	Inhibition of photosynthesis PS II - Histidine 215	28	none	Inhibition of dihydroorotate dehydrogenase
9	G	Inhibition of EPSP synthase	29	L	Inhibition of cellulose synthesis
10	H	Inhibition of glutamine synthetase	30	Q	Inhibition of fatty acid thioesterase
12	F1	Inhibition of PDS	31	R	Inhibition of serine threonine protein phosphatase
13	F4	Inhibition of DOXP synthase	32	S	Inhibition of solaneyl diphosphate synthase
14	E	Inhibition of PPO	33	T	Inhibition of isoprenoid biosynthesis
15	K3	Inhibition of VLCFAs	34	F3	Inhibition of lycopene cyclase
18	I	DHP inhibition	3	Z	Inhibition of cell division

A free copy of this poster can be downloaded at www.hracglobal.com

^a Reactive oxygen species.
^b Indicates an herbicide.
^c HRAC recommendations may not include a chemical family name when there is one active in the family. Actives without chemical family names are indicated with a white background.

Insecticide Group Numbers

Group 1 interferes with an insect's nervous system function

Key to Target Physiology

- Nerve & Muscle
- Growth & Development
- Respiration
- Midgut
- Unknown/Non-specific

Group 1: Acetylcholinesterase (AChE) inhibitors

(Only representatives actives of the groups are shown)

1A Carbamates

Carbafuran

Methomyl

1B Organophosphates

Acephate

Chlorpyrifos

Phorate

Carbosulfan

Insecticide Action Committee Insecticide Classification

Group 10: Mile growth inhibitors affecting CHS1

10A Clofentazine, Diflufenican, Hexythiazox

10B Etoxazole

Group 11: Insecticides acting on membranes (mechanism of action)

11A Bacillus thuringiensis

11B Bacillus sphaericus

Group 12: Inhibitors of mitochondrial ATP synthase

12B Organotin sulfides

12C Propargite

12D Tetradifon

Group 13: Pyrethroids, Dinitrophenols, Sulfoximides

13 Chlorfenvinphos, Deltamethrin, Sulfuramid, Zeta-cypermethrin, Zeta-cypermethrin, Zeta-cypermethrin

Group 14: Nicotinic acetylcholine receptor (nAChR) channel blockers

14 Nereis toxin analogues

14a Cyantraniprol, Cyantraniprol, Cyantraniprol

Group 15: Inhibitors of chitin biosynthesis affecting CHS1

15 Benzoylureas

Group 16: Inhibitors of chitin biosynthesis, type 1

16 Buprofezin

Group 17: Moulting disruptors, Dipteran

17 Cyromazine

Group 18: Ecdysone receptor agonists

18 Diafenthialin

Group 19: Octopamine receptor agonists

19 Ambroz

Group 20: Mitochondrial complex III electron transport inhibitors - Qo site

20A Hydramethylnon

20B Acequinol

20C Fluazapyrim

20D Bifenazate

Group 21: Mitochondrial complex I electron transport inhibitors

21A METI acaricides and insecticides

Group 22: Voltage-dependent sodium channel blockers

22A Oxadiazines

22B Semicarbazones

Group 23: Inhibitors of acetyl CoA carboxylase

23 Tefenozic & Tefenozic acid derivatives

Group 24: Mitochondrial complex IV electron transport inhibitors

24A Phosphites

24B Cyanides

Group 25: Mitochondrial complex II electron transport inhibitors

25A Beta-Ketonolide derivatives

Group 26: Ryanodine receptor modulators

26 Diamides

Group 27: Chordotonal organ nicotinic acid inhibitors

27 Flocicamid

Group 28: GABA-gated chloride channel allosteric modulators

28 Meta-diamides & Isoxalones

Group 29: Baculoviruses

29a Granuloviruses & Nucleopolyhedroviruses

Group 30: Acetylcholine receptor (nAChR) allosteric modulators site I

30 Omega-ops

Group 31: Calcium-activated potassium channel (KCa2) modulators

31 Acynonagr

Group 32: Mitochondrial complex III electron transport inhibitors - Qi site

32 Flometoquin

Group 33: Chordotonal organ modulators - undefined target site

33 Dimpopyridaz

Group 34: Unknown or uncertain mode of action

34 Botanical essences including synthetic, extracts and unrefined oils

Use of Groups:

- Alterations, sequences or rotations of compounds between MOA groups reduce selection for **target site resistance**.
- Applications are arranged into MOA spray windows defined by crop growth stage and pest biology. Several series of a compound may be possible within each spray window, but successive generations of a pest should not be treated with compounds from the same MOA group. Local expert advice on spray windows and timings should always be followed.
- Groups in the classification whose members do not act at a common target site are exempt from the prescription against rotation within the group (Group 8, 13 and all UN groups: UN, UNB, UNE, UNF, UNM, UNP & UNV).

Use of Sub-Groups:

- Sub-groups represent distinct structural classes which are believed to have the same mode of action.
- Sub-groups provide differentiation between compounds that may target the same target site but are structurally different enough that risk of **metabolic cross-resistance** is lower than for those chemical analogs.
- Cross-resistance potential between sub-groups is higher than between groups, so rotation between sub-groups should be considered only when there are no alternatives, and only if cross-resistance does not exist, following consultation with local expert advice. These exceptions are not sustainable, and alternative options should be sought.

Disclaimer: While CropLife International and IRAC make every effort to present accurate and reliable information, they do not guarantee the accuracy, completeness, efficacy, timeliness, or correct sequencing of such information. Inclusion of active ingredients on the IRAC Code Lists is based on scientific evaluation of their modes of action. It does not provide any kind of testimonial for the use of a product or a judgment on efficacy. CropLife International and IRAC are not responsible for, and expressly disclaim all liability for, damages of any kind arising out of use, reference to, or reliance on information provided. Listing of chemical classes or modes of action must not be interpreted as approval for use of a compound in a given country. Prior to implementation, each user must determine the current registration status in the country of use and strictly adhere to the uses and instructions approved in that country.

Group 21: Mitochondrial complex I electron transport inhibitors

21A METI acaricides and insecticides

Group 22: Voltage-dependent sodium channel blockers

22A Oxadiazines

22B Semicarbazones

Group 23: Inhibitors of acetyl CoA carboxylase

23 Tefenozic & Tefenozic acid derivatives

Group 24: Mitochondrial complex IV electron transport inhibitors

24A Phosphites

24B Cyanides

Group 25: Mitochondrial complex II electron transport inhibitors

25A Beta-Ketonolide derivatives

Group 26: Ryanodine receptor modulators

26 Diamides

Group 27: Chordotonal organ nicotinic acid inhibitors

27 Flocicamid

Group 28: GABA-gated chloride channel allosteric modulators

28 Meta-diamides & Isoxalones

Group 29: Baculoviruses

29a Granuloviruses & Nucleopolyhedroviruses

Group 30: Acetylcholine receptor (nAChR) allosteric modulators site I

30 Omega-ops

Group 31: Calcium-activated potassium channel (KCa2) modulators

31 Acynonagr

Group 32: Mitochondrial complex III electron transport inhibitors - Qi site

32 Flometoquin

Group 33: Chordotonal organ modulators - undefined target site

33 Dimpopyridaz

Group 34: Unknown or uncertain mode of action

34 Botanical essences including synthetic, extracts and unrefined oils

Poster Notes:

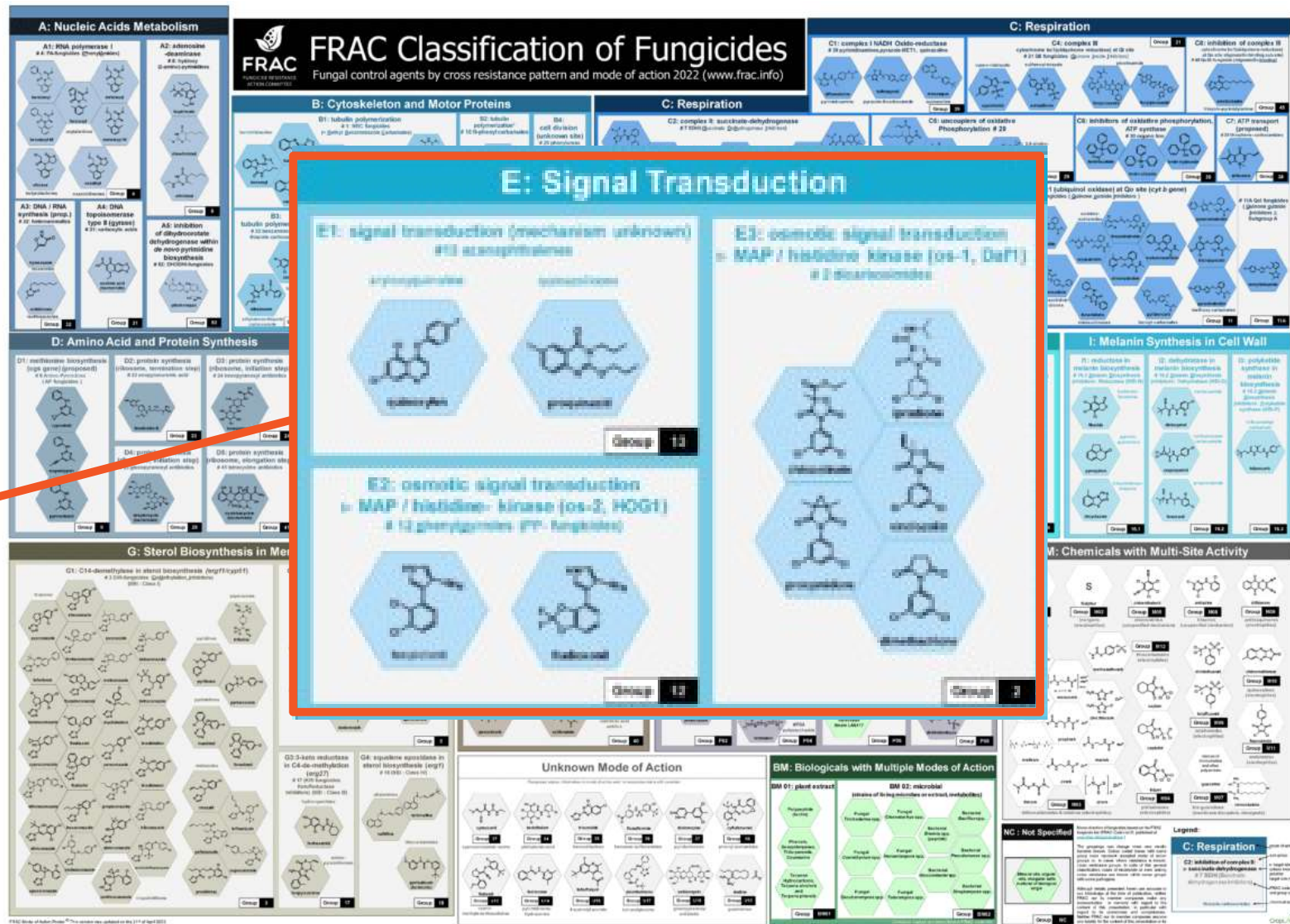
- Sub-group 28: DDT is no longer used in agriculture and therefore this is only applicable for the control of insect vectors of human disease, such as mosquitoes, because of a lack of alternatives.
- Sub-group 10A: Hexythiazox is grouped with Clofentazine because they exhibit cross-resistance even though they are structurally distinct. Diflufenican has been added to this group because it is a close analogue of Clofentazine and is expected to have the same mode of action.
- Group 20: While there is strong evidence that Bifenazate acts on the Qo site of Mitochondrial Complex III and some Bifenazate resistance mutations confer cross-resistance to Acequinol, the sites of action of Fluazapyrim and Hydramethylnon have not been determined.
- Groups 26, 27 and 36 are unassigned.
- In some cases, only representative actives are shown.
- Please visit www.irac-online.org for the complete IRAC classification.

CropLife International

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Fungicide Group Numbers

Groups 2, 12, and 13 inhibit signal transduction in fungi



Why does knowing MOA matter?

- Resistance!
 - A heritable characteristic of a pest that makes it less sensitive to a pesticide
 - Allows the pest to survive exposure to pesticides that would normally kill it



Resistance



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Life finds a way.



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Why does knowing MOA matter?



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QUIZALOFOP-P-ETHYL GROUP 1 HERBICIDE

Mode of Action

- Lipid Synthesis Inhibitor-MOA
- ACCase Inhibitors

Aggressor® HERBICIDE

wides Post-Emergence Control of winter and Spring Annual Grasses in the CoAXium Wheat Production System and wheat varieties with the AXigen trait.

LIPID SYNTHESIS INHIBITORS

1

ACCASE INHIBITORS
(acetyl CoA carboxylase)

15

	clodinafop	<i>Discover NG</i>
	cyhalofop	<i>Clincher</i>
Aryloxyphenoxypropionate (fops)	fenoxaprop	<i>Ricestar, Tecoma, others</i>
	fluazifop	<i>Fusilade DX</i>
	quizalofop	<i>Assure II, Targa</i>
Cyclohexanedione (dims)	clethodim	<i>Select Max, others</i>
	sethoxydim	<i>Poast, Poast Plus</i>
Phenylpyrazolin	pinoxaden	<i>Axial XL</i>



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Mode of Action

- Sodium Channel Modulator-MOA
- Impacts nervous and muscular system

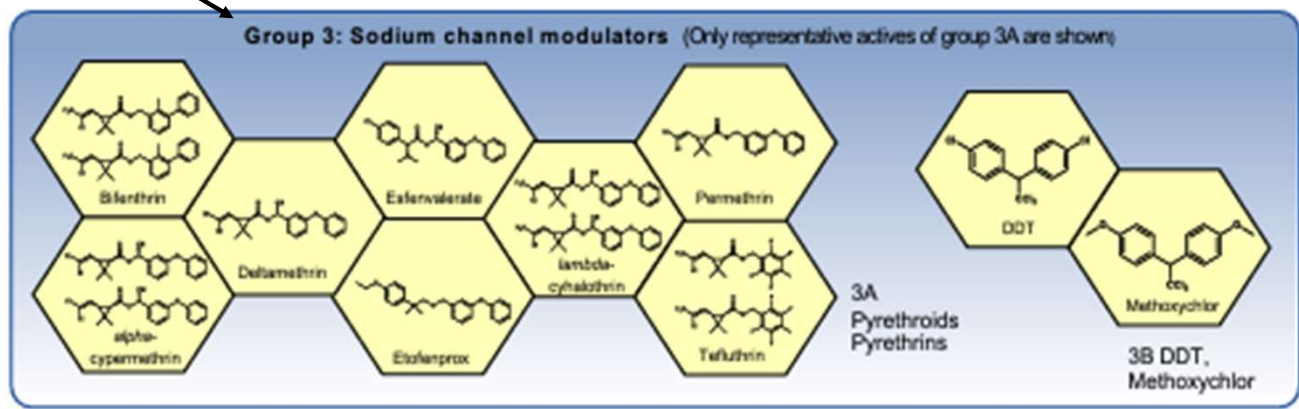
GROUP 3 INSECTICIDE

RESTRICTED USE PESTICIDE
 DUE TO TOXICITY TO FISH AND AQUATIC ORGANISMS.
 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 Applicator's certification.

FIRST AID (continued)

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 eyes. Call a poison control center for treatment advice.

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.



PRECAUTIONARY STATEMENTS

Mode of Action

Group 6:

- Photosynthesis Inhibitor-MOA
- Photosystem II Inhibitor-SOA

Group 27:

- Pigment Inhibitor-MOA
- HPPD Inhibitors-SOA

The image shows a portion of a Huskie herbicide label and a corresponding mode of action chart. The label features the brand name "Huskie" in large white letters on an orange background, with "HERBICIDE" written below it. A circled box on the label indicates "GROUP 6 | 27 HERBICIDE". Below the label, a chart titled "PHOTOSYNTHESIS INHIBITORS" lists various herbicide modes of action. The chart is divided into sections: "PIGMENT INHIBITORS" (including "12 PHYTOENE DESATURASE (PDS) INHIBITOR" and "13 DOXP SYNTHASE INHIBITOR (1-DEOXY-D-XYULOSE 5-PHOSPHATE)"), and "HPPD INHIBITORS" (marked with "27"). To the right, a detailed chart for "PHOTOSYSTEM II INHIBITORS" lists "5 PHOTOSYSTEM II INHIBITORS (D1 Serine 264 binders and non-histidine 215 binders)" and "6 PHOTOSYSTEM II INHIBITORS (D1 Histidine 215 binders)". Arrows from the text on the left point to these specific categories in the chart.

Mode of Action

- No Group Number
- Can look up the active ingredient:
 - HRAC- Herbicides
 - IRAC – Insecticides
 - FRAC - Fungicides



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ACTIVE INGREDIENTS:	% BY WT.
Oryzalin: 3,5-dinitro-N ⁴ N ⁴ -dipropylsulfanilamide	41.0%
OTHER INGREDIENTS:	59.0%
TOTAL:	100.0%

Contains 4 pounds of active ingredient per gallon.

CONTENTS:
2.5 GALLONS



EPA 20100308

**KEEP OUT OF
REACH OF CHILDREN
CAUTION**

For additional precautionary, handling, and use statements, see inside of this booklet.

EPA Reg. No.: 53883-369
EPA Est. No.: 37429-GA-001^{BT}, 37429-GA-002^{BO}
Letters(s) in lot number correspond(s) to superscript in EPA Est. No.



ADAMA

Manufactured for:

**Control
Solutions Inc.**

5903 Genoa-Red Bluff, Pasadena, TX 77507

A member of Adama
Consumer and Professional Solutions



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Herbicide Classification Chart

- https://ppp.purdue.edu/wp-content/uploads/2016/08/TakeAction_HerbicideClass_Chart_Poster_FNL_HR112-2014.pdf



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GLOBAL HEALTH
LOOKUP

IRAC

Insecticide Resistance Action Committee

INTERNATIONAL

REGIONAL

PES

THE IRAC MODE OF ACTION CLASSIFICATION

The definitive, global scheme on the target sites of insecticides

filter by mode of action, chemical class

1 ACETYLCHOLINESTERASE (ACHE) INHIBITORS

A CARBAMATES

B ORGANOPHOSPHATES



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FUNGICIDE RESISTANCE
ACTION COMMITTEE



Fungicide Resistance Management > By Fungicide Common Name

Back

Search Fungicides to find FRAC Recommendations

The FRAC Mode of Action (MoA) classification of fungicides provides growers, advisors, extension staff, consultants and crop protection professionals with a guide to the selection of fungicides for use in an effective and sustainable fungicide resistance management strategy.

Filter:

Active...

Groups...

A Nucleic acids metabolism

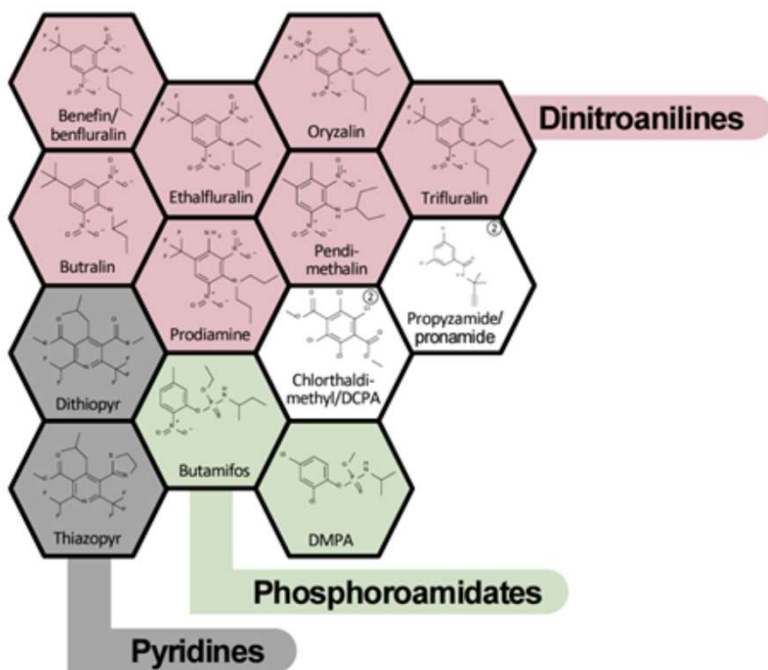


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HRAC Herbicide Mode of Action Chart

3

Inhibition of Microtubule Assembly



- Mode of Action Groups can contain different chemical families AND active ingredients
 - Even if different, act in similar ways



Take Action Herbicide Mode of Action Chart

MODE OF ACTION
(effect on plant growth)

This chart groups herbicides by their modes of action to assist you in selecting herbicides **1)** to maintain greater diversity in herbicide use and **2)** to rotate among effective herbicides with different sites of action to delay the development of herbicide resistance.

SITE OF ACTION GROUP	NUMBER OF RESISTANT WEED SPECIES IN U.S.	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAME*)
1 ACCASE INHIBITORS (acetyl CoA carboxylase)	15	Aryloxyphenoxypionate (fops)	clofoprop, cyhalofop, fenoxaprop, fluroxyp, quizalofop	Discover IIG, Clearstar, Avastar, Tricoma, others, Fastlane DX, Assure II, Targa
		Cyclohexanedione (dlims)	clethodim, sethoxydim	Select Max, others, Poast, Poast Plus
		Phenylpyrazolin	pinocaden	AmiG XL

SITE OF ACTION GROUP

PREMIX	ACTIVE INGREDIENT	TRADE NAME*	
	bicyclafop	-----	27
ACURON*	mesotrione	Callisto	27
	atrazine	Atrix	5
	s-metolachlor	Dual II Magnum	15
AFFINITY BROADSPEC (Affinity Tankmix)	thifensulfuron	Rennex	2
	tribenuron	Express	2
AFFORA	thifensulfuron	Rennex	2
	tribenuron	Express	2
	fluroxyp	Valor	14
AGILITY SG	dicamba	Clarity	4
	thifensulfuron	Rennex	2
	tribenuron	Express	2
	metolachlor	Ally	2

GROWTH REGULATORS

4 TIRI AUXIN RECEPTORS (synthetic auxins)	Aryloxolone	haloxifen	component of Dualer*
	Benzoic acid	dicamba	Assure, Clarity, Effirex*, others
	Carboxylic acid	cycpyrid	Slinger
		fluroxyp	Stance
19 AUXIN TRANSPORT INHIBITOR	triclopyr	Grandstand	
	quinclorac	Facet, Paramount	
	2,4-D	Z,4-D, others	
Phenoxy	MCPA	MCPA, others	
Semicarbazone	diflufenopyr	component of Stance	



“What makes post emergent herbicides work and/or fail?”

- Application rate
- Application timing/location
 - Is your pesticide a contact or systemic pesticide?
- Resistance



Application Rates

- Found in the Directions For Use section of the label
- Illegal to use more than the label amount
- Allowed to apply less than the label amount BUT
 - Creates resistance concerns
 - Pest exposed to sublethal doses of pesticide, which basically makes it stronger, and eventually, resistant to the pesticide.



Neemix[®]4.5

INSECT GROWTH REGULATOR

BIOLOGICAL INSECTICIDE

DIRECTIONS FOR USE ON FIELD-GROWN FOOD CROPS

GENERAL DIRECTIONS:

Use care when applying near streams, ponds, lakes or other bodies of water.

Do not apply NEEMIX[®] 4.5 when weather conditions favor drift or when the likelihood of runoff is high.

SPECIFIC CROP/PEST DIRECTIONS:

Application Rate: Apply 0.25 – 1 pint (4 – 16 fl. oz.) of NEEMIX[®] 4.5 per acre using suitable ground or aerial application equipment, in a manner to obtain uniform and complete plant coverage. For agronomic crops apply using conventional ground application equipment in a minimum of 30 gallons of water and aerial application equipment in a minimum of 3 gallons of water. Avoid over-spraying to the point of ex-

Subsurface-Feeding Insects:

Mow and irrigate turf prior to application. The treated area may be lightly irrigated for 3 – 5 minutes after application if desired to increase penetration of the turf surface. Do not water turf again within 24 hours after application. Do not mow again within 3 days after application.

For use to control white grubs (Japanese beetles, European chafers, dung beetles, June beetles, green June beetles, May beetles, annual white grubs, grub beetles, southern masked chafers, etc.) and crane fly larvae (leatherjackets):

- For white grubs, make application soon after adults emerge in summer (1 – 3 weeks after first sign of adults). Leatherjackets should be targeted as young larvae while feeding near the soil surface.
- Apply 1 quart – 3 gallons of NEEMIX[®] 4.5 per acre (0.75 – 9 fluid ounces per 1,000 square feet)

Application Rates for Whiteflies, Aphids, Leafminers, Worms, and Other Pests

Pest	Rate of Neemix [®] 4.5 Per Acre*	Frequency	Remarks
Whiteflies: Low Pressure High Pressure	4 – 7 fl. oz. 8 – 16 fl. oz.	4 – 10 days 3 – 7 days	Foliar application against nymphs
Aphids	5 – 7 fl. oz.	7 – 10 days	Suppression of nymphs and adult feeding deterrence
Leafminer (<i>Liriomyza</i> spp. and Citrus Leafminer <i>Phyllocnistis citrella</i>)	4 – 7 fl. oz.	14 – 21 days	Foliar application against larvae and nymphs
Lepidoptera larvae (caterpillars or worms) feeding on foliage or fruit	4 – 10 fl. oz.	7 – 10 days	Foliar application against larvae
Others (Including): Borers, Leafhoppers, Leafrollers, Loopers	7 – 16 fl. oz.	7 – 10 days	Foliar application against larvae or nymphs

*Apply in sufficient water to obtain adequate plant coverage, typically 30 – 100 gallons per acre by ground or 3 – 5 gallons per acre by air.



ACCOL

Application Timing and Location

- Found in the Directions For Use section of the label
- Important to pay attention to growth stage of pest.
 - Pre-emergence vs. post-emergence herbicide applications
- Applying to the wrong part of the pest (herbicide e.g., soil drench vs foliar spray)



POISON
KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Calypso[®] 480 SC

INSECTICIDE

ACTIVE CONSTITUENT: 480 g/L THIACTLOPRID

GROUP 4A INSECTICIDE

For control of apple dimpling bug in apples, codling moth and oriental fruit moth in pome fruit and oriental fruit moth in stone fruit as specified in the DIRECTION FOR USE table

DIRECTIONS FOR USE

CROP	PEST	RATE	CRITICAL COMMENTS
Apples	Apple dimpling bug	Dilute spraying 37.5 mL/100 L	Correctly timed applications of Calypso will significantly reduce fruit damage caused by apple dimpling bug, however a substantial reduction in pest numbers may not always be evident. Apply an initial spray from pink stage to petal fall when pest numbers reach accepted threshold levels as indicated by monitoring. Spray thoroughly to ensure complete coverage of flower parts and developing fruitlets, using dilute spraying equipment (concentrate spraying is not appropriate for this use). A second spray (up to a total of two Calypso applications during flowering) and/or other control measures may be necessary under high pest pressure.



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2. IN CASE OF AN EMERGENCY INVOLVING THIS PRODUCT, OR FOR MEDICAL ASSISTANCE, CALL COLLECT, DAY OR NIGHT,

(314)-694-4000

3.0 PRECAUTIONARY STATEMENTS

3.1 Hazards to Humans and Domestic Animals

Keep out of reach of children.

CAUTION!

1

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in any manner inconsistent with its labeling. This product can only be used in accordance with the Directions for Use on this label or in separately published Monsanto Supplemental Labeling. Supplemental Labeling may be found on the internet at www.agrian.com, www.cdms.net or www.greenbook.net or obtained by contacting your Authorized Monsanto Retailer or Monsanto Company representative.

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 regulations.

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) 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 4 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, shoes plus socks and chemical-resistant gloves made of any waterproof material.

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (40 CFR Part 170) for agricultural pesticides. The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Keep people and pets off treated areas until spray solution has dried.

4.0 STORAGE AND DISPOSAL

Proper pesticide storage and disposal are essential to protect against exposure to people and the environment due to leaks and spills, excess product or waste, and vandalism. Do not allow this product to contaminate water, foodstuffs, feed or seed by storage or disposal.

PESTICIDE STORAGE: Store pesticides away from food, pet food, food, feed, fertilizers

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Once cleaned, some plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or Monsanto at 1-800-768-6387. If recycling is not available, puncture and dispose of in a sanitary landfill.

[CONTAINER LABEL LANGUAGE FOR TRANSPORT VEHICLES AS DEFINED IN 40 CFR §156.3]

CONTAINER DISPOSAL: Emptied container retains vapor and product residue. Observe all precautions stated on this label until the container is cleaned, reconditioned or destroyed.

CONTAINER HANDLING: Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, and worn-out threads and closures. Clean thoroughly before reuse for transportation of a material of different composition or before retrimming this transport vehicle from service.

5.0 GENERAL INFORMATION

Product Description: This product is a postemergence, systemic herbicide with no soil residual activity. It gives broad-spectrum control of many annual weeds, perennial weeds, woody brush and trees. It is formulated as a water-soluble liquid containing surfactant.

Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days, but on most perennial weeds may not occur for 7 days or more. Extremely cool or cloudy weather following treatment may slow activity of this product and delay development of final symptoms. Visible effects on a residual culture and collection of the

“ This product is a postemergence, systemic herbicide... ”



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When tank-mixing this product with 2,4-D, only 2,4-D amine formulations may be used for aerial application in California. Tank mixtures with 2,4-D amine formulations may be applied by air in California for fallow and reduced tillage systems, and for alfalfa and pasture renovation applications only.

Do not allow the herbicide solution to mist, drip, drift, or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended.

Avoid direct application to any body of water.

Drift reduction additives may be used. When a drift reduction additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

Ensure uniform application—to avoid streaked, uneven or overlapped application, use appropriate marking devices.

PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion. To prevent corrosion of exposed parts, thoroughly wash aircraft after each day of spraying to remove residues of this product accumulated during spraying or from spills. Landing gear are most susceptible.

SPRAY DRIFT MANAGEMENT

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended.

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

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops.

1. The distance of the outermost nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

Importance of 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 the **Wind, Temperature and Humidity**, and **Temperature Inversion** sections of this label).

Controlling droplet size

- **Volume:** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with the higher rated flows produce larger droplets.
- **Pressure:** Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. 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 backwards, parallel to the airstream, will produce larger droplets than other orientations. Significant deflection

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 the sensitive areas).

7.2 Ground Broadcast Equipment

For broadcast ground applications, unless otherwise specified use this product at the rate of 0.8 to 1.6 quarts per acre for annual weeds, 1.6 to 4 quarts per acre for perennial weeds and 4 to 8 quarts per acre for woody brush and trees. When used according to label directions, this product will give control or partial control of herbaceous weeds, woody brush and trees listed in the **WEEDS CONTROLLED** section of this label.

Use the labeled rates of this product in 3 to 40 gallons of water per acre as a broadcast spray unless otherwise specified. As density of weeds increases, spray volume should be increased within the specified range to ensure complete coverage. Carefully select proper nozzles to avoid spraying a fine mist. For best results with ground application equipment, use flat-fan nozzles. Check for even distribution of spray droplets.

7.3 Backpack or Hand-Held Equipment

Apply to foliage of vegetation to be controlled. For applications made on a spray-to-wet basis, spray coverage should be uniform and complete. Do not spray to the point of runoff. Use coarse sprays only.

For control of weeds listed in the **Annual Weeds** section of **WEEDS CONTROLLED**, apply a 0.4 percent solution of this product to weeds less than 6 inches in height or runner length. For annual weeds over 6 inches tall, or unless otherwise specified, use a 0.8 percent solution. Apply prior to seedhead formation in grass or bud formation in broadleaf weeds.

For best results, use a 1.6 percent solution on harder-to-control perennials, such as Bermudagrass, dock, field bindweed, hemp dogbane, milkweed and Canada thistle.

For low volume directed spray applications, use a 4 to 8 percent solution of this product for control or partial control of annual weeds, perennial weeds, or woody brush and trees. Spray coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one half of the plant is important for best results. To ensure adequate spray coverage, spray both sides of large or tall woody brush and trees, when foliage is thick and dense, or where there are multiple sprouts.

7.4 Selective Equipment

“ Apply to foliage of vegetation to be controlled...”



ORYZALIN 4

Herbicide

ACTIVE INGREDIENTS:	% BY WT.
Oryzalin: 3,5-dinitro-N ⁴ N ⁴ -dipropylsulfanilamide	41.0%
OTHER INGREDIENTS:	59.0%
TOTAL:	100.0%

Contains 4 pounds of active ingredient per gallon.

KEEP OUT OF REACH OF CHILDREN CAUTION
For additional precautionary, handling, and use statements, see inside of this booklet.

EPA Reg. No.: 53883-369
EPA Est. No.: 37429-GA-001^{BT}, 37429-GA-002^{BD}
Letters(s) in lot number correspond(s) to superscript in EPA Est. No.

**CONTENTS:
2.5 GALLONS**



Manufactured for:
Control Solutions Inc.
5903 Geneva-Red Bluff, Pasadena, TX 77507
A member of Adama Consumer and Professional Solutions

- A selective preemergence surface-applied herbicide for control of annual grasses and many broadleaf weeds in:
- Landscape Ornamentals
 - Container Grown Ornamentals
 - Field-Grown Ornamentals
 - Drainage Areas Under Shadehouse Benches
 - Ornamental Bulbs
 - Ground Covers/Perennials
 - Non-cropland and Industrial Sites
 - Established Warm Season Turf (including Bahiagrass, Bermudagrass, Buffalograss, Centpedeagrass, St. Augustinegrass and Zoysiagrass)
 - Tall Fescue (warm season areas)
 - Non-bearing fruit and nut trees and nonbearing vineyards

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION
PERSONAL PROTECTIVE EQUIPMENT (PPE)



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“ A selective preemergence surface-applied herbicide for control of annual grasses and many broadleaf weeds in: ”

Resistance Management on Labels

- Not in all labels
- If included, pay close attention
 - Usually means that pesticide is known to be resistant



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GROUP	21	FUNGICIDE
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“Some plant pathogens are known to develop resistance...Ranman Fungicide’s Mode of action...FRAC code 21”



EPA Reg. No. 71512-3-279 EPA Est. No. 279-NY-1

Active Ingredient:

Cyazofamid*	34.5%
Other Ingredients:	65.5%
	100.0%

*4-chloro-2-cyano-*N,N*-dimethyl-5-(4-methylphenyl)-1*H*-imidazole-1-sulfonamide (CA)
 Contains 3.33 pounds Cyazofamid Per Gallon (400 grams per liter)

RESISTANCE MANAGEMENT
 Some plant pathogens are known to develop resistance to products used repeatedly for disease control. RANMAN FUNGICIDE’s mode/target site of action is complex III of fungal respiration: ubiquinone reductase, Qi site, FRAC code 21. A disease management program that includes alternation or tank mixes between RANMAN FUNGICIDE and other labeled fungicides that have a different mode of action and/or control pathogens not controlled by RANMAN FUNGICIDE is essential to prevent disease resistant pathogens populations from developing. RANMAN FUNGICIDE should not be utilized continuously nor tank mixed with fungicides that have shown to have developed fungal resistance to the target disease.

Since pathogens differ in their potential to develop resistance to fungicides, follow the directions outlined in the “Directions For Use” section of this label for specific resistance management strategies for each crop. Consult with your Federal or State Cooperative Extension Service representatives for guidance on the proper use of RANMAN FUNGICIDE in programs that seek to minimize the occurrence of disease resistance. RANMAN FUNGICIDE is not cross-resistant with other classes of fungicides that have different modes of action.



Atrazine: Group 5 Herbicide

NUMBER OF RESISTANT WEED SPECIES IN U.S.			
	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAME)

PHOTOSYNTHESIS INHIBITORS				
5	PHOTOSYSTEM II INHIBITORS (D1 Serine 264 binders and non-histidine 215 binders)	Amide	propanil	<i>SuperWham</i>
			atrazine	<i>AAtrex, others</i>
		Triazine	prometon	<i>Pramitol</i>
			prometryn	<i>Caparol</i>
			simazine	<i>Princep</i>
			Triazinone	hexazinone
		Uracil	metribuzin	<i>Metribuzin, others</i>
			terbacil	<i>Sinbar</i>
		Urea	diuron	<i>Dirax, Karmex</i>
			fluometuron	<i>Cotoran</i>
linuron	<i>Lorox, Linex</i>			
tebuthiuron	<i>Spike</i>			
6	PHOTOSYSTEM II INHIBITORS (D1 Histidine 215 binders)	Berzothiadiazinone	bentazon	<i>Basagran, others</i>
		Nitrile	bromoxynil	<i>Maestro, Moxy, others</i>
		Phenyl pyridazine	pyridate	<i>Tough</i>



Paraquat: Group 22 Herbicide

CELL MEMBRANE DISRUPTERS					
14	PPO INHIBITORS	Aryl triazinone	carfentrazone	<i>Aim</i>	
			fluthiacet	<i>Cadet</i>	
			sulfentrazone	<i>Spartan 4F</i>	
		4	Diphenylether	acifluorfen	<i>Ultra Blazer</i>
				fomesafen	<i>Flexstar, Reflex, others</i>
				lactofen	<i>Cobra, Phoenix</i>
			N-phenylphthalimide	flumiclorac	<i>Resource</i>
				flumioxazin	<i>Valor, Chateau, others</i>
			Pyrimidinedione	saflufenacil	<i>Sharpen</i>
		22	PHOTOSYSTEM I ELECTRON DIVERTER	5	Bipyridylum
paraquat	<i>Gramoxone SL</i>				



Best Practices

- Use several approaches to pest management (IPM)
- Read the Label
 - Follow label rates and label instructions
- Plan ahead and keep good records
- Use different MOA groups when making subsequent applications



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Best Practices

MANAGEMENT OPTION	LOW RISK	MODERATE RISK	HIGH RISK
Herbicide mix or rotation in cropping system	> 2 modes of action	2 modes of action	1 mode of action
Weed control in cropping system	Cultural*, mechanical and chemical	Cultural and chemical	Chemical only
Use of same mode of action per season	Once	More than once	Many times
Cropping system	Full rotation	Limited rotation	No rotation
Resistance status to mode of action	Unknown	Limited	Common
Weed infestation	Low	Moderate	High
Control in last three years	Good	Declining	Poor



Resources for Applicators

- Herbicides: <https://www.hracglobal.com/>
- Insecticides: <https://irac-online.org/>
- Fungicides: <https://www.frac.info/>
- Global Resistance Management App:
 - <https://apps.apple.com/us/app/global-resistance-management/id1600781873>
 - Combines all three into one app



Take Home Messages

- Follow the label
- Implement best practices
- Use different MOA groups throughout the season
- Utilize the Global Resistance Management App



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MODE OF ACTION by ACTION (effect on plant growth)

This chart groups herbicides by their modes of action to assist you in selecting herbicides 1) to maintain greater diversity in herbicide use and 2) to rotate among effective herbicides with different sites of action to delay the development of herbicide resistance.

SITE OF ACTION GROUP	NUMBER OF RESISTANT WEED SPECIES IN U.S.	CHEMICAL FAMILY	ACTIVE INGREDIENT	PRODUCT EXAMPLES (TRADE NAME*)		
LIPID SYNTHESIS INHIBITORS						
1 ACCASE INHIBITORS (acetyl CoA carboxylase)	15	Aryloxyphenoxypionate (fops)	clodinafop	<i>Discover NG</i>		
			cyhalofop	<i>Clincher</i>		
			fenoxaprop	<i>Ricestax, Tecoma</i> , others		
		Cyclohexanedione (dims)	fluaazifop	<i>Fusilade DX</i>		
			quizalofop	<i>Assure II, Targa</i>		
			clethodim	<i>Select Max</i> , others		
			sethoxydim	<i>Poast, Poast Plus</i>		
		Phenylpyrazolin	pinoxaden	<i>Azial XL</i>		
		AMINO ACID SYNTHESIS INHIBITORS				
		2 ALS INHIBITORS (acetolactate synthase)	45	Imidazolinone	imazamox	<i>Raptor, Beyond, Clearmax</i>
imazapic	<i>Plateau</i>					
imazaquin	<i>Scepter</i>					
Pyrimidylthiobenzic acid	bispyribac			<i>Regiment</i>		
	pyrithiobac			<i>Staple</i>		
Sulfonylaminoacarbonyl-triazolinones	flucarbazone			<i>Everest, Pre-Para, Sierra</i>		
	propoxycarbazone			<i>Olympus</i>		
	thiencarbazone			<i>Varro</i>		
	bensulfuron			<i>Londax</i>		
	chlorsulfuron			<i>Classic</i>		
	chlorsulfuron			<i>Glean</i>		
	halosulfuron			<i>Pernit</i>		
	iodosulfuron			<i>Autumn</i>		
	mesosulfuron			<i>Osprey</i>		
	metosulfuron			<i>Ally</i>		
	nicosulfuron			<i>Accent Q</i>		
	orthosulfuron			<i>Strada</i>		
Sulfonylurea	primisulfuron			<i>Beacon</i>		
	prosulfuron			<i>Peak</i>		
	rimsulfuron			<i>Resolve, Matrix</i>		
	sulfosulfuron			<i>Maverick</i>		
	thifensulfuron			<i>Harmony</i>		
	triasulfuron			<i>Amber</i>		
	tribenuron			<i>Express</i>		
	trifloxysulfuron			<i>Envole</i>		
	triflussulfuron			<i>UpBeet</i>		
	clorasulam			<i>FirstRate</i>		
	florasulam			component of <i>Orion</i>		
	flumetsulam			<i>Python, Accolade</i>		
penoxsulam	<i>Grasp</i>					
pyroxulam	<i>PowerFlex HL</i>					
Triazolopyrimidine	14			Organophosphorus	glyphosate	<i>Roundup, Touchdown</i> , several
					GROWTH REGULATORS	
				Aryloxyacetate	halauxifen	component of <i>Quelex*</i>

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GROWTH REGULATORS

4 TIRI AUXIN RECEPTORS (synthetic auxins)	8	Aryloxyacetate	halauxifen	component of <i>Quelex*</i>
		Benzoic acid	dicamba	<i>Banvel, Clarity, Diflexx*</i> , others
		Carboxylic acid	clopyralid	<i>Stinger</i>
			fluroxypyr	<i>Starane</i>
Phenoxy	triclopyr	<i>Grandstand</i>		
	quinclorac	<i>Facet, Paramount</i>		
	2,4-D	<i>2,4-D</i> , others		
19 AUXIN TRANSPORT INHIBITOR	0	MCPA	MCPA	others
		Semicarbazone	diffenozopyr	component of <i>Status</i>

PHOTOSYNTHESIS INHIBITORS

5 PHOTOSYSTEM II INHIBITORS (different binding than 6 & 7)	26	Phenylcarbamate	desmedipham	<i>Betenex</i>
			phenmedipham	component of <i>Betamix</i>
		Triazine	atrazine	<i>Aitrex</i> , others
			prometryn	<i>Caparol</i>
			simazine	<i>Princep</i>
Triazinone	hexazinone	<i>Velpar</i>		
	metribuzin	<i>Metribuzin</i> , others		
6 PHOTOSYSTEM II INHIBITORS (different binding than 5 & 7)	1	Uracil	terbacil	<i>Sinbar</i>
		Benzothiadiazole	benazon	<i>Basagran</i> , others
7 PHOTOSYSTEM II INHIBITORS (different binding than 5 & 6)	9	Nitrile	bromoxynil	<i>Buctril</i> , others
		Amide	propanil	<i>SuperWham</i>
			diuron	<i>Direx, Karmex</i>
Urea	fluometuron	<i>Cotoran</i>		
			linuron	<i>Lorox, Linex</i>

NITROGEN METABOLISM INHIBITOR

10 GLUTAMINE SYNTHETASE INHIBITOR	1	Organophosphorus	glufosinate	<i>Liberty</i>
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PIGMENT INHIBITORS

12 PHYTOENE DESATURASE (PDS) INHIBITOR	1	none recognized	fluridone	<i>Sonar</i>
13 DOXP SYNTHASE INHIBITOR (1-DEOXY-D-XYLULOSE 5-PHOSPHATE)	1	Isoxazolidinone	clomazone	<i>Command</i>
27 HPPD INHIBITORS	2	Isoxazole	isoxaflutole	<i>Balance Flex</i>
		Pyrazole	pyrasulfotole	component of <i>Huskie</i>
		Pyrazolone	topramezone	<i>Armezon, Impact</i>
			mesotrione	<i>Callisto</i>
		Triketone	tembotrione	<i>Laudis</i>
		bicyclopyrone	component of <i>Acuron*</i>	

CELL MEMBRANE DISRUPTERS

14 PPO INHIBITORS	2	Aryl triazinone	sulfentrazone	<i>Spartan</i>
			carfentrazone	<i>Aim</i>
			fluthiacet	<i>Cadet</i>
		Diphenylether	acifluofen	<i>Ultra Blazer</i>
			fomesafen	<i>Flexstar, Reflex</i> , others
			lactofen	<i>Cobra, Phoenix</i>
		N-phenylphthalimide	flumiclorac	<i>Resource</i>
			flumioxazin	<i>Valor</i> , others
		Pyrimidinedione	salfufenacil	<i>Sharpen</i>
		22 PHOTOSYSTEM I ELECTRON DIVERTER	5	Bipyridylum
paraquat	<i>Gramoxone SL</i>			

ENTAL PROGRAM

Endangered Species Act (ESA)



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What is the Endangered Species Act?

- The Endangered Species Act (ESA) provides a program for the conservation of threatened and endangered (listed) plants and animals and the habitats in which they are found.
- Designed to protect at-risk species from extinction
- 99% of species listed on it have avoided extinction.



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What is the Endangered Species Act?

- Risk only statute (different than FIFRA)
- Federal agencies must ensure that the “actions” they authorize will not result in jeopardy or adversely modify designated critical habitat for species listed as endangered or threatened by the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) (jointly the Services).
- The “actions” EPA authorizes are the sale, distribution, and use of pesticides according to the product labeling.



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Why is ESA important for pesticides?

- Pesticides can affect non-target species
 - Directly ingested
 - Indirectly feed on target species
- Drift can spread pesticide to non-target sites



Why is EPA enforcing ESA?

- EPA has been subject to several lawsuits claiming that the Agency has failed to meet its ESA obligations.
- EPA has settled many of these lawsuits, resulting in the Agency agreeing to conduct scientific assessments and make effects determinations for numerous pesticides



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What Does this Mean for You?

- Restrictions on some pesticides in some areas
- Specific mitigations may change over time



How w
pesticid
ESA?

your
because of



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RESTRICTED USE PESTICIDE
DUE TO HAZARD TO NON-TARGET ORGANISMS
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 Applicator's Certificate.

Kaput-D PRAIRIE DOG BAIT



NET WT. 50 LBS. (22.7 kg)

EPA Reg. No. 72500-22 EPA Est. 72500-CO-1

ACTIVE INGREDIENTS:
Diphacinone(CAS No. 82-66-6)..... 0.005%
OTHER INGREDIENTS..... 99.995%
TOTAL..... 100.000%

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

READ THIS LABEL: Read this entire label and follow all use directions and use precautions. Use only for sites, pests and application methods described on this label.

IMPORTANT: Do not expose children, pets, or other non-target animals to diphacinone. To help prevent accidents:
1. Store product well in a location out of reach of children and pets.
2. Dispose of product container, unused, spoiled and unaccounted bait as specified on this label.

Use Restrictions: This product may only be used as follows:
1. **States/Pests:** Black-tailed Prairie Dogs (*Cynomys ludovicianus*) on rangeland and adjacent non-crop areas.
2. **States:** Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming. Do not apply this product within the exterior boundaries of the Outer Continental Shelf or the Blackfoot Reservation in Montana.

3. **Application:** This product may only be used as underground applications. Do not apply bait at or above ground level. Treat only active burrows. Labels on bait are not surface. Applicator must retrieve and dispose of any bait that is spilled above ground or placed less than 6 inches down the burrow entrance.
4. **Treatment Period:** Apply between October 1 and March 15 of the following year when animals will most readily take the grain bait.
5. **Non-Applicators:** Do not allow children, pets, domestic animals or persons not involved in the application to be in the area where the product is being applied.
6. **Grazing Restrictions:** Do not allow livestock to graze in treated areas for 14 days after treatment and when no bait is found above ground.
7. **Other:** Do not use Kaput-D Prairie Dog Bait with any other anticoagulant prairie dog bait. For each treatment area, only one anticoagulant rodenticide active ingredient (diphacinone or chlordane) may be used per treatment period.

Endangered Species: It is a Federal offense to use any pesticide in a manner that results in the death of an endangered species. Use of this product may pose a hazard to endangered or threatened species. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. To obtain Bulletin, no more than six months before using this product, contact <http://www.epa.gov/epd/pest> or call 1-844-447-9813. You must use the Bulletin for the months in which you will apply the product.
Site Assessment: Before applying this product, identify active prairie dog burrows by visual observation. The openings of active burrows will generally be free of leaves, seeds, other debris or spider webs, and will show freshly turned earth, and have prairie dog feces nearby.

Application Directions:
Method 1: Application by Hand: Apply 1/4 cup of bait (approx. 2 ounces or 56 grams) at least 6 inches down prairie dog burrows. Make sure no bait is left on the soil surface. Applicator must retrieve and dispose of any bait that is spilled above ground or placed less than 6 inches down the burrow entrance.
Method 2: Application by Mechanical Bait Placement Machine: Apply 1/4 cup of bait (approx. 2 ounces or 56 grams) at least 6 inches down prairie dog burrows. Apply with a mechanical bait application machine that is designed, constructed and operated in a manner that ensures bait is properly placed at least 6 inches down prairie dog burrows. Mechanical bait application machines must be calibrated to ensure that the proper amount of bait is deposited into each prairie dog burrow. Make sure no bait is left on the soil surface. Applicator must retrieve and dispose of any bait that is spilled above ground or placed less than 6 inches down the burrow entrance.

Pre-treatment: Prairie dogs that have eaten this bait will begin to die off 4 to 5 days after the first treatment. The applicator must return to the site within 4 days after bait application and at 11 to 12 day intervals, to collect and properly dispose of any bait or dead or dying prairie dogs found on the surface. Carcass searches must be performed using a live-trap method that completely covers the baited area. Trapped center lines must be not more than 200 feet (about 60 meters) apart, and should be consistently spaced. Searches are conducted in more densely vegetated sites. Trapped lines may be trapped on bait or by vehicle if it is not to exceed 4 mph. All carcasses found above ground must be collected and disposed of properly. Continue to collect and dispose of dead or dying prairie dogs and search for non-target animals for at least two weeks, but longer if carcasses are still being found at that time. Carcass collection should occur in late afternoon, near sundown, to reduce the potential of nocturnal animals feeding carcasses and dying animals. Bury carcasses on site in holes dug at least 18 inches deep or in holes burrows no longer being used by prairie dogs or other species) to avoid non-target animal scavenging. Bait includes covering and sealing the hole or burrow with soil. Bait is not practical (due to frozen ground, etc.) and other disposal methods are allowed by state and local authorities. Collected carcasses may be disposed of by other methods to insure that the carcasses are inaccessible to scavengers. All dead or dying non-target animals must be reported to the National Pesticide Information Center at 1-800-858-7378 as soon as possible. Any apparently injured or sick Federally listed species must also be immediately reported by calling 800-256-7540 if located in Kansas, Nebraska, the Dakotas, Montana, Colorado or Wyoming, or 520-248-7339 if located in Texas. New Mexico or Oklahoma. The Black-footed Ferret Coordinator must also be contacted if ferrets are found during Kaput-D Prairie Dog Bait applications or carcass searches at 970-897-2730 x204. If live black-footed ferrets are found outside reintroduction sites, before using or after Kaput-D Prairie Dog Bait application, the Black-footed Ferret Coordinator must be contacted immediately and sufficient time must be allowed for the FWC to capture and relocate the black-footed ferrets) before applying Kaput-D Prairie Dog Bait.

Second Bait Application: If prairie dog activity persists several weeks or months after the bait was applied, a second application may be made, by treating burrows in the manner, time period and procedure as described under DIRECTIONS FOR USE instructions. Follow all Use Restrictions, Site Assessment, Application and Follow-up directions as stipulated above.

STORAGE AND DISPOSAL
Do not contaminate water, food, feed, storage or disposal.
Pesticide Storage: Store in original container in a cool, dry place inaccessible to children and pets.
Pesticide Disposal: Wastes resulting from the use of this product must be disposed of in trash or at an approved waste disposal facility.
Container Handling: Re-use/recycle container. Do not reuse or refill this container. Completely empty container then offer for recycling or incineration/ or purchase and dispose of in a sanitary landfill.
Label: Retain. See label for details.

PERSONAL PROTECTION EQUIPMENT (PPE)
All handlers (including applicators) must wear long-sleeved shirt, long pants, shoes, socks, and waterproof gloves. Any person who retrieves carcasses or uncut bait following application of this product must wear waterproof gloves.
Water Contamination: Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washing, use detergent and hot water. Rinse separately from other washable PPE. Do not reuse immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash hands thoroughly after applying bait and before eating, drinking, chewing gum, using tobacco or using the toilet and change into clean clothing.

KEEP OUT OF REACH OF CHILDREN

CAUTION
HARMFUL IF SWALLOWED.
SEE BELOW FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS.

FIRST AID
HAVE THE PRODUCT CONTAINER OR LABEL WITH YOU WHEN CALLING A POISON CONTROL CENTER OR DOCTOR OR GOING FOR TREATMENT. YOU MAY ALSO CONTACT THE NATIONAL POISON INFORMATION CENTER AT 1-800-858-7378 FOR EMERGENCY MEDICAL TREATMENT INFORMATION.

- If Swallowed:** Immediately call a poison control center or doctor 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.
- If on skin or clothing:** Take off contaminated clothing. Immediately rinse skin 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.

TREATMENT FOR PET POSSESSION
If animal eats bait, call veterinarian or 1-800-222-1222 at once.

NOTE TO PHYSICIAN OR VETERINARIAN
Contains diphacinone, an anticoagulant. If swallowed, this material may reduce the clotting ability of the blood and cause bleeding. For humans or dogs that have ingested this product and/or have obvious poisoning symptoms (bleeding or prolonged prothrombin time), give Vitamin K1 intramuscularly or orally.

ENVIRONMENTAL HAZARDS
This product is toxic to fish and wildlife. Dogs and other predatory and scavenging mammals and birds might be poisoned if they feed spot animals that have eaten the bait. Do not apply directly to water, or to areas where surface water is present. Do not contaminate water by cleaning of equipment or disposal of wastes. Runoff also may be hazardous to aquatic organisms in water adjacent to treated areas.

WARRANTY
To the extent consistent with applicable law, Manufacturer and Seller make no warranty, express or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use/handling is contrary to label instructions.

Scimetrics

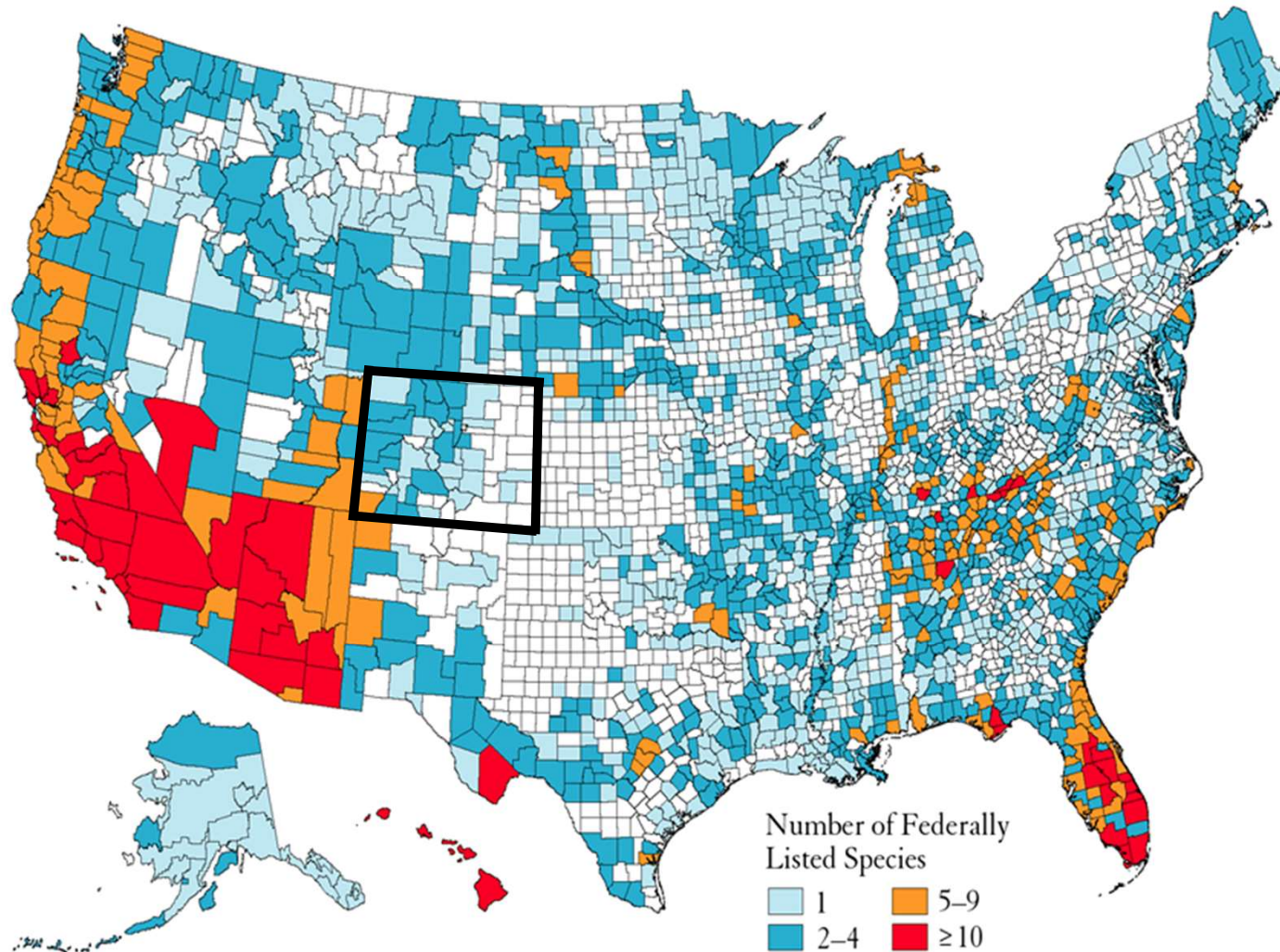
LABORATORY
Pest Management Solutions
P.O. Box 1045
Wellington, CO 80549-1045
970-452-1200
customerservice@scimetrics.com
Made in the USA

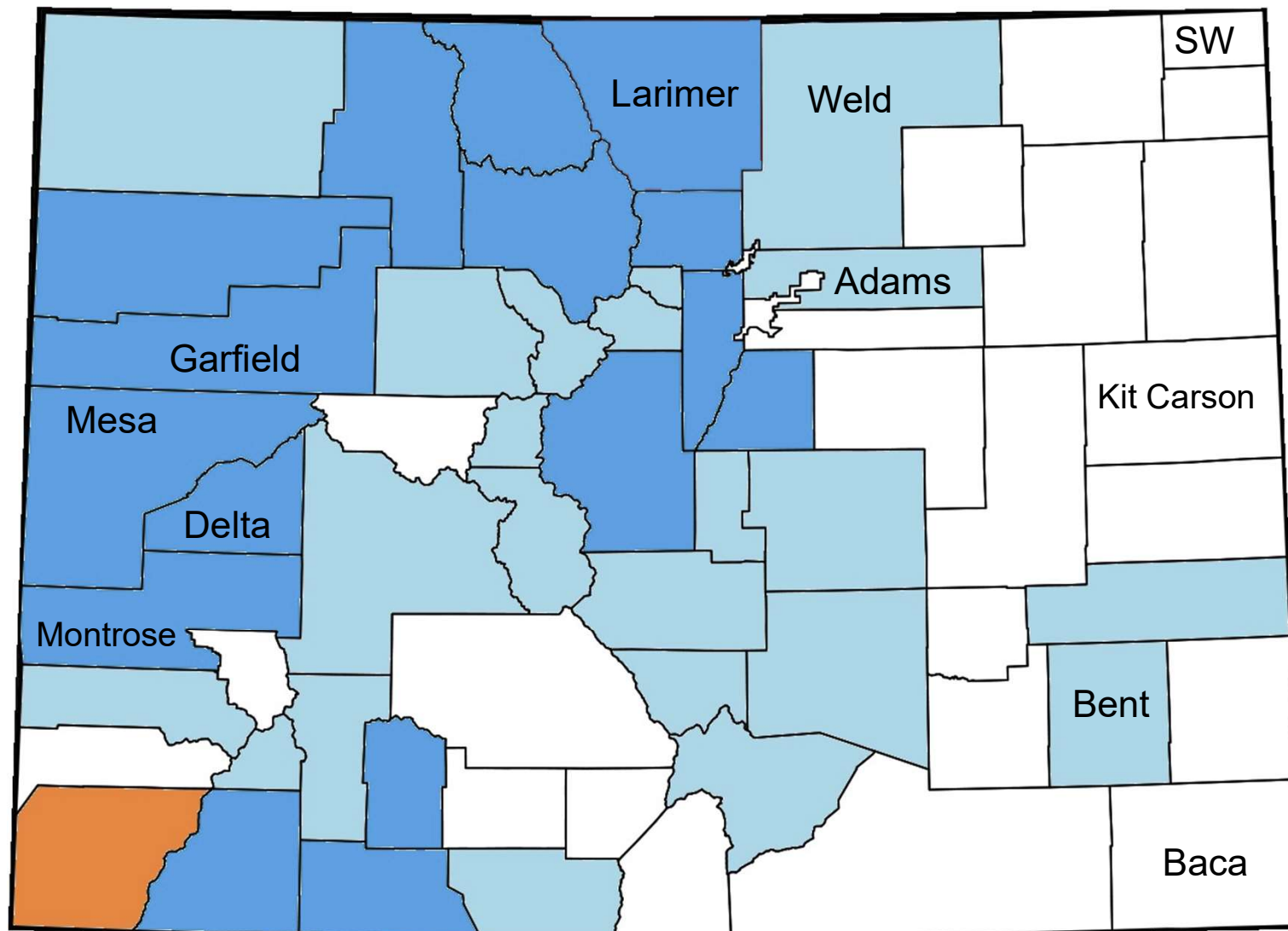
Label Version 08/07/17



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Endangered species clustered in subset of counties





Number of Federally Listed Species

- 1
- 2-4
- 5-9
- ≥10

Federally Listed Species in Colorado

- Gunnison Sage-Grouse
- Lesser Prairie-Chicken
- Mexican Spotted Owl
- Piping Plover
- Southwestern Willow Flycatcher
- Western Yellow-Billed Cuckoo
- Whooping Crane



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Federally Listed Species in Colorado

- Bonytail
- Colorado Pikeminnow
- Greenback Cutthroat Trout
- Humpback Chub
- Razorback Sucker



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Federally Listed Species in Colorado

- Black-Footed Ferret
- Grey Wolf
- Grizzly Bear
- Lynx
- Preble's Meadow Jumping Mouse



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Grey Wolf

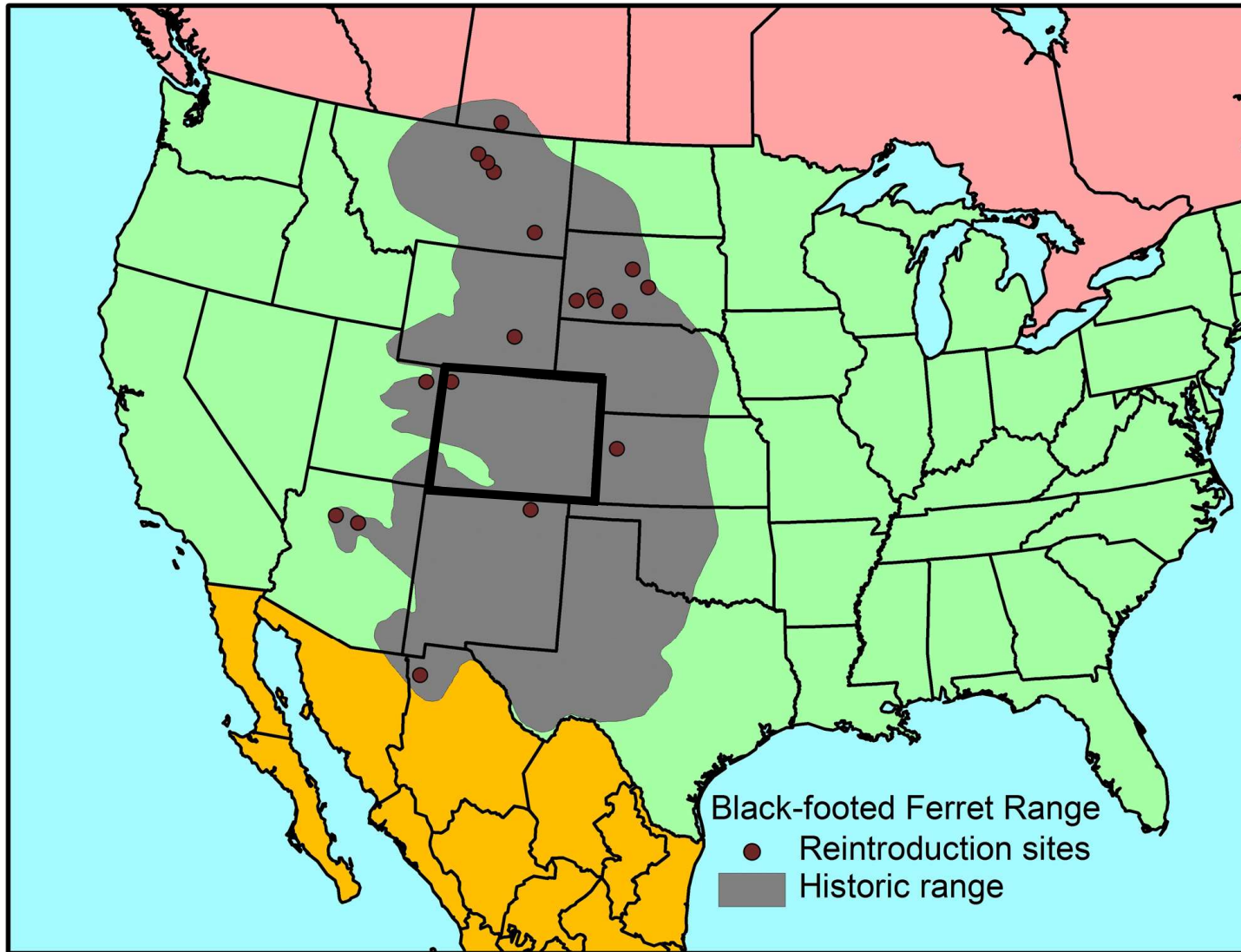
- 10(j) experimental population
- Scheduled for reintroduced into Colorado December 31, 2023



Black Footed Ferret

- Reintroductions in Colorado, Utah, and Wyoming





Prairie Dog

- Controlled with Rodenticides
- Products currently restricted by ESA in CO:
 - Kaput Combo Prairie Dog Bait
 - Kaput-D Prairie Dog Bait
 - Rozol Prairie Dog Bait
- These baits can only be used for prairie dogs on rangeland, rangeland and pasture, or rangeland and adjacent non-crop area.



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**RESTRICTED USE PESTICIDE
DUE TO HAZARD TO NON-TARGET ORGANISMS**
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 Applicator's Certificate.

Kaput-D PRAIRIE DOG BAIT

NET WT. 50 LBS. (22.7 kg)

<p>EPA Reg. No. 72500-22 EPA Est. 72500-01</p> <p>ACTIVE INGREDIENTS: Diphacinone (CAS No. 82-66-6) 0.005%</p> <p>OTHER INGREDIENTS 99.995%</p> <p>TOTAL 100.000%</p>	<p>KEEP OUT OF REACH OF CHILDREN CAUTION HARMFUL IF SWALLOWED. SEE BELOW FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS.</p>	<p>FIRST AID HAVE THE PRODUCT CONTAINER AND LABEL WITH YOU WHEN CALLING A POISON CONTROL CENTER OR DOCTOR OR GOING FOR TREATMENT. YOU MAY ALSO CONTACT THE NATIONAL POISON INFORMATION CENTER AT 1-800-527-2773 FOR EMERGENCY MEDICAL TREATMENT INFORMATION.</p> <p>Swallowed • Immediately call a poison control center or doctor 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.</p> <p>On skin or clothing • Wash off contaminated clothing. Immediately rinse skin with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.</p> <p>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.</p> <p>TREATMENT FOR PET POSSESSION: If animal eats bait, call veterinarian at 1-800-252-1222 at once.</p> <p>NOTE TO PHYSICIAN ON VETERINARIAN Contains Diphacinone, an anticoagulant. If swallowed, this material may reduce the clotting ability of the blood and cause bleeding. For humans or dogs that have ingested this product and/or have obvious poisoning symptoms (bleeding or prolonged prothrombin time), give Vitamin K1 intravenously or orally.</p> <p>ENVIRONMENTAL HAZARDS This product is toxic to fish and wildlife. Dogs and other predatory scavenging mammals and birds might be poisoned if they feed upon animals that have eaten this bait. Do not apply directly to water or to areas where surface water is present. Do not contaminate water by cleaning of equipment or disposal of waste. Runoff also may be hazardous to aquatic organisms in water adjacent to treated areas.</p> <p>WARNING To the extent consistent with applicable laws, Manufacturer and Seller make no warranty, express or implied, concerning the use of this product other than that stated on the label. Buyer assumes all risk of use and/or handling of this material when such use differs in conformity to label instructions.</p> <p>Scimetrics LTD. CORP. Pest Management Solutions P.O. Box 1045 Wellington, CO 80549-1045 (970) 482-1330 customerservice@scimetricsproducts.com Made in the USA</p> <p>Label Version 08/03/17</p>
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Directions for Use: It is a violation of Federal law to use this product in a manner inconsistent with labeling. **READ THIS LABEL.** Read this entire label and follow all use directions and use precautions. Use only for bats, pests and application methods described on this label.

IMPORTANT: Do not expose children, pets, or other non-target animals to diphacinone. To help prevent accidents:

1. Store product not in use in a location out of reach of children and pets.
2. Dispose of product container, unused, spilled and unaccounted bait as specified on this label.

Use Restrictions: This product may only be used as follows:

1. **Site/Pests:** Black-Tailed Prairie Dog (Spermophilus tridecemlineatus) on rangeland and adjacent non-rangeland areas.
2. **States:** Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming. Do not apply this product within the exterior boundaries of the Crow Reservation of the Blackfoot Reservation in Montana.
3. **Application:** This product may only be used in underground applications. Do not apply bait at or above ground level. Bait only active burrows. Leave no bait on soil surface. Applicator must remove and dispose of any bait that is spilled above ground or placed less than 6 inches down the burrow entrance.
4. **Treatment Period:** Apply between October 1 and March 15 of the following year, when animals will most readily take the grain bait.
5. **Non-Applicators:** Do not allow children, pets, domestic animals or persons not involved in the application to be in the area where the product is being applied.
6. **Grazing Restrictions:** Do not allow livestock to graze in treated areas for 14 days after treatment and when no bait is found above ground.
7. **Other:** Do not use Kaput-D Prairie Dog Bait with any other anticoagulant prairie dog bait. For each treatment area, only one anticoagulant rodenticide active ingredient (diphacinone or cholecalciferol) may be used per treatment period.

Endangered Species: It is a Federal offense to use any pesticide in a manner that results in the death of an endangered species. Use of this product may pose a hazard to endangered or threatened species. When using this product you must follow the requirements contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. To obtain this Bulletin, contact the Bureau of Reclamation or call 1-844-847-6153. You must use the Bulletin and for the month in which you will apply the product.

Site Assessment: Before applying this product, identify active prairie dog burrows by visual observation. The openings of active burrows will generally be the base of mounds, mounds, mounds or spider webs, and will show freshly turned earth, and have prairie dog footprints nearby.

Application Directions:

Method 1. Application by Hand: Apply 1/4 cup of bait (approx. 2 ounces or 56 grams) at least 6 inches down prairie dog burrows. Make sure no bait is left on the soil surface. Applicator must remove and dispose of any bait that is spilled above ground or placed less than 6 inches down the burrow entrance.

Method 2. Application by Mechanical Bait Placement Machine: Apply 1/4 cup of bait (approx. 2 ounces or 56 grams) at least 6 inches down prairie dog burrows. Apply with a mechanical bait application machine that is designed, constructed and operated in a manner that ensures bait is properly placed at least 6 inches down prairie dog burrows. Mechanical bait application machines must be calibrated to ensure that the proper amount of bait is dispensed into each prairie dog burrow. Make sure no bait is left on the soil surface. Applicator must remove and dispose of any bait that is spilled above ground or placed less than 6 inches down the burrow entrance.

Follow-up: Prairie dogs that have eaten this bait will begin to die off 4 to 8 days after the first treatment. The applicator must return to the site within 4 days after bait application, and at 1 to 2 day intervals, to collect and properly dispose of any bait or dead or

performed using a line-baited method that completely covers the baited area. Treated areas must be not more than 700 feet (about 60 meters) apart, and should be considerably less if species are conducted in more densely populated areas. Treated lines may be traveled on foot or by vehicle at a rate not to exceed 4 mph. All carcasses found above ground must be collected and disposed of properly. Continue to collect and dispose of dead or dying prairie dogs and search for non-target animals for at least two weeks, but longer if carcasses are still being found at that time. Carcass collection should occur in late afternoon, near sundown, to reduce the potential of nocturnal animals feeding carcasses and dying animals. Bury carcasses on site or in hole deep at least 18 inches deep or in inactive burrows (no longer being used by prairie dogs or other species) to avoid non-target animal scavenging. Burial includes covering and packing the hole or furrow with soil. If burial is not practical due to frozen ground, etc.) and other disposal methods are allowed by state and local authorities, collected carcasses may be disposed of by other methods to ensure that the carcasses are inaccessible to scavengers. All dead or dying non-target animals must be reported to the National Pesticide Information Center 1-800-800-7379 as soon as possible. Any carcasses, injured or sick (especially killed species) must be immediately reported by calling 303-256-7540 (if located in Kansas, Nebraska, the Dakota, Missouri, Colorado or Wyoming) or 305-249-7889 (if located in Texas, New Mexico or Oklahoma). The Black-footed Ferret Coordinator must also be contacted if ferrets are found outside introduction sites, before, during or after Kaput-D Prairie Dog Bait application. The Black-footed Ferret Coordinator must be contacted immediately and sufficient time must be allowed for the FWS to capture and relocate the black-footed ferret) before applying Kaput-D Prairie Dog Bait.

Second Bait Application: If prairie dog activity persists several weeks or months after the bait was applied, a second application may be made, by treating burrows in the previous time period and procedure as described under the DIRECTIONS FOR USE instructions. Follow all Use Restrictions, Site Assessment, Application and Follow-up directions as indicated above.

STORAGE AND DISPOSAL
Do not contaminate water, food or feed by storage or disposal.
Pesticide Storage: Store in original container in a cool, dry place inaccessible to children and pets.
Pesticide Disposal: Residue resulting from the use of this product may be disposed of in trash or at an approved waste disposal facility.
Container Handling: Non-refillable container. Do not reuse or refill this container. Completely empty container, then either recycle or reconditioning or puncture and dispose of in a sanitary landfill.
Lot Number: See Label Flight

PRECAUTIONARY STATEMENTS
Hazards to Humans and Domestic Animals
CAUTION: Harmful if swallowed or absorbed through the skin because it may reduce the clotting ability of blood and cause bleeding. Keep away from children, domestic animals and pets. Do not get in eyes on skin or on clothing.
Personal Protective Equipment (PPE)
All handlers including applicators must wear long-sleeved short-sleeve shirts, long pants, shoes plus socks, and waterproof gloves. Any person whose clothes or shoes had followed application of this product must use waterproof gloves.
User Safety Requirements
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washing, use detergent and hot water. Keep and wash PPE separately from other laundry. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash hands thoroughly after applying bait and before eating, drinking, chewing gum, using tobacco or using the toilet and before using public facilities.

**RESTRICTED USE PESTICIDE
DUE TO HAZARD TO NON-TARGET ORGANISMS**

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 Applicator's Certificate.

***Kaput-D*[®]
PRAIRIE DOG BAIT**



NET WT. 50 LBS. (22.7 kg)

EPA Reg. No. 72500-22

EPA Est. 72500-CO-1

ACTIVE INGREDIENTS:

Diphacinone(CAS No. 82-66-6)..... 0.005%

OTHER INGREDIENTS 99.995%

TOTAL 100.000%

KEEP OUT OF REACH OF CHILDREN

CAUTION

HARMFUL IF SWALLOWED.

SEE BELOW FOR FIRST AID AND ADDITIONAL
PRECAUTIONARY STATEMENTS.

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**Kent D
G BAIT**



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TOTAL 100.000%

KEEP OUT OF REACH OF CHILDREN

CAUTION

HARMFUL IF SWALLOWED.

SEE BELOW FOR FIRST AID AND ADDITIONAL
PRECAUTIONARY STATEMENTS.

DIRECTIONS FOR USE

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

READ THIS LABEL: Read this entire label and follow all use directions and use precautions. Use only for sites, pests and application methods described on this label.

IMPORTANT: Do not expose children, pets, or other non-target animals to rodenticides. To help prevent accidents:

1. Store product not in use in a location out of reach of children and pets.
2. Dispose of product container, unused, spoiled and unconsumed bait as specified on this label.

Use Restrictions: This product may only be used as follows:

1. Sites/Pests: Black-Tailed Prairie Dogs (*Cynomys ludovicianus*) on rangeland and adjacent non-crop areas.

2. States: Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas and Wyoming. Do not apply this product within the exterior boundaries of the Crow Reservation or the Blackfeet Reservation in Montana.

3. Application: This product may only be used in underground applications. Do not apply bait at or above ground level. Treat only active burrows. Leave no bait on soil surface. Applicator must retrieve and dispose of any bait that is spilled above ground or placed less than 6 inches down the burrow entrance.

4. Treatment Period: Apply between October 1 and March 15 of the following year, when animals will most readily take the grain bait.

5. Non-Applicators: Do not allow children, pets, domestic animals or persons not involved in the application to be in the area where the product is being applied.

6. Grazing Restriction: Do not allow livestock to graze in treated areas for 14 days after treatment and when no bait is found above ground.

7. Other: Do not use *Kaput®-D Prairie Dog Bait* with any other anticoagulant prairie dog bait. For each treatment area, only one anticoagulant rodenticide active ingredient (diphacinone or chlorophacinone) may be used per treatment period.

Endangered Species: It is a Federal offense to use any pesticide in a manner that results in the death of an endangered species. Use of this product may pose a hazard to endangered or threatened species. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. To obtain Bulletins, no more than six months before using this product, consult <http://www.epa.gov/espp/> or call 1-844-447-3813. You must use the Bulletin valid for the month in which you will apply the product.

Site Assessment: Before applying this product, identify active prairie dog burrows by visual observation. The openings of active burrows will generally be free of leaves, seeds, other debris or spider webs, and will show freshly turned earth, and have prairie dog feces nearby.

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Site Assessment: Before applying this product, identify active prairie dog burrows by visual observation. The openings of active burrows will generally be free of leaves, seeds, other debris or spider webs, and will show freshly turned earth, and have prairie dog feces nearby.

RESTRICTED USE PESTICIDE

(GROUND AND SURFACE WATER CONCERNS)

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 APPLICATOR'S CERTIFICATION. THIS PRODUCT IS A RESTRICTED-USE HERBICIDE DUE TO GROUND AND SURFACE WATER CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR ATRAZINE TO REACH GROUND AND SURFACE WATER.

Sale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is prohibited.

ATRAZINE GROUP 5 HERBICIDE PULL HERE TO OPEN ►



syngenta.

Herbicide

For season-long weed control in corn, sorghum, and certain other crops

Active Ingredients:

Atrazine: 2-chloro-4-ethylamino-6-isopropylamino-s-triazine 42.6%
Related Compounds 0.9%

Other Ingredients: 56.5%

Total: 100.0%

AAtrrex 4L contains 4 lb active ingredients per gallon.

Shake well before using.

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No. 100-497

EPA Est. 100-LA-001

SCP 497A-L38VV 1121

4150889

2.5 gallons
Net Contents



DIRECTIONS FOR USE

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

Endangered Species

It is a Federal offense to use any pesticide in a manner that results in an unauthorized "take" (e.g., kill or otherwise harm) of an endangered species under the Endangered Species Act section 9. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. You must obtain a Bulletin no earlier than six months before using this product. To obtain Bulletins, consult <http://www.epa.gov/espp/>, call 1-844-447-3813, or email ESPP@epa.gov. You must use the Bulletin valid for the month in which you will apply the product.

ANY USE OF THIS PRODUCT IN AN AREA WHERE USE IS PROHIBITED IS A VIOLATION OF FEDERAL LAW. Before using this product, you must consult the Atrazine Watershed Information Center (AWIC) to determine whether the use of this product is prohibited in your watershed. AWIC can be accessed through www.atrazine-watershed.info or 1-866-365-3014. If use of this product is prohibited in your watershed, you may return this product to your point of purchase or contact Syngenta Crop Protection, LLC for a refund.

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.

Labels and Labeling

- The **label** is the information printed on, or physically attached to, the pesticide container itself.
- **Labeling** includes the label plus any other information about the product the label refers to.
- Labeling can also include websites directing you to for more information about uses or restrictions, like the **EPA Bulletins Live! Two** website
- Directions for a product that are not directly on the label, but the label directs you to are legally binding



Bulletins Live! Two -- View the Bulletins

For assistance in using Bulletins Live! Two, [view the tutorial](#). Also see [background, notes and a quick start guide for BLT](#).

Hmm. We're having trouble finding that site.

We can't connect to the server at blt.epa.gov.

If you entered the right address, you can:

- Try again later
- Check your network connection
- Check that Firefox has permission to access the web (you might be connected but behind a firewall)

[Try Again](#)

<https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins>

1. Using the map application tools

Match the following letters for the tools with the letters on the image.

A. Zoom Tool: Zoom in using the “+” button and zoom out using the “-” button.

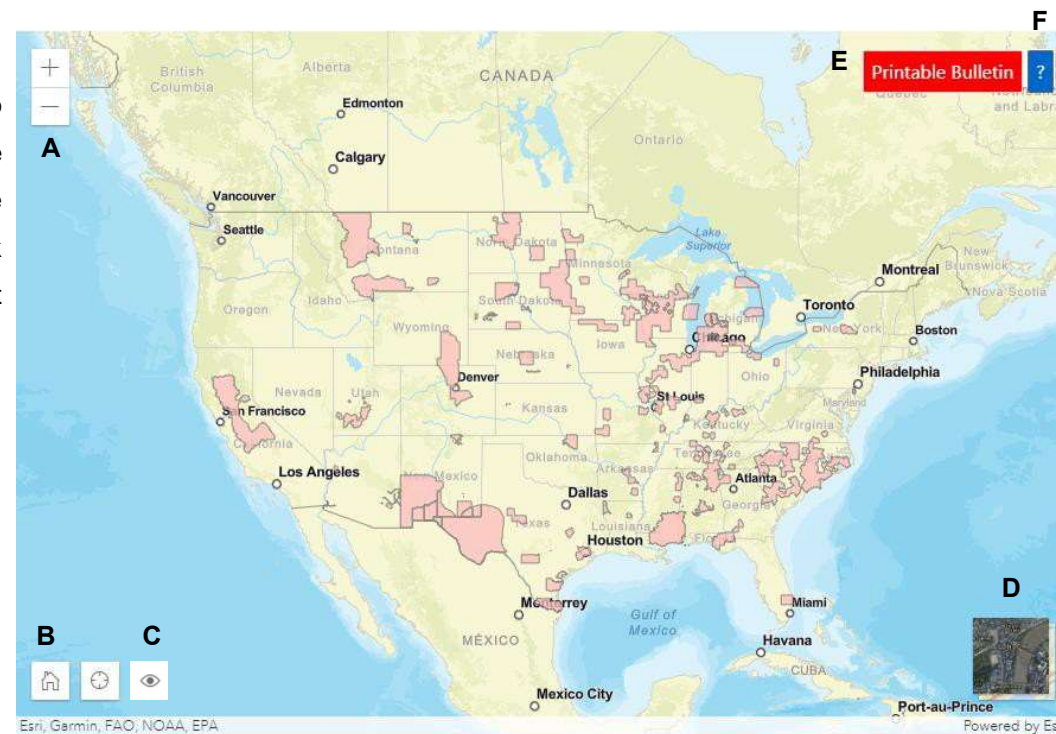
B. Default Map View Tool: Click the house in the lower left-hand corner to zoom to the full extent of the Pesticide Use Limitation Areas (PULAs) on the map. The geographic areas on the map where pesticide use limitations are present are referred to as PULAs. A PULA is indicated on the map by a pink shape. These are the geographic areas where pesticide use limitations exist to protect listed species and their designated critical habitat.

C. Opacity Slider: Use the opacity slider to increase or decrease the shading intensity of the PULA(s).

D. Basemap Tool: Click the box in the lower right-hand corner to change the background. It will say “Toggle Basemap” when your cursor hovers over it.

E. Printable Bulletin: This red button in the upper right-hand corner will generate a pdf of the PULA.

F. Help Button: This blue button marked with a “?” displays directions for using the application.



2. Navigating to the intended pesticide application location (Step 1 on *Instructions Tab*)


There are three ways to zoom to your intended pesticide application area:

A. Use the “Location Search” tool at the top of the blue search window left of the map. Search options include but are not limited to:

- city (e.g., New York, NY)
- county (e.g., New York County, NY)
- landmark (e.g., Statue of Liberty, NY)
- zip code (e.g., 10004)
- full address (e.g., Statue of Liberty National Monument, Liberty Island, New York, NY 10004) or
- coordinates (latitude and longitude: type longitude first, then latitude) in decimal degrees (e.g., -74.0444, 40.6892).

Names of cities, counties or other landmarks may occur in more than one location across the country; therefore, adding unique identifiers such as the state will help the application find the correct location.

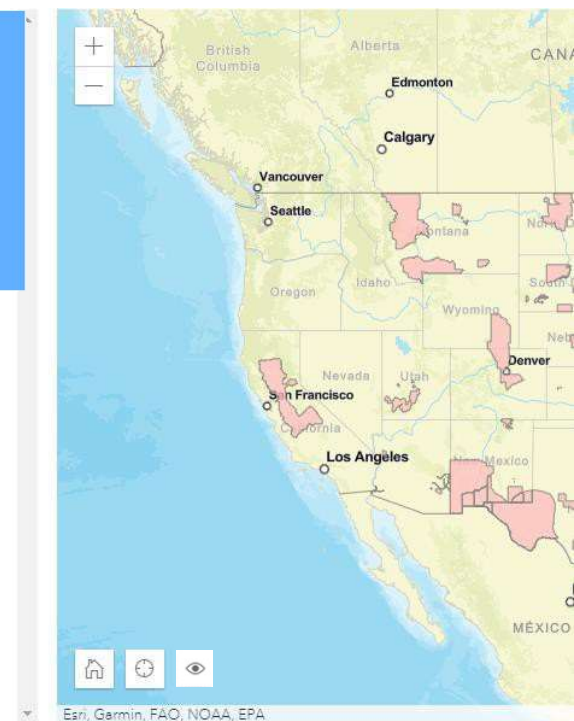
A



Location Search:
Find Place

Application Month:
November 2023

EPA Registration Number:
 *

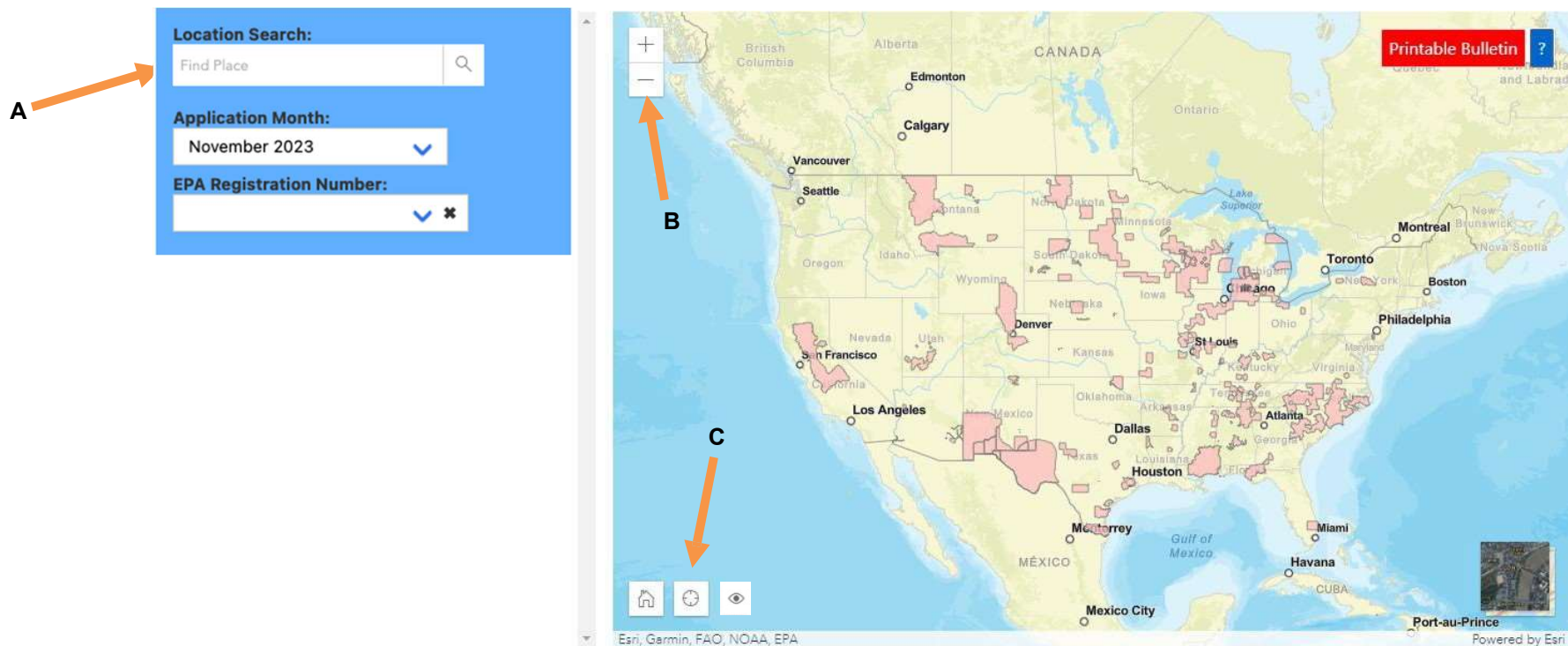


2. Navigating to the intended pesticide application location (Step 1 on *Instructions Tab*)

There are three ways to zoom to your intended pesticide application area:

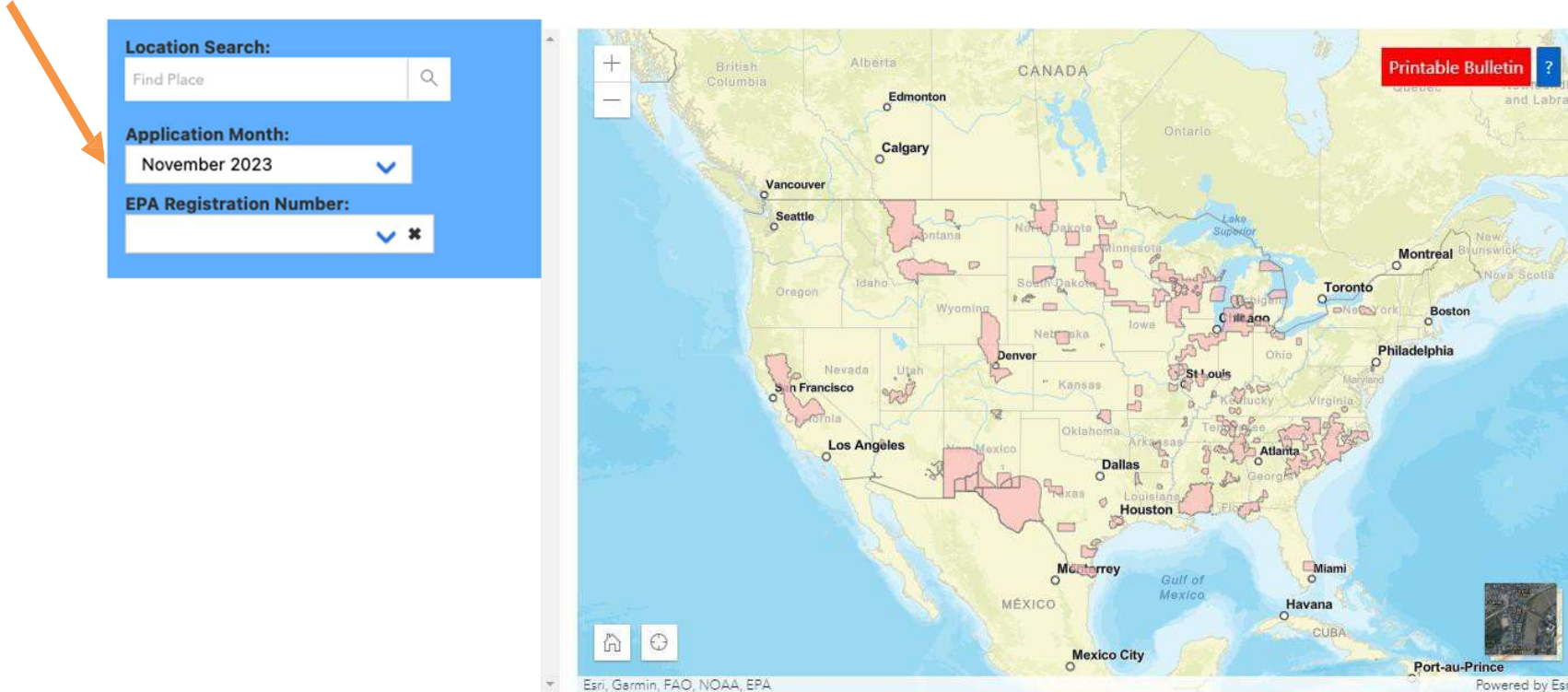
B. Manually zoom to a location by dragging the map to your location and using the “+” and “-” buttons in the upper left-hand corner to zoom in and out.

C. Use the lower left hand “Find my location” button if you are within the pesticide application area and your device’s privacy settings allow your location to be broadcasted.



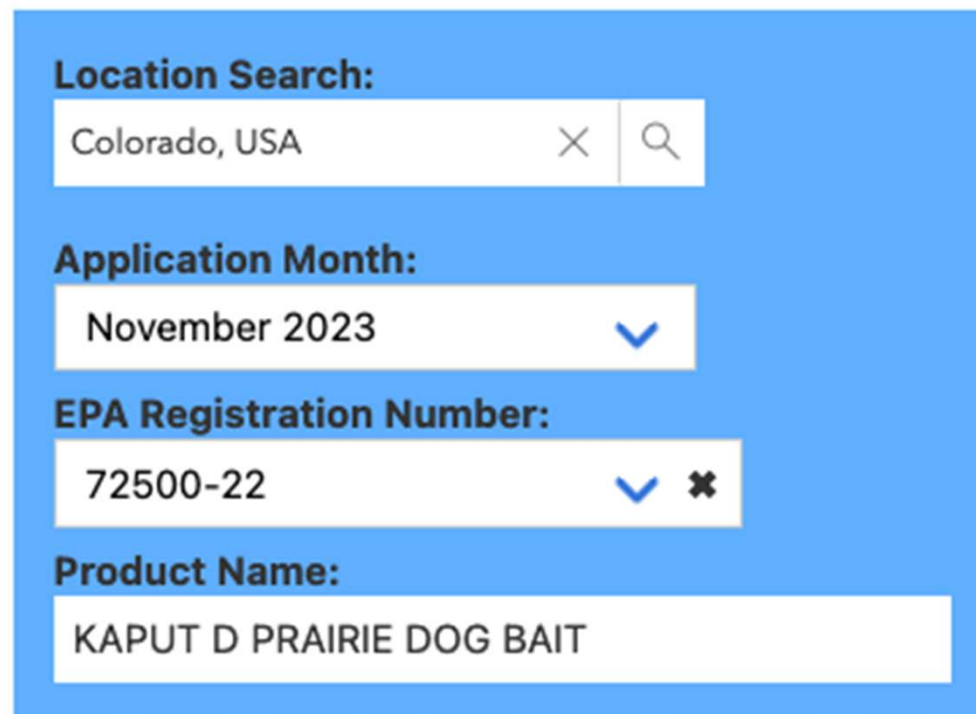
3. Selecting the application month (Step 2 on *Instructions Tab*)

After zooming to your intended application area, you must select the month when you intend to make your pesticide application. Bulletins are available for the current month (default option) as well as the next six months. Select a month from the second box in the blue search window left of the map. The “Application Month” box is located below the “Location Search” box. An application month of February 2022 is used in the featured example.



4. Selecting the EPA Registration Number (Step 3 on *Instructions Tab*)

EPA registration number searches: See next page for instructions about how to locate the EPA registration number on a pesticide label. A search box for entering the EPA registration number is located below the “ApplicationMonth” box. After typing the EPA registration number, only the PULAs for that specific pesticide will appear on the map, and the product name(s) will appear in a box directly beneath the EPA registration number search box. It is not possible to search solely using the product name(s); the EPA registration number MUST be typed first to ensure the correct product is searched. The purpose of the product name(s) box is for a user to verify that the search using the EPA registration number was executed properly. If this does not appear, then the search was not successful.



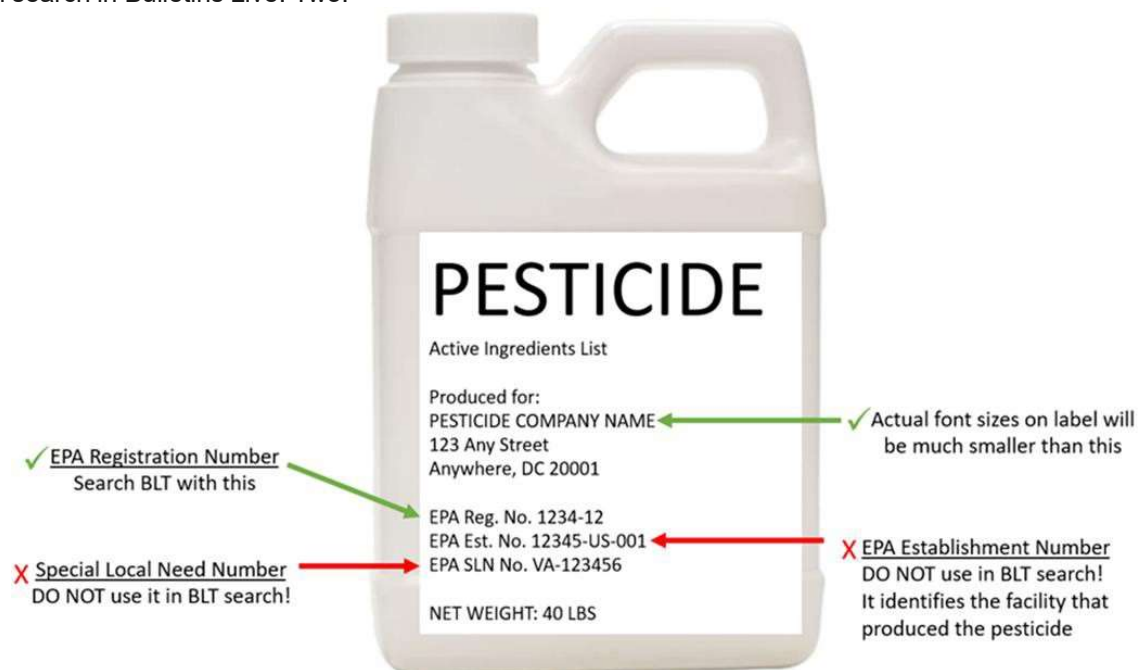
The screenshot shows a search interface with four main sections, each with a white input field on a blue background:

- Location Search:** The input field contains "Colorado, USA" and has a search icon on the right.
- Application Month:** The input field is a dropdown menu showing "November 2023" with a downward arrow.
- EPA Registration Number:** The input field contains "72500-22" and has a dropdown arrow and a clear icon (an 'x') on the right.
- Product Name:** The input field contains "KAPUT D PRAIRIE DOG BAIT".

4. Selecting the EPA Registration Number (Step 3 on *InstructionsTab*)

Locating the EPA registration number on a product label:

- Look for “EPA Reg. No.” followed by two or three sets of numbers.
- If your product's registration number has **two** parts (ex. 1234-12), it has a **primary registration number**. This is the number that should be entered into the product search in BLT.
- If your product's registration number has **three** parts (ex. 1234-12-123), you have a **supplemental distributor product**. These products have the same chemical composition and efficacy as primary products, but often have different brand or product names. Enter the **first two parts** of this registration number (ex. **1234-12-123**) into the EPA registration search in Bulletins Live! Two.



5. Selecting a PULA (Step 4 on Instructions Tab)

If a PULA occurs within your intended pesticide application area:

If a PULA occurs within your intended pesticide application area, select the PULA by clicking on it. This will outline the selected PULA in yellow and activate the “**Limitations for Selected Area**” results window.

Clicking on the blue button at the bottom of the results window that says “Full Details” will display a product summary table of codes, active ingredients, uses, methods, forms, and limitations for the selected PULA.

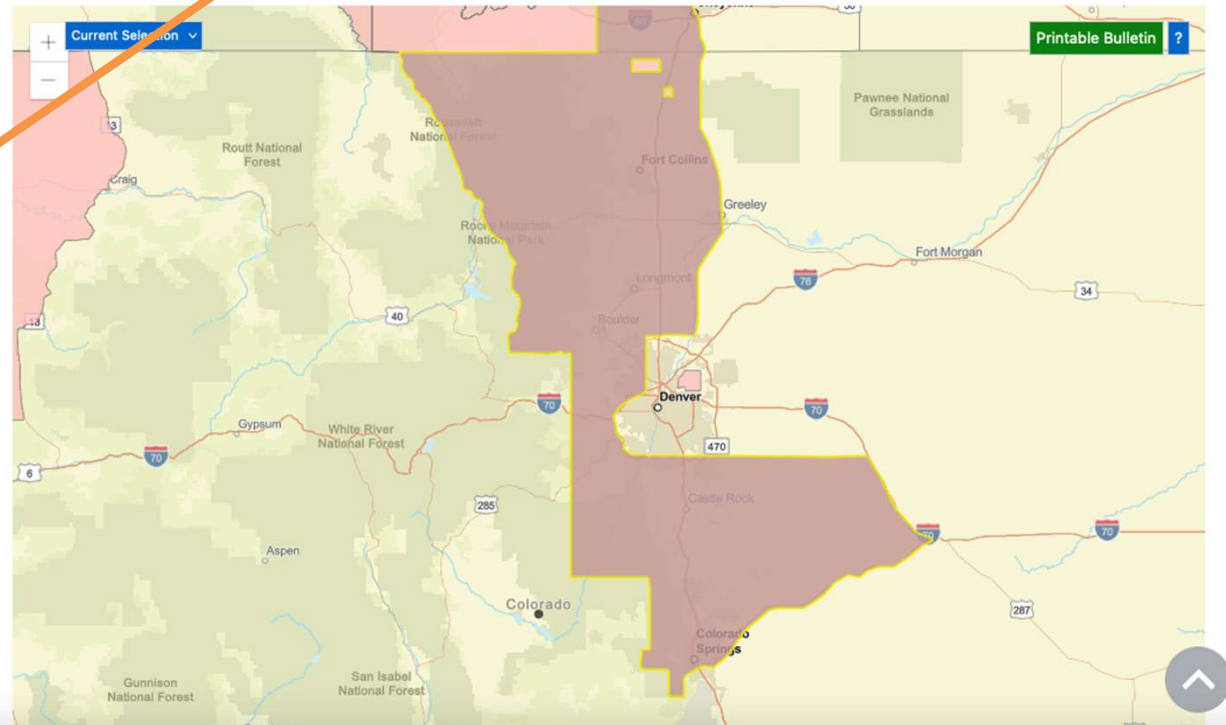
Limitations for Selected Area

Pula ID: 30
Event Name: Kaput
Application Month: November 2023

Product	Count
KAPUT-D PRAIRIE DOG BAIT (72500-22)	1

[Full Details](#)

[Clear Selected](#) [Zoom To Selected](#)



6. Printing a Bulletin (Step 5 on *Instructions Tab*)

Print or save a pdf version of the Bulletin for your records, even if no PULAs appear in your intended pesticide application area.

If you see no PULA(s) in your intended application area after entering the location and EPA Reg. No., click on the map's green "Printable Bulletin" button. This creates a pdf that declares no limitations are present.

To print or save a PDF version of the bulletin when there is a PULA present, click the green "Printable Bulletin" button below the product summary table. The button can also be selected in the map when the table is not displayed.

The screenshot displays the 'Limitations for Selected Area' interface. On the left, a sidebar shows event details: Pula ID: 30, Event Name: Kaput, Application Month: November 2023. Below this is a table with one row: Product: KAPUT-D PRAIRIE DOG BAIT (72500-22), Count: 1. A 'Full Details' button is below the table. At the bottom of the sidebar are 'Clear Selected' and 'Zoom To' buttons. The main area features a map with a red selection box. A white modal window titled 'Limitations for Selected Area' is open, showing the same event details and a 'Filter Selections' section. Below the filter section is a table with the following data:

Code	Product	AI	Use	Method	Form	Limitation
K3	KAPUT-D PRAIRIE DOG BAIT (72500-22)	Diphacinone	Black-tailed Prairie Dog	Bait (loose)	Bait	Kaput-D Prairie Dog Bait and Kaput COMBO Prairie Dog Bait use is limited to the period November 1 through March 15.

Below the table is a green 'Printable Bulletin' button. An orange arrow points from this button to a similar button on the map in the background.

7. Understanding the components of the PDF Bulletin

[If a PULA occurs within your intended pesticide application area:](#)

The month for which the Bulletin is valid is located at the top of the page. Note: Bulletins are valid for the current month (default option) as well as the next six months.

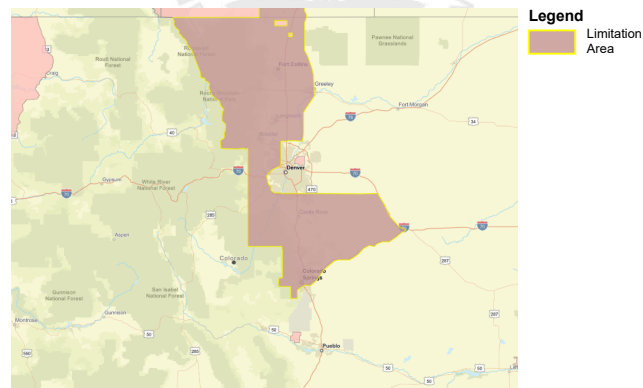
If you intend to apply a pesticide within the PULA, outlined in yellow, follow the steps found in the Bulletin and the limitations in the [Pesticide Use Limitation Summary Table](#) and the [Codes and Limitations Table](#)

Endangered Species Protection Bulletin



Application Month: November 2023
Product: KAPUT D PRAIRIE DOG BAIT (72500-22)

- 1 Areas where pesticide use must be limited are identified on the map. A legend is located beside the map to help pinpoint these locations.



- 2 Look below at the Pesticide Use Limitation Summary Table. This table lists the user selected Active Ingredient(s) (ALs) or Product(s) with pesticide use limitations on the printed map. Locate the Active Ingredient (AI) or Product you intend to apply in this table and identify the code in the last column. This code indicates the specific limitation associated with that AI or Product. A limitation description for each code can be found below in the Codes and Limitations Table. If multiple Pesticide Use Limitation Areas (PULAs) are visible on the map, these tables provide information for the highlighted PULA.
If you are applying a pesticide that contains more than one Active Ingredient, or multiple Products, then multiple codes may apply. Follow the limitations for all codes when using this pesticide.

This document contains legal requirements for the use of certain pesticides. Do not modify any text, graphics or coloration or otherwise alter this document. ESPP Contact: ESPP@epa.gov Phone: 1-844-447-3813

7. Understanding the components of the PDF Bulletin

The [Pesticide Use Limitation Summary Table](#) identifies the Code(s) associated with the highlighted PULA. It also provides the:

Product and AI: These columns include the name of the active ingredient(s) and/or product(s) with pesticide use limitations.

-When using the default search settings, both the active ingredient(s) and product name(s) will be visible in the [Pesticide Use Limitation Summary Table](#), as seen in the example above.

Endangered Species Protection Bulletin						
Pesticide Use Limitation Summary Table						
Product	AI	Use	Method	Form	Code	
KAPUT-D PRAIRIE DOG BAIT (72500-22)	Diphacinone	Black-tailed Prairie Dog	Bait (loose)	Bait	K3	

Codes and Limitations Table	
Code	Limitation
K3	Kaput-D Prairie Dog Bait and Kaput COMBO Prairie Dog Bait use is limited to the period November 1 through March 15.

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7. Understanding the components of the PDF Bulletin

The [Pesticide Use Limitation Summary Table](#) identifies the Code(s) associated with the highlighted PULA. It also provides the:

Use: This column specifies the labeled use pattern or use(s) to which the limitation applies. The use may be specific (e.g., 'cranberries') or general, if referring to all use patterns registered for a particular product (e.g., 'Any Use').

Method: This column specifies the application method (e.g., aerial spray, ground spray, seed treatment, bait, broadcast, etc.) associated with the limitation.

Form: This column specifies the chemical formulation (e.g., bait, dust, ear tag, liquid, granular, etc.) associated with the limitation.

Code: This column specifies the code associated with the limitation. This code can be used to identify the active ingredient(s) and/or product(s) associated with limitation in the Pesticide Use and Limitation Summary Table.

Limitation: This column matches the code with a full description of the pesticide use limitation.

When applying a pesticide product with multiple active ingredients, follow all of the codes and corresponding limitations.


Endangered Species Protection Bulletin

Pesticide Use Limitation Summary Table

Product	AI	Use	Method	Form	Code
KAPUT-D PRAIRIE DOG BAIT (72500-22)	Diphacinone	Black-tailed Prairie Dog	Bait (loose)	Bait	K3

Codes and Limitations Table

Code	Limitation
K3	Kaput-D Prairie Dog Bait and Kaput COMBO Prairie Dog Bait use is limited to the period November 1 through March 15.



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Endangered Species Protection Bulletin



Application Month: March 2023
Product: INTREPID 80WSP AGRICULTURAL INSECTICIDE (62719-438)

- 1 Areas where pesticide use must be limited are identified on the map. A legend is located beside the map to help pinpoint these locations.



- 2 Look below at the Pesticide Use Limitation Summary Table. This table lists the user selected Active Ingredient(s) (ALs) or Product(s) with pesticide use limitations on the printed map. Locate the Active Ingredient (AI) or Product you intend to apply in this table and identify the code in the last column. This code indicates the specific limitation associated with that AI or Product. A limitation description for each code can be found below in the Codes and Limitations Table. If multiple Pesticide Use Limitation Areas (PULAs) are visible on the map, these tables provide information for the highlighted PULA.
- If you are applying a pesticide that contains more than one Active Ingredient, or multiple Products, then multiple codes may apply. Follow the limitations for all codes when using this pesticide.

This document contains legal requirements for the use of certain pesticides. Do not modify any text, graphics or coloration or otherwise alter this document. ESPP Contact: ESPP@epa.gov Phone: 1-844-447-3813

Endangered Species Protection Bulletin

Pesticide Use Limitation Summary Table

Product	AI	Use	Method	Form	Code
INTREPID 80WSP AGRICULTURAL INSECTICIDE (62719-438)	Methoxyfenozide	Cranberries	Aerial spray	Any form	1a
INTREPID 80WSP AGRICULTURAL INSECTICIDE (62719-438)	Methoxyfenozide	Cranberries	Ground spray	Any form	1a
INTREPID 80WSP AGRICULTURAL INSECTICIDE (62719-438)	Methoxyfenozide	All Other Uses	Aerial spray	Any form	1
INTREPID 80WSP AGRICULTURAL INSECTICIDE (62719-438)	Methoxyfenozide	All Other Uses	Ground spray	Any form	1

Codes and Limitations Table

Code	Limitation
1	Do not apply this product in the specified areas.

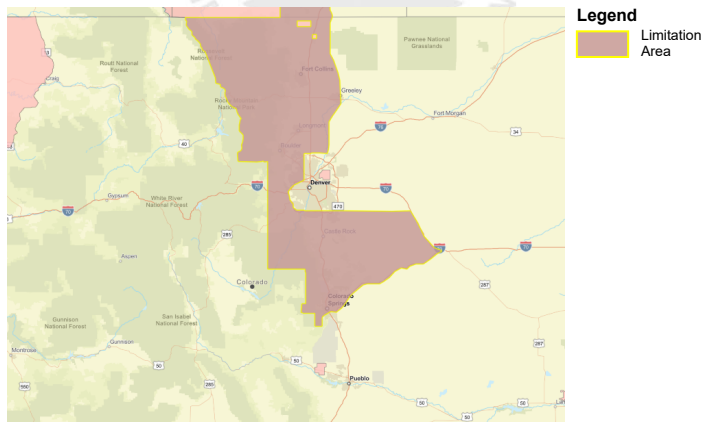
This document contains legal requirements for the use of certain pesticides. Do not modify any text, graphics or coloration or otherwise alter this document. ESPP Contact: ESPP@epa.gov Phone: 1-844-447-3813

Endangered Species Protection Bulletin



Application Month: November 2023
Product: KAPUT D PRAIRIE DOG BAIT (72500-22)

- 1 Areas where pesticide use must be limited are identified on the map. A legend is located beside the map to help pinpoint these locations.



- 2 Look below at the Pesticide Use Limitation Summary Table. This table lists the user selected Active Ingredient(s) (AIs) or Product(s) with pesticide use limitations on the printed map. Locate the Active Ingredient (AI) or Product you intend to apply in this table and identify the code in the last column. This code indicates the specific limitation associated with that AI or Product. A limitation description for each code can be found below in the Codes and Limitations Table. If multiple Pesticide Use Limitation Areas (PULAs) are visible on the map, these tables provide information for the highlighted PULA.

If you are applying a pesticide that contains more than one Active Ingredient, or multiple Products, then multiple codes may apply. Follow the limitations for all codes when using this pesticide.

This document contains legal requirements for the use of certain pesticides.
 Do not modify any text, graphics or coloration or otherwise alter this document.
 ESPP Contact: ESPP@epa.gov Phone: 1-844-447-3813

Endangered Species Protection Bulletin

Pesticide Use Limitation Summary Table

Product	AI	Use	Method	Form	Code
KAPUT-D PRAIRIE DOG BAIT (72500-22)	Diphacinone	Black-tailed Prairie Dog	Bait (loose)	Bait	K3

Codes and Limitations Table

Code	Limitation
K3	Kaput-D Prairie Dog Bait and Kaput COMBO Prairie Dog Bait use is limited to the period November 1 through March 15.

This document contains legal requirements for the use of certain pesticides.
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Not all pesticides that reference BLT on the label will have geographically specific ESA mitigation

- The pdf will show a blank map
- The text will read, “Currently, no pesticide use limitations exist within the printed map view for the month/year and product you selected, beyond the instructions specified on the pesticide label.”
- Absence of a bulletin one season does not indicate absence of a bulletin the following season
- Applicators must check the system within 6 months of planned application

Endangered Species Protection Bulletin



February 2024
Application Month: AATREX 4L HERBICIDE (100-497) ; "AATREX 4LC"; "AATREX 4LC (FOR COMMERCIAL APPLICATIONS ONLY)"; "ATRAZINE 4L HERBICIDE"
Product:

- 1 Areas where pesticide use must be limited are identified on the map. A legend is located beside the map to help pinpoint these locations.



Currently, no pesticide use limitations exist within the printed map view for the month/year and product you selected, beyond the instructions specified on the pesticide label.

Follow the use instructions on your label.

Ensure that your pesticide application area is within the printed map view. If it is not, follow the directions on the Instructions Tab to ensure that your pesticide application area is captured within the printed map view.

Please check back if you plan to apply your pesticide in an area outside the map view or in a month and year other than the one for which this Bulletin is valid.

This document contains legal requirements for the use of certain pesticides.
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What pesticides uses are significant for your crops?



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FIFRA Interim Ecological Mitigation

- Under FIFRA, EPA is placing greater emphasis on addressing ecological risks while considering benefits and impacts of mitigation
 - Reduce risks to all nontarget species identified in a FIFRA risk assessment
 - Reduce exposure to listed species



FIFRA Interim Ecological Mitigation

- EPA has developed a menu of FIFRA Interim Ecological Mitigation measures
 - Focuses on agricultural crops uses of conventional and biological pesticides
 - Proposing in registration review, to be adapted to new use registrations
 - To be adjusted to account for varying risks and benefits of the pesticide
 - Proposed for inclusion on product labels (not Bulletins)
- FIFRA Interim Ecological Mitigation measures do not include
 - Pesticide-specific measures (e.g., application rate reductions)
 - Listed species-specific mitigation measures being developed for ESA Pilots
 - Mitigation measures being developed for listed species under Additional ESA Strategies

FIFRA Interim Ecological Mitigation

- To reduce off-field ecological risks from surface water runoff or soil erosion :
 - Surface water protection statements users would follow when precipitation occurs or (for runoff) is forecasted
 - Pick list of conservation buffers and other conservation measures (to be adjusted based on risks and benefits)
 - Vegetative filter strip (minimum width 30 ft for surface water runoff, 20 ft for soil erosion)
 - Field border
 - Field terracing/ contour buffer strips
 - Contour farming
 - Cover cropping
 - No/reduce tillage
 - Grassed waterways
 - Riparian buffer zone/ riparian herbaceous zone
 - Vegetative/grassed ditch banks
 - Runoff retention pond/ water and sediment control basin/ sediment catchment basin/ constructed wetland
 - Strip cropping
 - Vegetative barriers
 - Mulching with natural materials
 - Alley cropping



A small white aircraft is flying over a green field, spraying a fine mist. The background consists of a dense forest of trees. The image is partially obscured by a white, torn-paper-like border on the right side.

FIFRA Interim Ecological Mitigation

- To reduce off-field ecological risks from **spray drift** :
 - Droplet size, windspeed, and release height limits
 - Spray drift buffers from aquatic habitats
 - For example, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds
 - Spray drift buffers from conservation areas
 - For example, public lands and parks, Wilderness Areas, National Wildlife Refuges, reserves, and conservation easements

FIFRA Interim Ecological Mitigation

- Other Proposed Label Language
 - Bulletins Live! Two (BLT) system web link
 - Advisory language for insect pollinators
 - Pollinator Hazard Statement
 - Best Management Practices for Pollinator Protection
 - Incident reporting language
 - Treated seed language
 - Labeling for Products with Seed Treatment Uses
 - Instructions for Seed Bag Tags



Additional BLT Resources

- Written Tutorial

- Read the tutorial Bulletins Live! Two: <https://www.epa.gov/endangered-species/bulletins-live-two-bl-tutorial>

- Quick Start Guide

- <https://www.epa.gov/endangered-species/endangered-species-protection-bulletins#quick>

- Learn how to locate the EPA registration number to search for a product in Bulletins Live! Two

- <https://www.epa.gov/endangered-species/endangered-species-protection-bulletins#how-to>



Questions?

Respiratory Protection



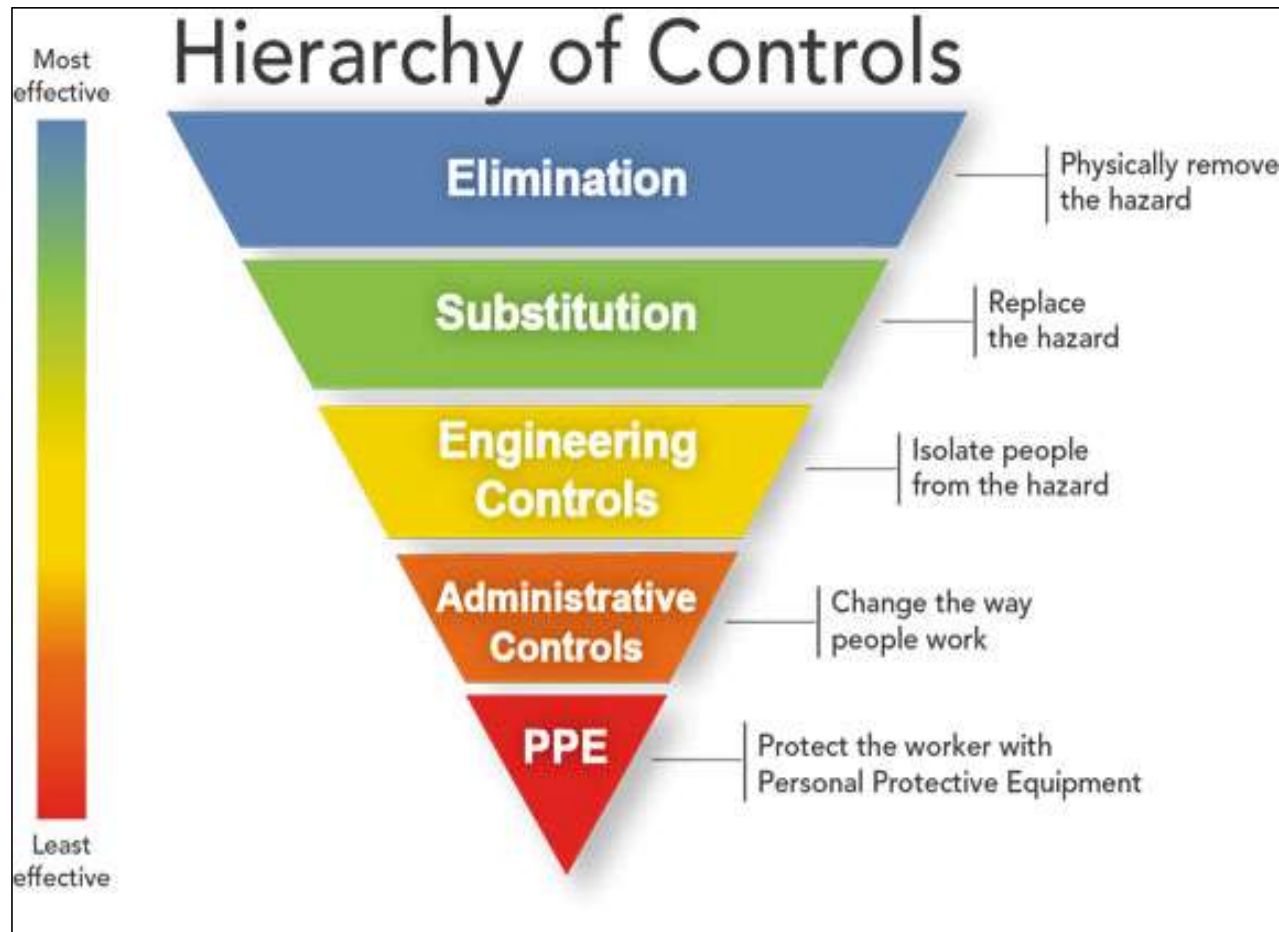
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Overview

- What is a respirator
- When to wear a respirator
- Respirator requirements
- How to choose a respirator
- When to dispose of filters and cartridges



- *Prevention through design* strategy
- Controlling exposures to occupational hazards is the fundamental method of protecting workers



Pesticide Exposure



55% of handler illnesses involved eye injury

28% of handler illnesses involved skin injury

32% of all handler pesticide illnesses were due to failure to wear PPE!



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Pesticide Exposure

- There are **four** routes of exposure
- How do we protect ourselves from pesticide exposure?



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Personal Protective Equipment (PPE)



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Which of these is a respirator?



YES!



YES!



YES!



YES!

This is a respirator!



- **NIOSH** → certifying agency
- **N, R, P** → resistance to oil degradation
- **95, 99, 100** → filter efficiency

Types of Respirators

Two types of respirators



Respirators
used in
restricted
area



Classes of Respirators Found on Pesticide Labels

NIOSH Class	Respirator Description
Air-purifying Respirators	
TC-21C	Powered air-purifying respirator (PAPR) with particulate filter (HE)
TC-14G	Gas mask with or without particulate filter (N, R, or P) Tight-fitting PAPR with gas canister with or without particulate filter (HE)
TC-23C	Air-purifying respirator with chemical cartridges PAPR with chemical cartridges PAPR with combination chemical cartridge and particulate filter (HE)
TC-84A	Filtering facepiece respirator (N, R, or P) Air-purifying respirator with particulate filter (N, R, or P) Air-purifying respirator with combination chemical cartridge and particulate filter (N, R, or P)
Air-Supplying Respirators	
TC-13F	Self-contained breathing apparatus Supplied-air respirator with a self-contained escape bottle
TC 19C	Supplied-air respirator

NIOSH Designations



TC – 21C: Powered particulate respirators (PAPR with HE filters)



TC – 23C: Chemical cartridge respirators (including PAPR)



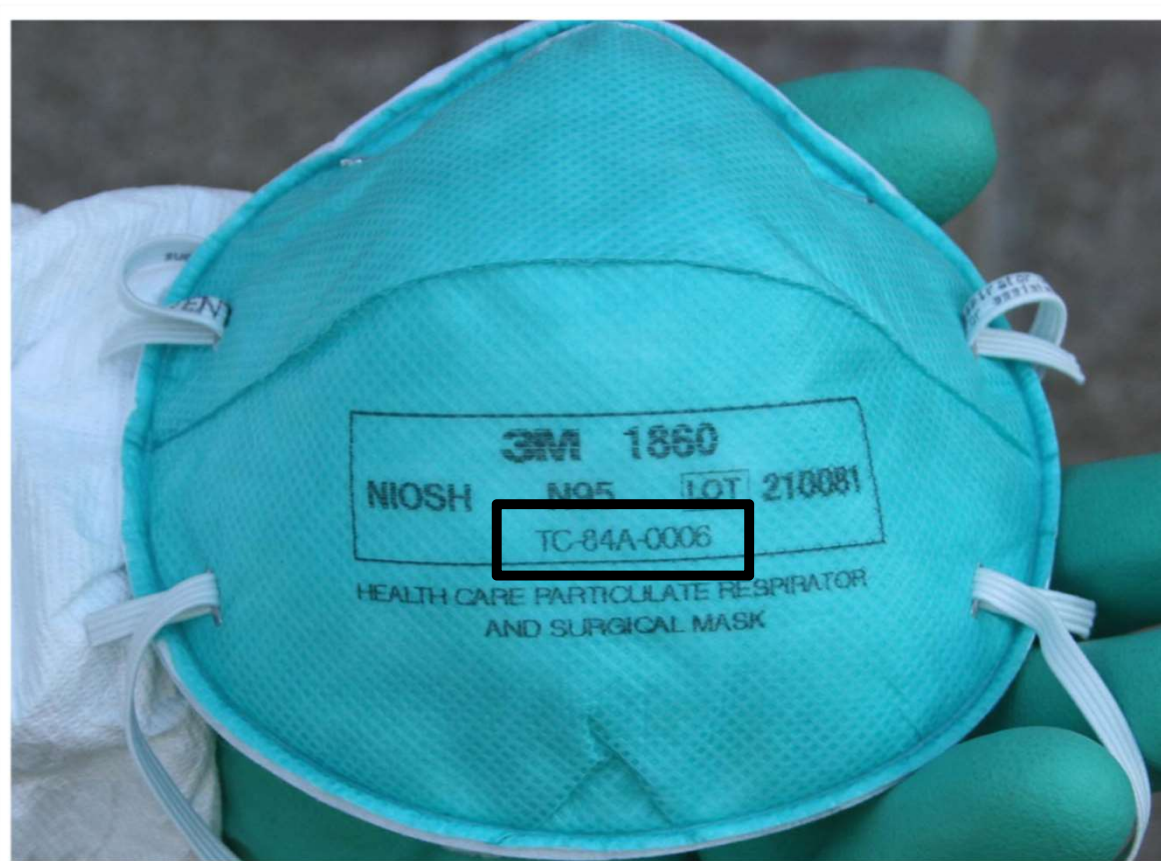
TC – 84A: Non-powered particulate respirators, or chemical cartridge respirators with a particulate filter

Filtering Facepiece/Particulate Respirator

- Simplest type of air-purifying respirator
- Listed on pesticide labels as TC-84A



National Institute for Occupational Safety and Health (NIOSH)



Cartridge Respirators

- Air-purifying
- Remove low levels of vapors, dusts, mists
- Listed as TC-23C or TC-84A
- Cartridges are color coded
- Particulate filter classification
 - N = not oil resistant
 - R = oil resistant
 - P= oil proof



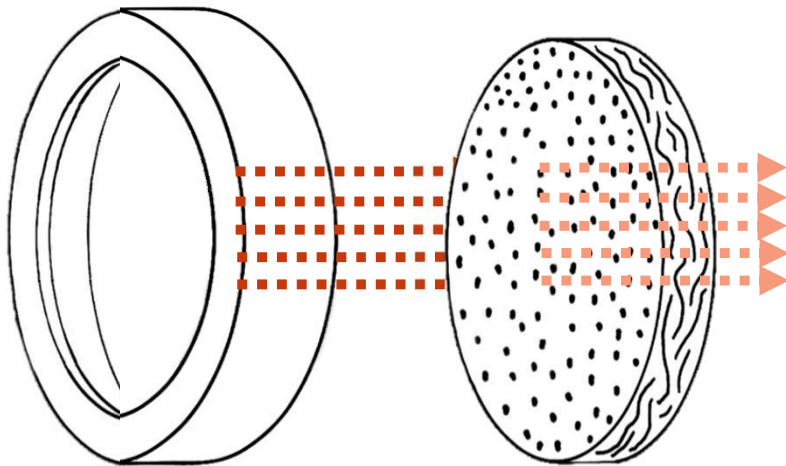
Half-face and full-face respirators



Cartridge Respirators

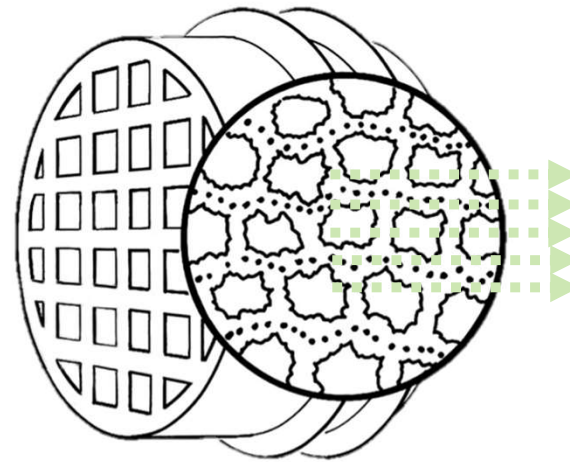
Particulate prefilter:

- Traps airborne particles

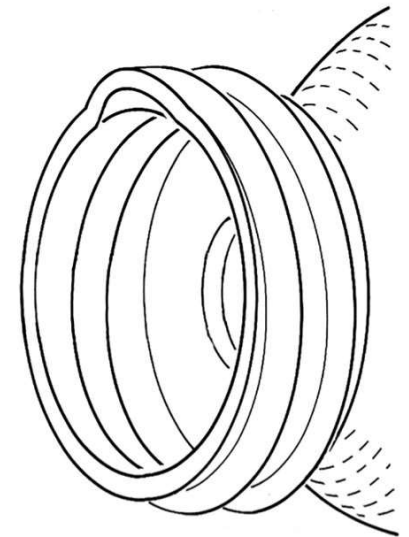


Chemical cartridge:

- Absorbs gasses



Facepiece



Cartridge Chemical Code: Gas/Vapor

Color	Offers protection against:
Pink	Dust, welding fumes
Yellow	Acid gases (chlorine and other disinfectants)
Green	Ammonia (anhydrous, livestock confinement)
Black	Organic Vapors (pesticides; not fumigants unless specified on label)

Cartridge Color Code

Black= Organic Vapors



Cartridge Color Code

Particulate Filter Cartridge (HEPA) – **Magenta** (also called P100)



Respirator Cartridge Filter Replacement

For particulate filter:

- When breathing resistance becomes excessive
- When the filter element has physical damage or tears
- According to manufacturer's recommendations or the pesticide label, whichever is more frequent
- At the end of eight hours of use.


For gas/vapor canisters or cartridges:

- At the first indication of odor, taste, or irritation
- When breathing resistance becomes excessive
- According to manufacturer's recommendations or the pesticide label, whichever is more frequent
- At the end of eight hours of cumulative use

When to wear a respirator?

- When required by label

All other mixers, loaders, applicators and handlers must wear: Long-sleeved shirt and long pants, shoes plus socks, chemical-resistant gloves and a chemical-resistant apron when mixing, loading or cleaning up spills or equipment. In addition, mixers and loaders supporting aerial or chemigation applications must wear a NIOSH approved dust/mist filtering respirator with a NIOSH approved particulate respirator with any N, R or P filter, NIOSH approval number prefix TC-84A; or a NIOSH approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C.



Carbaryl 4L

Insecticide

Intended For Agricultural or Commercial Use.

ACTIVE INGREDIENT:	
Carbaryl	42.6%
OTHER INGREDIENTS:	57.4%
TOTAL:	100.0%

This product contains 4 pounds of Carbaryl per gallon.

KEEP OUT OF REACH OF CHILDREN

CAUTION

See **FIRST AID** Below

SHAKE WELL BEFORE USING

[OPTIONAL: RECIRCULATE CONTENTS BEFORE USE]

ATTENTION: This product contains a chemical known to the State of California to cause cancer and reproductive harm in laboratory animals.

EPA Reg. No. 19713-49	Net Content:
EPA Est. No. 19713-GA-2	2.5 Gals. (9.46 L)

FIRST AID	
<p>IF SWALLOWED:</p> <ul style="list-style-type: none"> • Immediately call a poison control center or doctor 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 or convulsing person. <p>IF ON SKIN OR CLOTHING:</p> <ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice. <p>IF INHALED:</p> <ul style="list-style-type: none"> • 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. <p>IF IN EYES:</p> <ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 to 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. <p>Have the product container or label with you when calling poison control center or doctor, or going for treatment. You may also call CHEMTREC at 800-424-9300 for medical emergency.</p> <p>Note to Physician: Carbaryl is an N-methyl carbamate that inhibits cholinesterase. Drugs like 2-PAM (pyridine-2-aldoxime methiodide) are NOT recommended.</p>	<p>PRECAUTIONARY STATEMENTS</p> <p>Hazards to Humans and Domestic Animals</p> <p>CAUTION: Harmful if swallowed, absorbed through skin, or inhaled. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing. OVEREXPOSURE MAY CAUSE: Salivation, watery eyes, pinpoint eye pupils, blurred vision, muscle tremors, difficult breathing, excessive sweating, abdominal cramps, nausea, vomiting, diarrhea, weakness or headache.</p> <p>IN SEVERE CASES, CONVULSIONS, UNCONSCIOUSNESS AND RESPIRATORY FAILURE MAY OCCUR. SIGNS AND SYMPTOMS MAY OCCUR RAPIDLY FOLLOWING OVEREXPOSURE TO THIS PRODUCT.</p> <p style="text-align: right;"><i>(Continued)</i></p>

PRECAUTIONARY STATEMENTS (Cont.)

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are made of any waterproof material.

Handlers applying with open cab airlast equipment at application rates equal to or greater than 5 quarts of this product (5 lbs. a.l.) must wear: Coveralls over long-sleeved shirt and long pants, chemical-resistant gloves made of barrier laminate, butyl rubber ≥ 14 mils, nitrile rubber ≥ 14 mils, neoprene rubber ≥ 14 mils, natural rubber ≥ 14 mils, polyethylene, polyvinyl chloride ≥ 14 mils or viton ≥ 14 mils, chemical-resistant footwear plus socks, chemical-resistant headgear and a NIOSH approved particulate respirator with any N, R or P filter, NIOSH approval number prefix TC-84A or a NIOSH approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C.

All other mixers, loaders, applicators and handlers must wear: Long-sleeved shirt and long pants, shoes plus socks, chemical-resistant gloves and a chemical-resistant apron when mixing, loading or cleaning up spills or equipment. In addition, mixers and loaders supporting aerial or chemigation applications must wear a NIOSH approved dust/mist filtering respirator with a NIOSH approved particulate respirator with any N, R or P filter, NIOSH approval number prefix TC-84A; or a NIOSH approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C.

See "ENGINEERING CONTROLS" for additional requirements and exceptions. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

ENGINEERING CONTROLS

Pilots must use an enclosed cockpit in a manner that is consistent with the WPS for Agricultural Pesticides [40 CFR 170.240(d)(6)]. Applicators using airlast equipment for application to Citrus in California and for wide area mosquito adulticide applications must use an enclosed cab that meets the definition in the WPS for Agricultural Pesticides [40 CFR 170.240(t)(5)] for dermal protection. In addition, such applicators must:

- wear long-sleeved shirt, long pants, shoes and socks;
- either wear a NIOSH approved particulate respirator with any N, R or P filter, NIOSH approval number prefix TC-84A; or a NIOSH approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C or use an enclosed cab that is declared in writing by the manufacturer or by a government agency to provide at least as much respiratory protection as this type of respirator;
- be provided, have immediately available for use, and wear in an emergency when they must exit the cab in the treated area coveralls, chemical-resistant gloves, chemical-resistant footwear and chemical-resistant headgear (if overhead exposure) plus – if not already using one – the respirator specified above;

(Continued)

Manufactured By:
Drexel Chemical Company
P.O. Box 13327, Memphis, TN 38113-0327

SINCE 1972

The DREXEL logo is a registered trademark of Drexel Chemical Company.

49CSP-0417*
CARBARYL 4L Page 1 of 14

Respirator Requirements

- Medical Evaluation before a fit test
 - Employer is responsible for covering this cost
- Fit Test for tight fitting respirators
 - Complete annually OR
 - Physical changes
- Respirator specific training

Respirators

If you change respirators...

- Repeat your medical evaluation
- Repeat your fit test
- Receive additional training that corresponds to your new respirator

....BEFORE you wear the new respirator



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Respirators and Facial Hair

Which of these individuals is most likely to get a proper seal with a tight-fitting respirator?



A



B



C

Respirators and Facial Hair

Which of these individuals is most likely to get a proper seal with a tight-fitting respirator?



NO



NO



YES

Powered Air-Purifying Respirators

- Force filtered air through a hose
- Good for long application jobs or for people attached to the facial hair



Gramoxone[®] SL 2.0



dust/mist NIOSH-
approved
respirator with
any N, R, P, or HE
filter

KEEP OUT OF REACH
OF CHILDREN.



DANGER / POISON
PELIGRO / VENENO

Active Ingredient:
Paraquat dichloride (1,1'-dimethyl-4,4'-
bipyridinium dichloride) 30.1%
Other Ingredients: 69.9%
Total: 100.0%
Gramoxone SL 2.0 contains 2.0 pounds paraquat
cation per gallon as 2.762 pounds salt per gallon.
Gramoxone SL 2.0 contains alerting agent (odor),
emetic, and dye.

CHATEAU®

HERBICIDE SW



**filtering facepiece
respirator (N95,
R95 or P95)**

Active Ingredient	By Wt
Flumioxazin*	51%
Other Ingredients	49%
Total	100%

* 2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-4,5,6,7-tetrahydro-1H-isoindole-1,3(2H)-dione

Chateau® Herbicide SW is a water dispersible granule containing 51% active ingredient.

METAM KLR™ 54%

SOIL FUMIGANT SOLUTION FOR SPECIFIC CROPS AS LISTED IN THIS LABEL:



Use, Protection
Users must wear

organic vapor
(Type N, R, P,
number prefix

in this product
for more than 6000
service life, at the

Full face piece air-purifying respirator with an organic vapor cartridge (OV) and a particulate pre-filter (N, R, P or HE)

ACTIVE INGREDIENT:		
Potassium methyldithiocarbamate*	_____	54.0%
OTHER INGREDIENTS:	_____	46.0%
TOTAL:	_____	100.0%

*Contains 5.8 lbs. Potassium methyldithiocarbamate per gallon

RESTRICTED USE PESTICIDE

Because of the high acute toxicity of triphenyltin hydroxide, its potential for affecting fetal development, and due to its carcinogenicity, this product may be applied only by certified applicators or persons directly under their supervision.

Agri Tin[®]

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER / PELIGRO

Fatal if inhaled. Corrosive, causes irreversible eye damage and skin burns. May be fatal if swallowed or absorbed through the skin. Do not get in eyes, or on skin or on clothing. Do not breathe dust, vapor or spray mist. Remove contaminated clothing and wash clothing before reuse. The United States Environmental Protection Agency has determined that triphenyltin hydroxide, the active ingredient of this product, affects fetal development in laboratory animals. Exposure to this product during pregnancy should be avoided.

PERSONAL PROTECTIVE EQUIPMENT

Some materials that are chemical-resistant to this product are butyl rubber, nitrile rubber, or neoprene rubber. If you want more options, follow the instructions for Category A on an EPA chemical-resistance category selection chart.

Handlers exposed to the concentrate or diluted product must wear:

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant footwear plus socks,
- Chemical-resistant gloves, such as butyl rubber, nitrile rubber, or neoprene rubber,
- Protective eyewear,
- Chemical-resistant apron for mixing and loading or equipment maintenance,
- ~~Chemical-resistant headgear for overhead exposure,~~
- Dust/mist filtering respirator (MSHA/NIOSH approval TC-21C), or a NIOSH approved respirator with any N, R, P or HE filter.

Handlers, mixers, loaders, applicators and flaggers using engineering controls must wear:

- Long-sleeved shirt and long pants,
- Shoes plus socks,
- Chemical-resistant apron,
- Chemical-resistant gloves made of any waterproof material, such as butyl rubber, nitrile rubber, or neoprene rubber, during mixing and loading.

Dust/mist
filtering
respirator
(MSHA/NIOSH
approval...)

Take Home Messages

- Read the label
- Dust/mist masks are respirators
- Before you wear a respirator you must complete:
 - Medical evaluation
 - Fit test
 - Respirator specific training



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Pesticide Spills and Emergency Response



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Overview:

- How to prevent pesticide spills
- Proper spill cleanup procedure
- First aid and emergency procedures



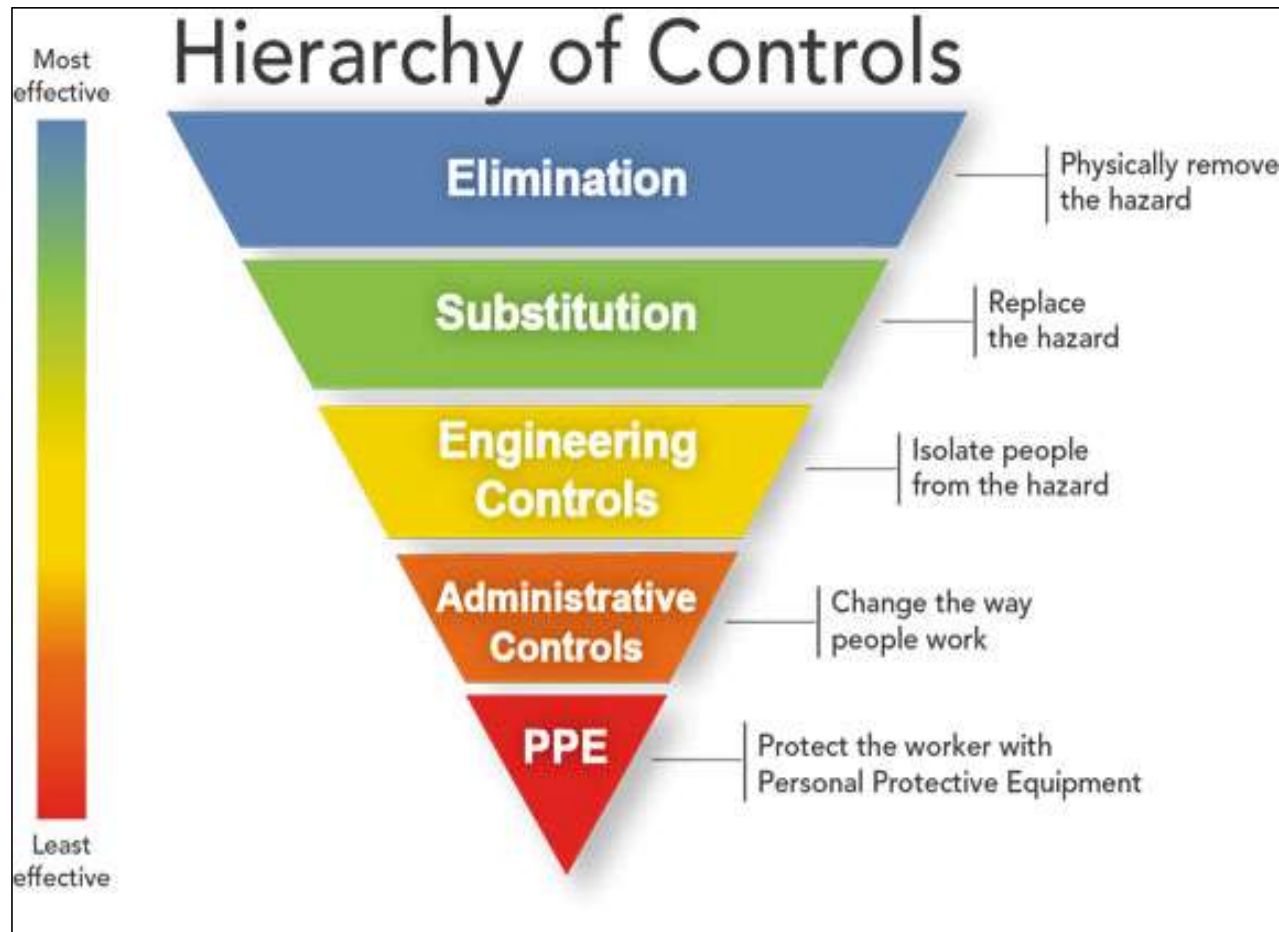
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Preventing Pesticide Spills



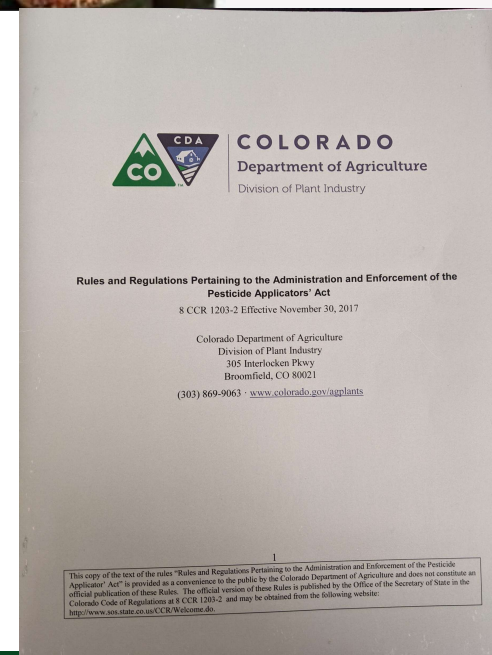


- *Prevention through design strategy*
- Controlling exposures to occupational hazards is the fundamental method of protecting workers



Preventing Pesticide Spills

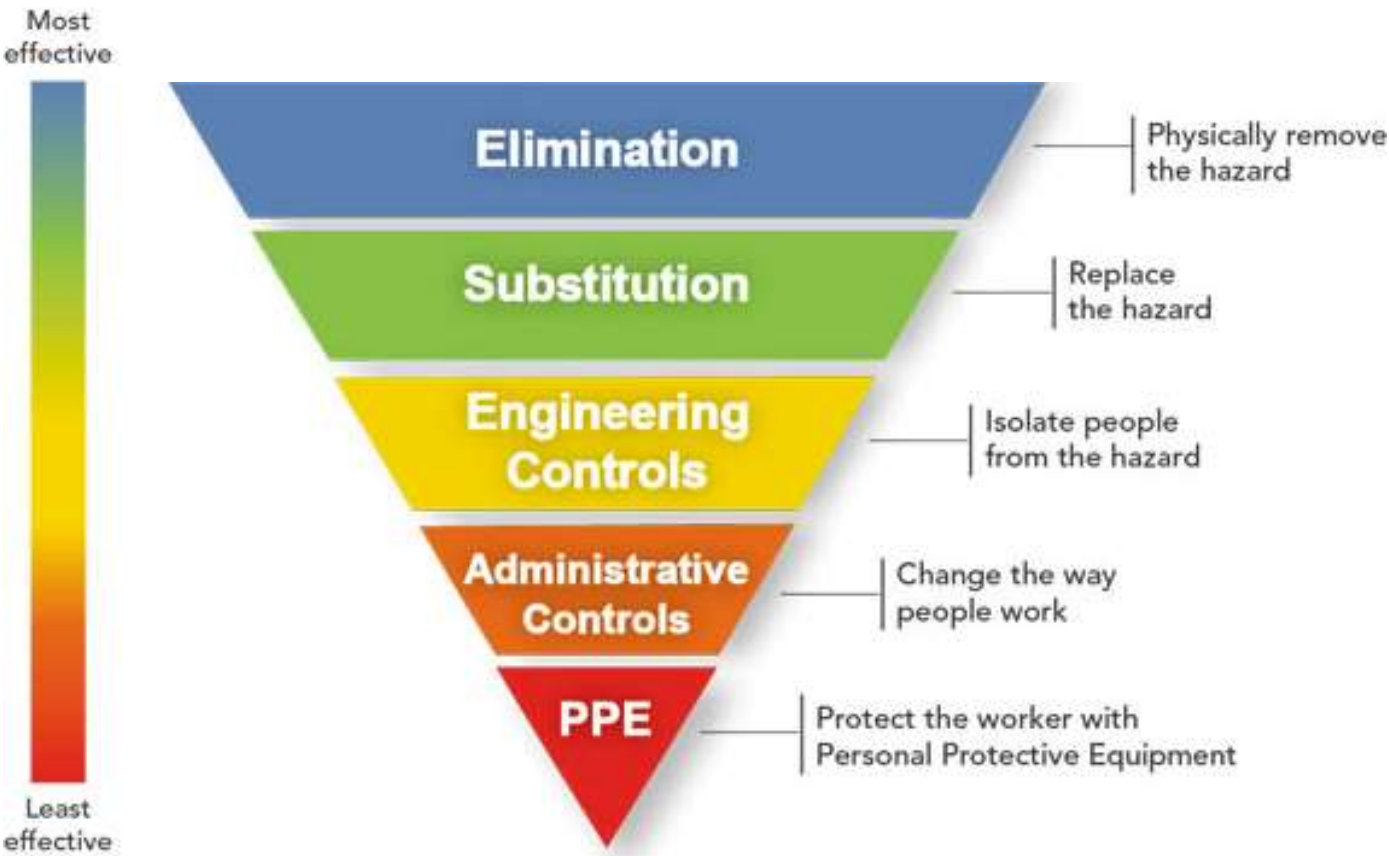
- Ensure proper training
 - Handlers, fieldworkers, and technicians must be trained annually
- Follow the label
 - Proper storage, transport, disposal
 - Always use the appropriate PPE



Training

- Employers are responsible for ensuring all handlers receive training on spill response and first aid





<https://www.cdc.gov/niosh/topics/hierarchy/default.html>

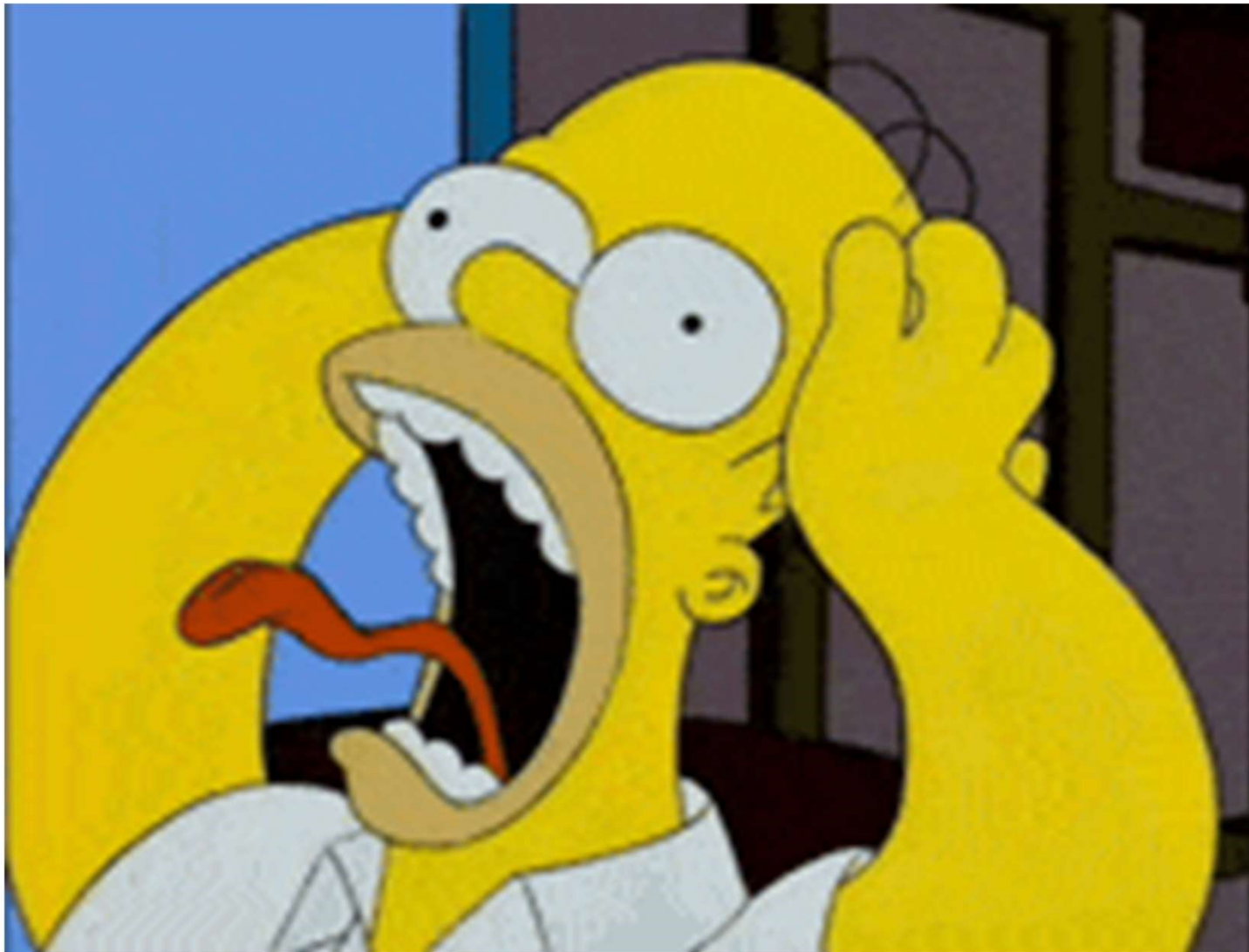
Heirarchy of Controls

- Controlling exposures to occupational hazards is the fundamental method of protecting workers.
- *Prevention through design* strategy



Accidents Happen





What are the 3 C's of spill cleanup procedure?

- 1) Control, Contain, Clean?
- 2) Cry, Curse, Clean?
- 3) Collect, Clean, Continue?



The 3 C's of spill cleanup procedure are:

- 1) Control
- 2) Contain
- 3) Clean





Control

Take immediate steps to stop the spill



Contain

Do everything possible to
keep the spill from
spreading or getting
worse





Clean

- Clean up the site where pesticides have been spilled
- Pesticides can leach into groundwater if not cleaned up properly



Spill Kits

What should be included in a spill kit?

- 1) PPE?
- 2) Absorbent material?
- 3) Snacks?
- 4) Numbers for emergency Assistance?



Spill Kits

- Telephone numbers for emergency assistance
- PPE
- An appropriate respirator
- Containment tubes or pads
- Absorbent materials
- Sweeping compound for dry spills
- Shovel, broom, and dustpan
- Heavy-duty detergent
- A fire extinguisher rated for all types of fires
- Any other spill cleanup items specified on the labeling of any products you use regularly
- Plastic bag or sealing plastic container



Safety Data Sheet: SDS

SAFETY DATA SHEET

EMERGENCY CALL: 1-800-303-6952 (PROSAR)

1. IDENTIFICATION

PRODUCT NAME: Alligare Fluroxypyr Herbicide

DESCRIPTION: A liquid herbicide.

EPA Reg. No.: 66330-385-81927

COMPANY IDENTIFICATION:

Alligare, LLC

13 N. 8th Street

Opelika, AL 36801

Hazardous Decomposition Products: None when stored and handled as prescribed. Thermal decomposition may release oxides of nitrogen and carbon as well as compounds of chlorine and fluorine.

NFPA Ratings: Health – 2 / Flammability – 2 / Reactivity - 0

6. ACCIDENTAL RELEASE MEASURES

For Chemical Emergencies (spill, leak, fire, exposure, or accident) call CHEMTREC at 1-800-434-9300 or 1-703-527-3887 if calling from outside of the U.S.

Clean up spills immediately observing the precautions in Section 8 of this MSDS. Isolate the hazard area and keep unnecessary and unprotected personnel from entering. Prevent material from contaminating soil or from entering sewage and drainage systems and bodies of water.

Absorb small spills with dry material and discard in a disposal container. Stop the leak, if possible. Ventilate the space involved. Construct a dike to prevent spreading and prevent waterway contamination. Collect run-off water and transfer to drums or tanks for later disposal. 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.

For spills that soak into the ground, contact the applicable Federal, State and or County Health Dept. for disposal recommendations. Place in non-sparking containers for recovery or disposal. Remove from spill location. Flush area with water spray, and collect rinsate. If disposal is required, refer to Section 13 of this MSDS for instructions.

7. HANDLING AND STORAGE

Handling: KEEP OUT OF REACH OF CHILDREN AND ANIMALS. Avoid contact with skin, eyes and clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum,

Disposing of Pesticide Waste

- It is hazardous waste
- Search for pesticide waste disposal in your county:
 - <https://ag.colorado.gov/conservation/ag-water-quality/pesticide-waste-disposal>
- If Clean Harbors isn't responsive:
 - Contact John Scott with Colorado Department of Agriculture



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Emergency Medical Care: Pesticide Poisoning

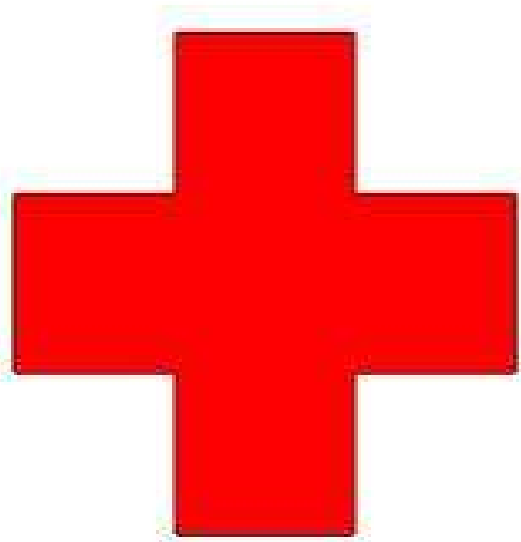
1. Basic First Aid
2. Information from the label or the SDS
3. Poison Control Center
4. Medical Treatment



Prevention is better
than providing
treatment!



First Aid



...is not a substitute for medical care!

Pesticide Exposure:

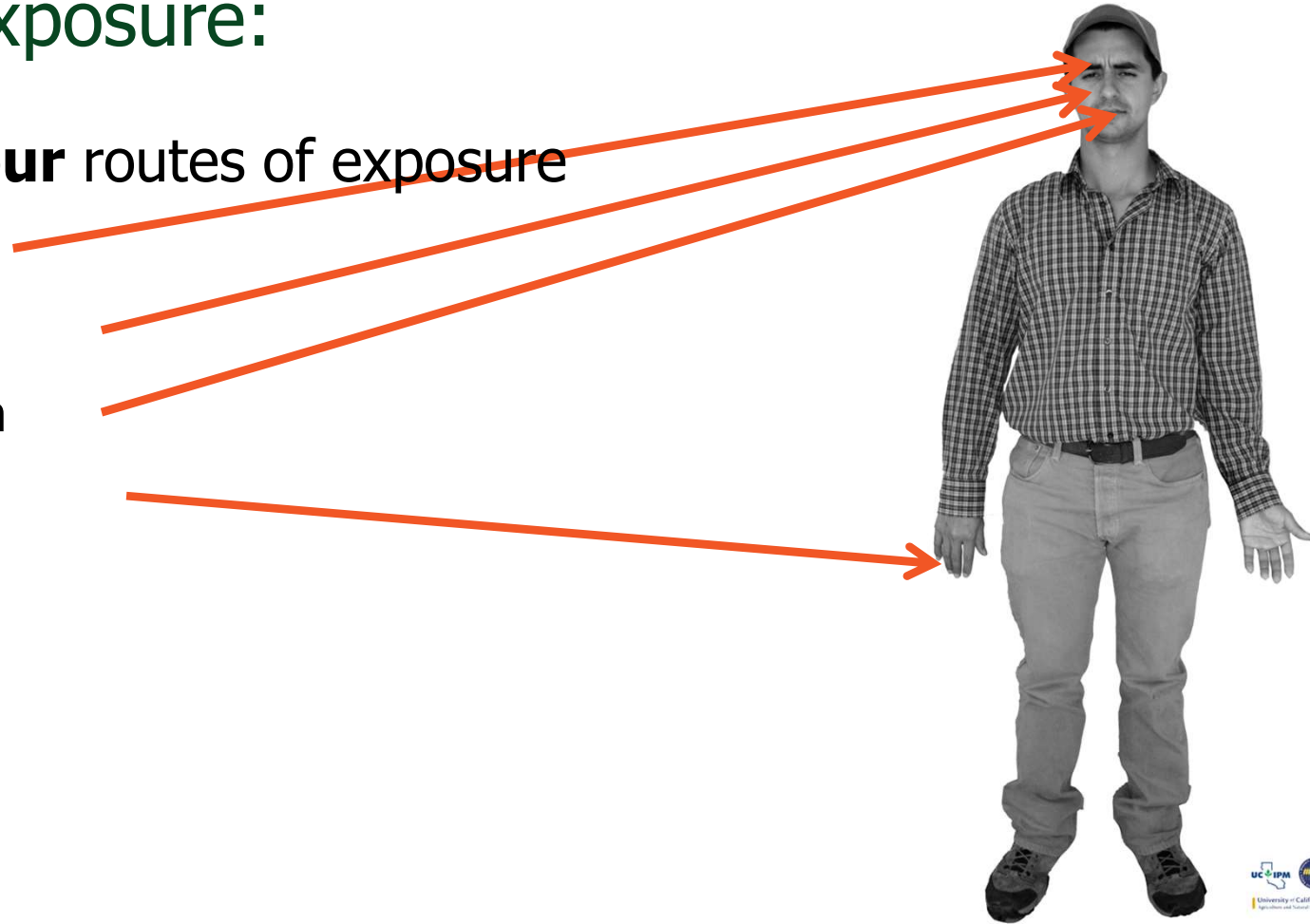
- There are **four** routes of exposure

1. Eyes

2. Nose

3. Mouth

4. Skin



First Aid

FIRST AID	
If in eyes:	<ul style="list-style-type: none">• 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 swallowed:	<ul style="list-style-type: none">• 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 on skin or clothing:	<ul style="list-style-type: none">• 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 inhaled:	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.• Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.	
NOTE TO PHYSICIAN	
Probable mucosal damage may contraindicate the use of gastric lavage.	

Skin

- Remove Clothing
- Flush the skin with large amounts of water
- Wash skin with soap and water





Eyes

- Tilt affected eye towards ground
- Flush eye(s) with CLEAN water
- 15-20 minutes



Respiratory

- Use respiratory protection
- Move victim to fresh air
- Mouth-to-mouth





Image Credit: Pesticide Resources.org

Oral

- Get IMMEDIATE medical attention
- Follow poison control or SDS antidotes
 - DO NOT administer antidotes not recommended by SDS, label, or poison control
- Rocky Mountain Poison Control Center: **1-800-222-1222**





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HOT LINE NUMBER

For 24 Hour Medical Emergency Assistance (Human or Animal) or
 Chemical Emergency Assistance (Spill, Leak, Fire, or Accident),
 Call
1-800-888-8372

EPA EST. 100-LA-001
SCP 497A-L38VV 1121
4150889

2.5 gallons
 Net Contents



Emergency Medical Care

- **Pesticide Information:**
 - EPA Registration number
 - Product Name
 - Active ingredients
 - Medical information from the product labeling
 - Circumstances of application
 - Circumstances of exposure




Emergency Medical Care


- Employer provides prompt transportation to an emergency medical facility
- Know the location of the nearest medical facility and where to find the posted information

Protect Yourself from Pesticides


IN AN EMERGENCY:

Get medical help nearby. 

Name: _____
 Address: _____
 Phone number: _____

If you need an ambulance, tell them where you are. 

Facility name: _____
 Facility location: _____

If you have questions or concerns, call the pesticide regulatory agency. 

Name of state/tribal pesticide regulatory agency: _____
 Address: _____
 Phone number: _____



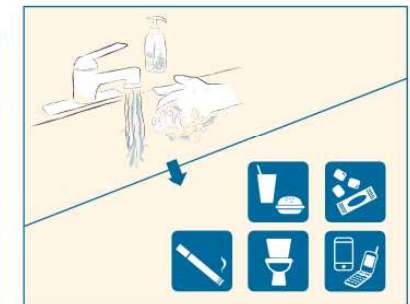
Avoid getting pesticides on your skin or in your body. Pesticides can be in many places. They can be on plants, in plants, in soil, and in irrigation water. Pesticides can drift in the air from nearby applications. They can also be on tractors and other equipment. Pesticides can also be found on used goggles, gloves, boots, and other personal protective equipment.



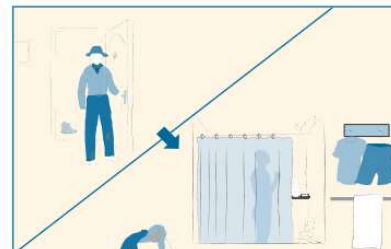
Protect your body from pesticide residue. Wear long-sleeved shirts and long pants when working. Also, wear shoes, socks, and a hat or scarf.



Stay out of treated areas when told, and whenever you see signs like this displayed. When you see a pesticide application taking place, stay back. Applicators must suspend their work if you get too close.



Wash your hands before you eat, drink, or chew gum. Also, wash before smoking, using the toilet, or using your phone.





Emergency Medical Care

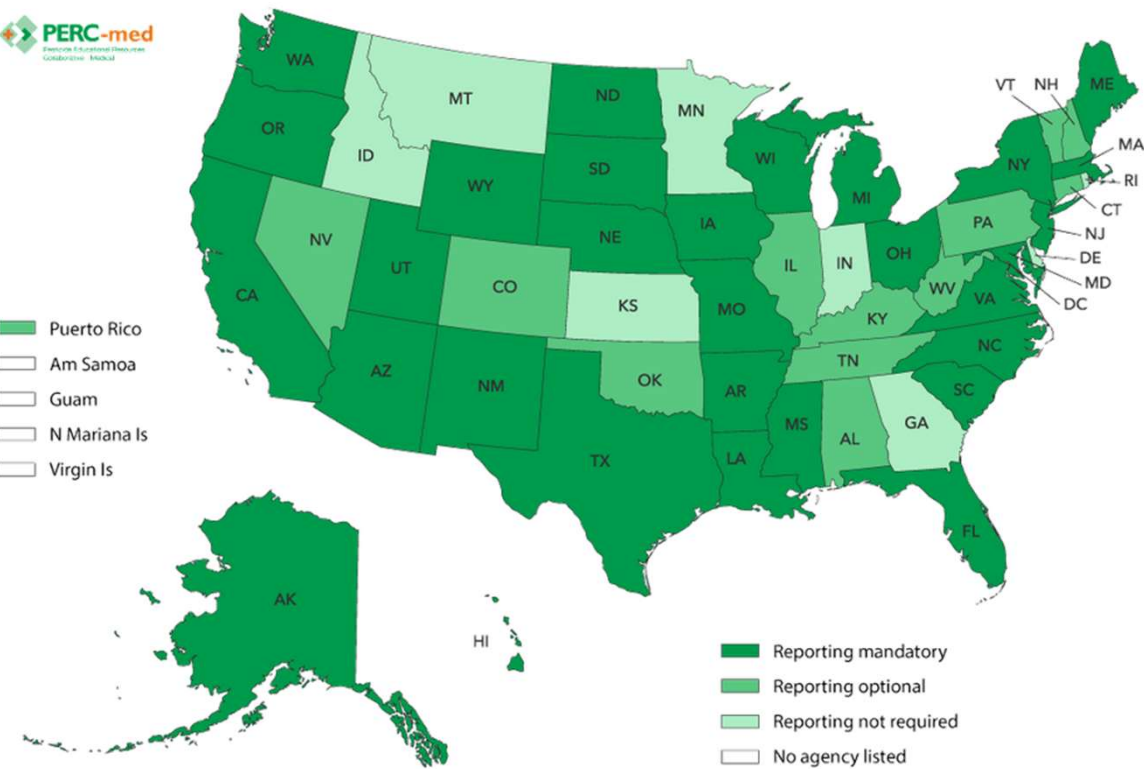
- People exposed to pesticides should not drive themselves to the hospital



Reporting pesticide exposure incidents

- Rocky Mountain Poison Control Center:
 - **1-800-222-1222**
- Colorado Department of Agriculture Incident Reporting: **303-869-9058**
- EPA National Response Center:
 - **1-800-424-8802**
- Colorado Department of Public Health and Environment: **1-877-518-5608**





Reporting pesticide exposure incidents

- Physicians in Colorado are **not required** to report when patients have been exposed to pesticides.
- They **can** report to the Rocky Mountain Poison Control system. This is important for data and statistics.
- They **can** report to CDA. This is important if pesticide misuse is suspected.



Reporting Pesticide Spills

- Any spills that come into contact with any water source **must** be reported
- Follow the guidelines in the Colorado Office of Emergency Preparedness and Response's "Environmental Spill Reporting" document



Take Home Messages

- Make sure you and your employees are trained annually
- Wear appropriate PPE when handling pesticides and their containers
- Provide the pesticide's EPA registration number when receiving medical attention
- Do not drive yourself to the hospital

