

2023 Pesticide Required Topics: Storage and PPE

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By show of hands, how many of you have an area specifically built for pesticide storage?

How many have adapted an area to be the storage area?

By show of hands, how many of are happy with your current storage setup?

How many always wear the proper PPE when mixing, loading, and applying pesticides?

**Realistic
expectations...**



**KEEP
CALM
AND**

**Set Realistic
Expectations**





Three Types of Storage Mindsets

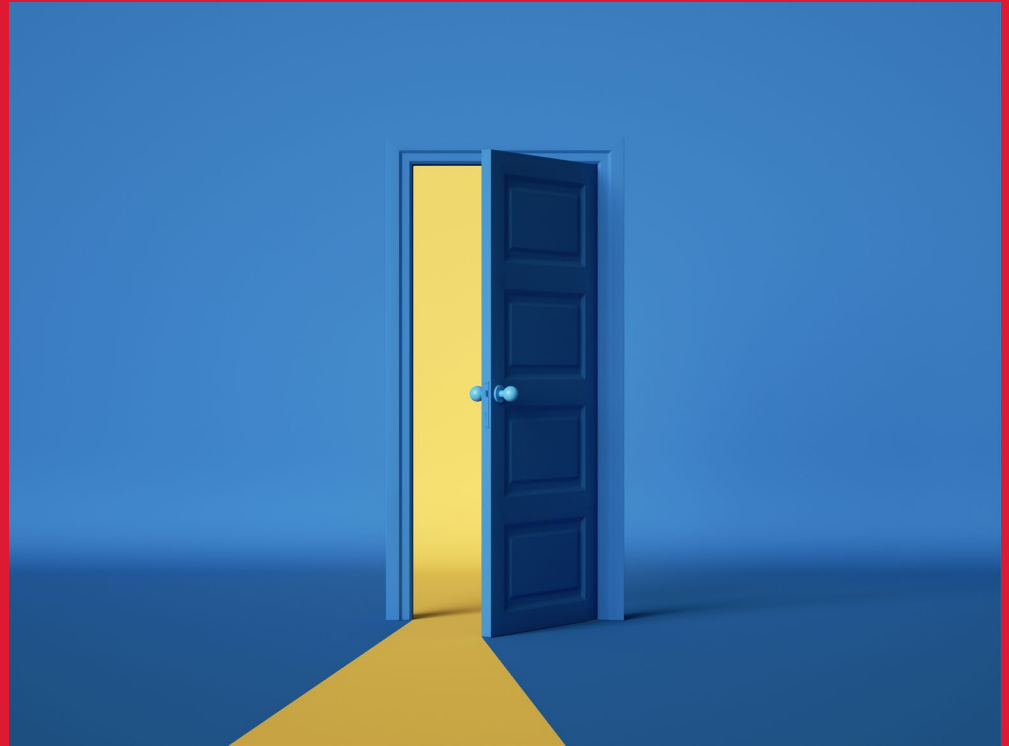


Type #1: The Open Highway



Type #2: The Fort Knox

**Type #3:
The can
you just
leave this
unlocked?**



Importance of Proper Storage

- **Protects people and animals**
 - Proper storage techniques
- **Ensuring product shelf-life**
 - Proper storage environment
- **Safe guards from unwanted outcomes**
 - Ensuring storage security

Reduces Your Liability



What makes a good storage facility?

1. It should be easily accessible and safe for the applicators using it.
2. It should ensure proper product storage and longevity.
3. It should be inaccessible when not in use.



3 Keys to Storage and Security



Storage Site and Build

- Site location
- Signage
- Site materials
- Prohibited items



Product Longevity

- Temperature
- Ventilation
- Inventory
- Product rotation



Storage Security

- Securing products
- Limiting unauthorized use
- Emergency response plan



Storage Site and Build

Storage Site Selection



- **If a large inventory is maintained over time, consider a building specifically designed for pesticide storage**
 - Should not contain office or living spaces
 - Pesticides should only be stored on ground level
- **Located downwind and downhill from sensitive areas**
- **Locate where flooding is unlikely**
- **Located a minimum of 150 ft from private wells, and a minimum of 400 ft public water supply wells**



Image: University of Florida, IFAS Extension

Storage Site Selection



Amount of pesticide inventory may allow for a designated room or area within an existing building.



Compliance with Secondary Containment Exemptions Iowa Code 21-44(206)



- No bulk pesticides (greater than 55 gallons or 100 pounds dry) are stored in nonmobile bulk storage tanks at this site.
- Pesticides (of any sized packaging) are stored at this location for less than 30 days per year.
- Less than 300 gallons of liquid or less than 300 pounds of dry pesticides are mixed, repackaged or transferred from one container to another within a 30-day period.
- All pesticide mixing, loading, unloading, repackaging and all rinsing or cleaning of equipment related to this licensee's operation will take place in the field of application
- Other

Signage



- **What signage is required to be affixed to the storage area?**
 - “DANGER-PESTICIDES-KEEPOUT”
 - “NO SMOKING”
- **These signs should be legible from at least 50 feet from the site**



Storage Area BMP's

#1

- **Use impermeable materials in your pesticide storage facility**
 - Wood should not be used in the storage area
 - Metal and plastics are your best friend



Storage Area BMP's



Best Management Practice: Use containment vessels for storage



Image: Audubon International



Right Three Images: Grainger

Storage Area BMP's



Containment vessels, thinking outside the box



Image: Audubon International

Shelving place inside cement mixing tubs.



Menards: Cement Mixing Tub - \$13.79



Menards: Boot Tray - \$2.98



ULINE: Divider Box - \$23.90



Grainger: Straight Wall Container - \$109.47

Storage Area BMP's



- **Nonporous materials should be used to construct the floor of the pesticide storage area**
 - Dirt or wood flooring is unacceptable due to its ability to absorb spilled or leaking pesticides
 - Consider using sealed cement, glazed ceramic tile, epoxy-coated metal or concrete, no-wax sheet flooring, or other material that is free of cracks and easy to clean
 - If building a new area, consider adding a continuous inside lip or curb 2-4 inches high



Storage Area BMP's



- Needing to “retrofit” an area for pesticide storage?
Consider these options:
 - Collapsible containment berm
 - Sealing your flooring yourself, its relatively easy



Grainger: 10ft x10ft - \$517.18



Menards: Concrete Sealer - \$35.99/gal



Menards: Epoxy-Seal - \$154.98/5 gal

Proper Pesticide Container Storage

#1

- **Store pesticides in the original, labeled container**
 - Make sure the label is in plain sight
 - Ensure label is legible
- **If label is destroyed, mark the container with some basic information**
 - Trade name, common name, EPA registration #, AI %, signal word, and use



Proper Pesticide Container Storage

#1

- **When storing your pesticide containers, follow these BMP's:**
 - Never store in non-pesticide containers
 - Make sure to properly seal bags of dry formulation
 - Always store liquid product below dry products
 - Keep items on the shelves
 - Store large items (bags or drums) on plastic pallets
 - Store volatile pesticides separately



Image: United States Golf Association

Prohibited Items



- **Items that should not kept in the pesticide storage area:**
 - Food or drink
 - Tobacco
 - Feed
 - Medication or medical supplies
 - Seed
 - Clothing
 - PPE (Other than that necessary for emergency response)



Essential Items



- **These items should be located in the storage area:**
 - Pesticide spill kit
 - Labeled measuring devices
 - Fire extinguisher
 - Exposure treatment supplies
 - Safety Data Sheets
 - Important phone numbers





Product Longevity

Proper Storage



- **Start with reading the label**
 - The label will give you the best information on how to store the pesticide product

STORAGE AND DISPOSAL

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

Pesticide Storage

Store in a dry place.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in original container in a locked storage area. Keep from freezing.

STORAGE AND DISPOSAL

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

Pesticide Storage

Keep container tightly closed when not in use. Do not store near seed, fertilizers, or foodstuffs. Can be stored at temperatures as low as -20°F. Keep away from heat and flame.

Storage and Disposal

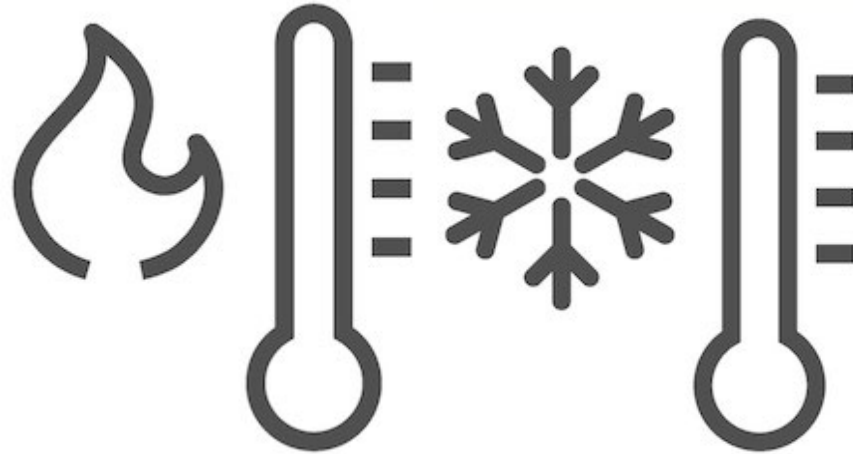
Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Store this product in a dry, cool place below 95° F (35° C) -- it will decompose at higher temperatures. This material reacts nonviolently with moisture, releasing fumigant vapors. Keep the container tightly sealed when not in use. Do not re-use the empty container. Keep this product and its vapors away from desirable plants, seeds, fertilizers, insecticides, and other agricultural chemicals as plant injury or loss may result from contamination.

Temperature



- **The normal recommended range for storing liquid pesticides is 40-100°F**
 - However, read the pesticide label for information on your specific products
- What happens to pesticides at either extremes of temperature?



Temperature



- Freezing of liquid pesticides can result in AI's separating out from solvents and emulsifiers
 - This can lead to crystallization or coagulation of some pesticides
- Some pesticides can be thawed and used after some agitation



Temperature



- **Excessive heat can cause pesticides to volatilize and drift**
 - Certain pesticides are flammable
 - Ensure these products are kept away from heating units.



Govee Wifi Thermometer/Hygrometer - \$33.99



Image: Purdue Pesticide Programs

Humidity



- **It is important to keep the storage area dry**
 - Humidity can negatively effective dry formulation pesticides
 - Humidity can weaken paper containers
 - Humidity can cause wet floors or metal shelving to rust



Inventory Control



- **There are three types of people**
 - 1. This has got to go, disposal immediate.**
 - 2. This will be alright for another year, I only need a little bit.**
 - 3. Let me just put this to the back of the shelf and I'll forget I even saw it.**

Inventory Control



- **When ordering pesticides, don't over order**
 - When you order more product than you potentially need you will store that pesticide for longer periods
 - Most manufacturers recommend products should be used within 2-3 years of purchase
- **Rotate old products to the front**
 - Date your products to quickly identify the oldest



Storage Security

Securing Your Products



- **Best way to keep your products secure is by locking them in a secure area**
 - Limit accessibility to only who needs it
 - When done mixing or loading products always put away immediately
- **If products are being stored in a work truck, make sure you have a way to lock your pesticides up**

Use Smart Tech to Your Advantage



- **Rather than a traditional lock and key, consider using some smart technology**



Wyze Lock Bolt - \$79.96



Kwikset Keypad - \$61.88



Eufy SoloCam E40 - \$129.99

Update Emergency Response Plan



- **Make sure to frequently update your Emergency Response Plan**
 - The plan should include:
 - Emergency coordinator
 - Emergency calling list
 - Facility map
 - Listing of products stored
 - Listing of emergency equipment and supplies
 - Outline of emergency procedures

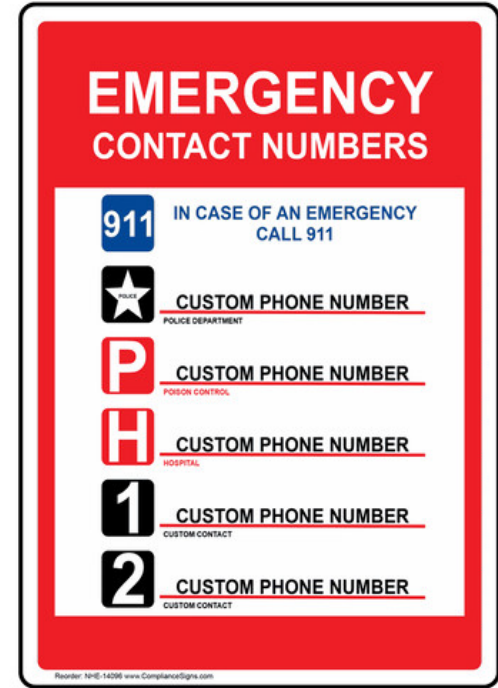


Image: Compliance Signs

3 Keys Summary

Key #1 *Storage Site and Build*

Consider the safety of everyone using the storage area. Anticipate potential issues, and have safe guards in place.

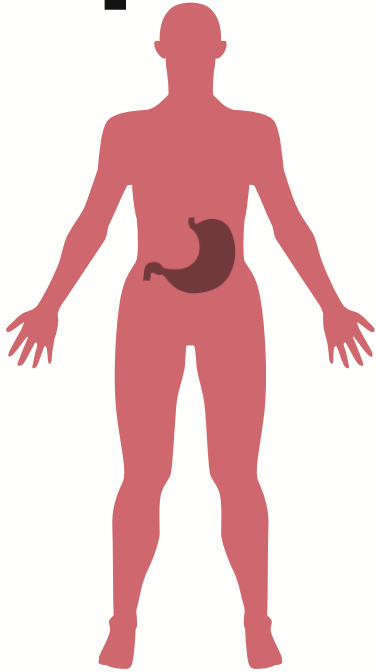
Key #2 *Product Longevity*

Ensure proper temperature and humidity regulation. Rotate and don't over order.

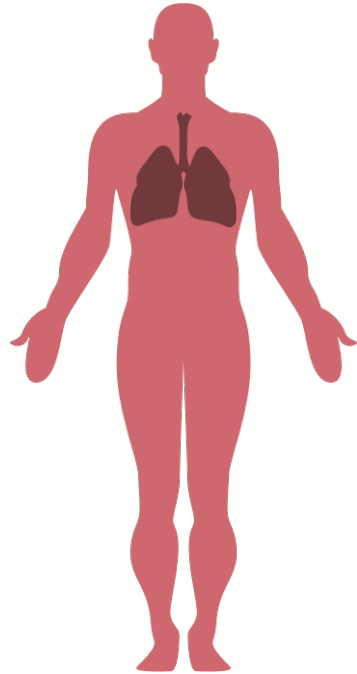
Key #3 *Storage Security*

A lock with a key works great. Technology can be your friend. Continually update your Emergency Response Plan.

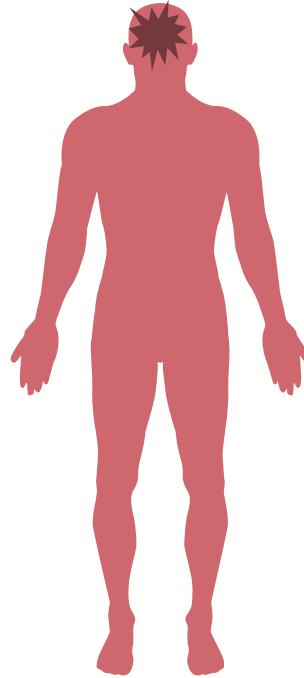
Exposure



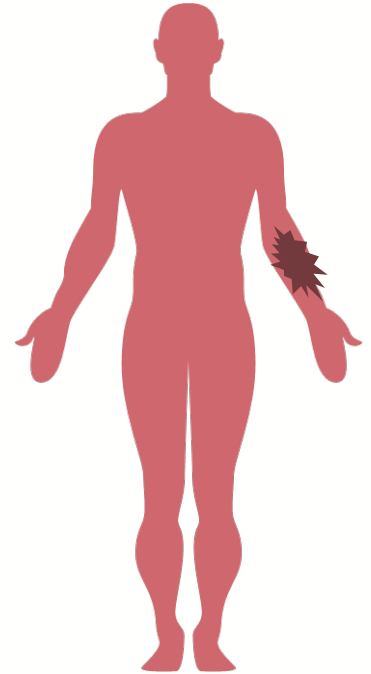
Oral



Inhalation



Ocular



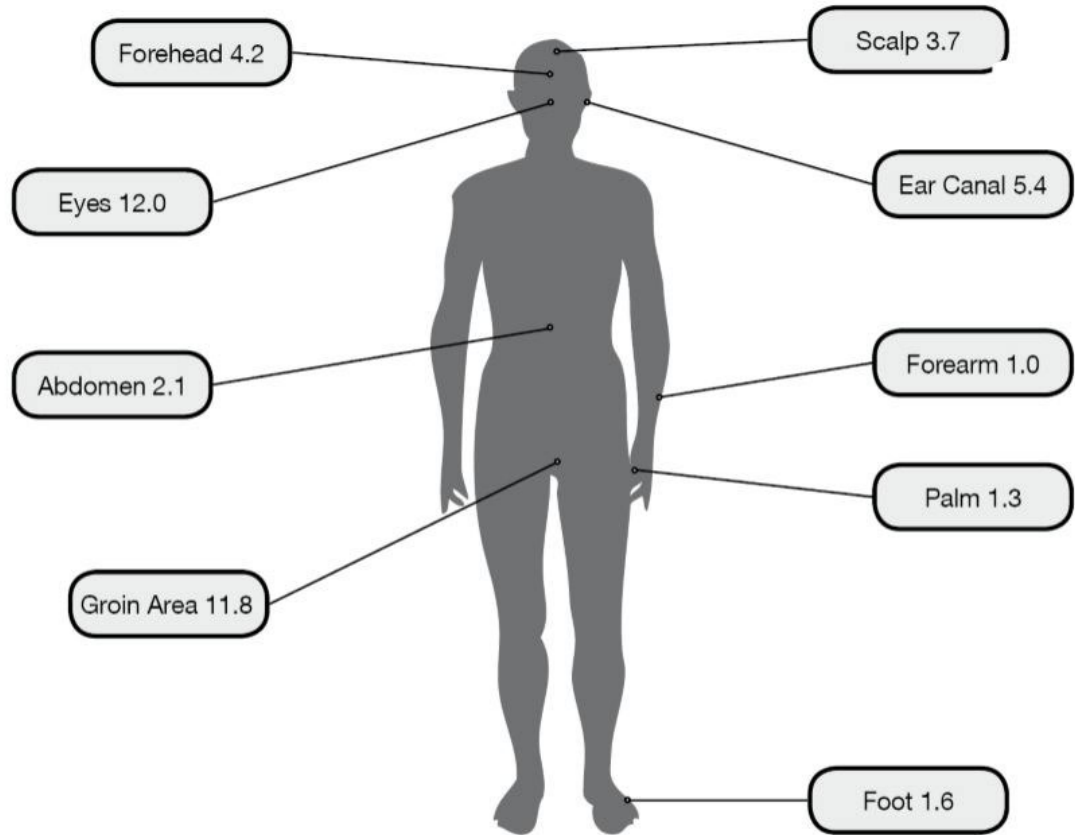
Dermal

High Pesticide Exposure Areas to Iowa Applicators

Body Part	Percentage of Exposure
Hands	65
Arms	62
Head/Face	57
Torso/Legs	34
Lungs	33
Feet	21
Groin	19



**Absorption
rate of
pesticide into
the body is
variable
based on
location of
exposure.**



Consult the Pesticide Label For Specific PPE Requirements



Aramark Heavy-Duty Twill Coveralls



DuPont Tyvek 400 Coverall



KleenGuard A80 Coverall



Ansell Midweight PVC Apron



Honeywell SilverShield SSG Gloves



Honeywell North Butyl Gloves



SHOWA Nitrile Gloves



Ansell Chemical-Resistant Gloves, Viton



SHOWA 723 Chemical-Resistant Neoprene Gloves



SHOWA 7712R Chemical-Resistant PVC Gloves



4X Blue Nitrile Exam Gloves



U.S. Safety Legend Pyramex G204 Splash Protection Goggles



3M Safety Glass



3M Complete Headgear Faceshield



3M N95 Particulate Respirator, 8200



Honeywell North 5500 Series Half-Mask Respirator

Protective clothing



Laundering PPE Tips

- **Minimize Pesticide Residues in the Home**
 - Launder clothes as soon as possible
 - If you can't wash immediately store separate from other household clothing
 - Contaminated clothes should be washed separately
 - Take necessary precautions to avoid exposure while washing



Chemical resistant gloves



Nitrile \geq 14 mil



Butyl \geq 14 mil



Neoprene \geq 14 mil



Barrier Laminate



Viton \geq 14 mil

AMINOPYRALID	GROUP	4	HERBICIDE
FLORPYRAUXIFEN-BENZYL	GROUP	4	HERBICIDE



CAUTION

**Causes Moderate Eye Irritation.
Avoid contact with eyes or clothing.
Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.**

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

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

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.

®™ Trademarks of Dow AgroSciences, DuPont or Pioneer and their affiliated companies or respective owners

For control of annual and perennial broadleaf weeds including invasive and noxious weeds, certain annual grasses, and certain woody plants and vines, on:

- rangeland, permanent grass pastures (including grasses grown for hay*), and Conservation Reserve Program (CRP);
- non-crop areas for example, airports, barrow ditches, communication transmission lines, electric power and utility rights-of-way, fencerows, gravel pits, industrial sites, military sites, mining and drilling areas, oil and gas pads, non-irrigation ditch banks, parking lots, petroleum tank farms, pipelines, roadsides, railroads, storage areas, dry storm water retention areas, substations, and
- natural areas (open space) for example, campgrounds, parks, prairie management, trailheads and trails, recreation areas, wildlife openings, and wildlife habitat and management areas including seasonally dry flood plains, deltas, marshes, prairie potholes, or vernal pools;
- including grazed areas in and around these sites.

* Hay from grass treated with TerraVue within the preceding 18 months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling

AMINOPYRALID	GROUP	4	HERBICIDE
METSULFURON-METHYL	GROUP	2	HERBICIDE



Opensight[®]

HERBICIDE

WARNING

Causes Substantial but Temporary Eye Injury • Harmful if Swallowed

Do not get in eyes or on clothing. Avoid contact with skin.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical resistant gloves
- Protective eyewear

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For control of susceptible weeds and certain woody plants, including invasive and noxious weeds, on rangeland, permanent grass pastures Conservation Reserve Program (CRP) acres, non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines, and railroads), non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites.

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U.S. Safety Legend Pyramex G204
Splash Protection Goggles



3M Safety Glass



3M Complete
Headgear Faceshield

INDAZIFLAM	GROUP 29	HERBICIDE
AMINOCYCLOPYRACHLOR	GROUP 4	HERBICIDE
IMAZAPYR	GROUP 2	HERBICIDE



PlainviewTM

SC

PERSONAL PROTECTIVE EQUIPMENT (PPE)

All mixers, loaders, applicators and other handlers must wear long-sleeved shirt, long pants, shoes and socks. 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.

Suspension Concentrate

For broad-spectrum bareground vegetation control in non-cropland areas.

ACTIVE INGREDIENT(S):

Indaziflam	2.00%
Potassium salt of aminocyclopyrachlor: 6-amino-5-chloro-2-cyclopropyl-4-pyrimidinecarboxylic acid ¹	6.55%
Isopropylamine salt of imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid) ²	20.43%
OTHER INGREDIENTS:	71.02%

TOTAL: 100.00%

Contains 0.18 pounds of indaziflam per gallon

¹ Equivalent to 5.55% 6-Amino-5-chloro-2-cyclopropyl-4-pyrimidinecarboxylic acid or 0.50 pounds acid per gallon

² Equivalent to 16.66% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 1.51 pounds acid per gallon

Shake Well Before Using

EPA Reg. No. 432-1606

AMINOPYRALID	GROUP	4	HERBICIDE
FLORPYRAUXIFEN-BENZYL	GROUP	4	HERBICIDE



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Thank You

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